



**Understanding ICT Classroom Issues Encountered by Teachers:
The Application of Dooyeweerd's Philosophy**

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List of Abbreviations

Activity Theory	AT
Actor Network Theory	ANT
Attitude towards Use	AU
Behavioural Intention to Use	BI
British Educational Communication and Technology Agency	BECTA
Consent Form	CF
Critical Incident Technique	CIT
Department for Education	DfE
Department for Education and Skills	DfES
District Health Authority	DHA
Down-To-Earth	DTE
Evidence Informed Policymaking in Education in Europe	EIPEE
Extra Information Volunteered	EIV
Human Computer Interaction	HCI
Information and Communication Technology	ICT
Information and Communication Technology in Education	ICTE
Information Systems	IS
Information Technology	IT
Institutional Review Board	IRB
Microsoft Word	MS
Multi-Aspectual Interview Technique	MAIT
Multi-Aspectual Knowledge Elicitation	MAKE
National Grid for Learning	NGfL

New Opportunities Fund	NOF
Office for Standards in Education	OfSTED
Paper Literature	PL
Participant Information Sheet	PIS
Perceived Ease of Use	PEU
Perceived Usefulness	PU
Research Governance and Ethics Committee	RGEC
Serial Number	SN
Soft System Methodology	SSM
Subjective Norms	SN
Technology Acceptance Model	TAM
Theory of Reasoned Action	TRA
United Kingdom	UK
Universal Service Provision Fund	USPF
Value Sensitive Design	VSD
Voice note	V

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OPEOLUWA ADEWOLU AIYENITAJU

Abstract

Information and Communication Technology (ICT) have become increasingly important in education and teaching roles and the integration of ICT into classrooms has become essential. Literature provides evidence of various issues hindering the successful integration of ICT in education; for example, a lack of access to computers and lack of training. Yet when these issues are addressed there is little or no evidence of improvement in ICT use in the classroom.

This thesis argues that understanding a Teacher's ICT use requires attention to many everyday life experience issues; what this study calls Down-to-Earth (DTE) issues. DTE relates to how occurrences in the classroom affect a user's experiences of ICT - (for example, technology disappointments, stress, thinking up another option every time, and so on). Theoretical literatures on the subject of the ICT use of educators often misses or takes for granted many DTE issues important to Teachers because of the difficulties involved in logging these diverse everyday issues.

However, a philosophically-based method has emerged that provides a new way of understanding ICT use from a DTE perspective. Many authors, such as Ahmad and Basden (2013) made use of aspects to reveal DTE issues in IS Mandatory use. The primary purpose of this study is how Dooyeweerd's philosophy can help us understand the everyday issues Teachers face with the use of ICT in the classroom. These DTE issues are diverse, deep and value-laden, and are meaningful in the everyday experience of ICT use.

Interpretive research with the use of in-depth interviews was conducted with twenty Primary School Teachers from three schools in Salford, across subjects and year groups. There were no gender restrictions as both male and female participants were included. The use of open-ended questions helped explore the topic deeply and produced a rich account from each participant. The transcribed interview was then analysed using Dooyeweerd's suite of aspects as a conceptual tool based on his philosophy of everyday life.

The results of this study showed that Dooyeweerd's aspects when applied to transcripts of open interviews are able to reveal the diversity of issues, uncover the deep issues and

encourage Teachers to be reflective about their values, making it easy to separate out what is meaningful to the interviewee from what is meaningful to the Researcher. This provides rich data that can be analysed by cohorts, such as gender, years and schools. A number of important findings have been obtained from various cohorts. First, a distinctive difference are the amount of issues male Teachers found meaningful in the formative aspect compared to issues in the economic aspect preoccupying female Teachers.

The implication of the results is that the current literature on Teachers' ICT use is not rich enough, especially in terms of everyday life experiences, and is misleading as a guide in research and practice. As such, theories would benefit from taking DTE issues into account. This study will help literatures on ICT education widen their focus and take all aspects into account. This study provides practitioners, policy-makers and the wider research community with a reliable basis to consider the DTE issues of Teachers alongside wider strategic goals and thus make more sensitive judgements in matters of policy formation and best practice.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter begins with a background to the study consisting of the following sections: the purpose of the study; the justification for the study; the context of the study and its research aims and objectives. It also establishes the method of research execution; its expected contributions to knowledge and practice and structure of the thesis.

This chapter establishes the research context, background and importance of the topic. It establishes the importance of this study and also gives a brief synopsis on some of the literature that discusses Information and Communication Technologies (ICT) in education, highlighting the inadequacies of previous research.

1.1.1 Background to the study

This section outlines the concept of ICT and its usefulness in education. It acknowledges how ICT in education has been embraced by policymakers with special focus on the massive financial investments the UK Government has devoted via various funding bodies.

ICT includes mobile devices such as smartphones, tablets, computer hardware/software, the network and other digital devices like video, audio, camera, which convert information (text, sound, motion, etc.) into digital form and other media; and social networking sites such as Facebook, Twitter, and so on (Yusuf et al., 2011; Kimball and Kim, 2013). The everyday use of ICT in education is to facilitate planning and teaching, using technology appropriately to improve student learning (Koehler et al., 2007; Angeli et al., 2009). Studies indicate that the use of technologies in education helps make Teachers and learners adapt to the idea of the global village economy. In this context, ICT helps create just-in-time learners (Zucker and Light, 2009). This study focuses on the issues with Information and Communication Technology in Education (ICTE) and how it is used in the classroom by Primary School Teachers.

1.1.2 The Impact of ICT in Education

There are various benefits of ICT use in the classroom. ICT provides opportunities to access varieties of information via varieties of resources 24/7 alongside the ability to view information from various perspectives and platforms, thereby enhancing learning. ICT has the potential to simplify complex processes through simulation, aiding understanding, while the use of interactive white boards and touch screens are revolutionising the classroom, with tablet technology and smart phones providing the opportunity to make personalised learning visible. These are some of the potentials and contributions ICT offers to education which most Teachers value (Smeets, 2005; Romeo et al., 2012; BESA, 2015) other benefits are discussed in section 2.3.

ICT has become an increasingly fundamental part of education worldwide. ICT in education is important to the economy because the world has become a global village. The importance of ICT is acknowledged among educational organisations and policymakers worldwide (Romeo et al., 2012). The British Government advocates: "ICT prepares pupils to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technology" (DfEEa, 1999, pp. 99).

The UK policy for the development of ICT in education is to: "promote vocational goals in preparing pupils for Higher Education and future skilled work; to raise standards in pupils' achievement; to increase Teacher effectiveness and sufficiency of professional preparation and presentation and to support, promote and extend learning" (Loveless, 2002, pp. 12, DfES, 2011). The UK Government endorses the importance of ICT in the workforce, the capability of ICT to help students raise their achievement standards, and its potential to improve the standard of education at large.

The United Kingdom (UK) government has spent a lot of money equipping primary schools with new technologies through the New Opportunities Fund (NOF) and National Grid for Learning (NGfL) schemes for serving Teachers. There is a large amount of funding that is currently being placed in schools by the UK government in an effort to equip all classrooms with computers. The government funding of £700 million for the NOF and the NGfL, which started in 1998, is a clear signal to Teachers that being ICT-literate is seen as being fundamental not just for their pupils but also for the Teachers' career (DfES, 2003a). Also, the UK government's plan to invest £20

million by 2020 into technology skill acquisition gives an insight into the importance in which the advancement of ICT in education is considered (Hopping, 2014).

From the Business School perspective, from which this study is carried out, the amount of spending ICT in education has obtained is considerable. If asked perhaps education would agree it has obtained this much benefit from ICT. Such considerations challenge this study to understand appropriately the issues Teachers encounter using ICT in the classrooms and why the benefits from ICT seems much less than the amount invested into it.

A motivation the Researcher chose to focus on Salford primary schools is the concern to raise the attainment of disadvantaged pupils in deprived communities, such as Salford, who are constantly lagging behind their peers in middle-class schools due to poor performance (DfE, 2010; The Telegraph Education 2016). Though deprivation is not a theme of this research, it is one of the reasons the Researcher sought schools in this area rather than any other.

Primary school is of interest because primary education is the foundation stone on which the Government is building its vision of an 'information society' (Holmes and Gardner, 2006). Teachers in primary schools have to teach a range of subjects to teach the curriculum effectively and, therefore, will have an overview of ICT in their teaching.

ICTs have changed the way Teachers teach, and students learn, and it is gradually changing the traditional educational environment. Teachers are endowed with many skills they use every day in the classroom. In most cases, they are often confident, at ease and enjoy the tools they use and the subject they teach. There is, however, an area that is often intensely problematic for Teachers, thereby hindering its effective implementation; this area is the use of ICT in teaching (Koohang, 1987; Kay, 1989; Stark et al., 2002; OfSTED, 2002c; Conlon, 2004; McCarney, 2004; Condie et al., 2005; OfSTED, 2005; Beastall, 2006). Literature by Beastall (2006) highlighted some limitations Teachers have identified with ICT use in the classroom. For example, a lack of pedagogical support given to Teachers directly affects an educational approach that embraces technology in order to improve the learning trajectory of pupils and the teaching process beyond the aesthetic delivery of courses (Beastall, 2006). The use of league tables and other targets has portrayed ICT in education as a quick fix for a market ideology interested in such solutions (Beastall, 2006).

Although the Researcher grew up in Nigeria, a third-world country, and my interest in this topic is also motivated by the possibilities of ICT in education in third-world countries, the research takes place in the UK, a developed country.

This study seeks to understand the everyday issues Teachers encounter with ICT use in the classroom. Discussion on issues with ICT use will further be elaborated on in the literature review Chapter 2.

1.1.3 Diversity of Issues

This section gives a background insight into the diversity of issues faced with ICT use in the classroom.

Despite decades of researches and investments into the implementation of ICT in education there are some issues Teachers face when using ICT in the classroom. A great deal of previous research – highlights concerns over the issue of ICT in education and its impact on children's learning (Preston et al 2000; Selwyn, 1999; Fabry and Higgs, 1997; Andrews, 1997; Hoffman, 1996; Kirkman, 2000; Kennewell et al., 2000, BECTA, 2005, BECTA 2006).

Reports by the Office for Standards in Education (OfSTED) have highlighted the increases in ICT use in teaching subjects across the curriculum, the problems of good practice, however, are still some of the issues (OfSTED, 2001b, 113; Blackwell et al., 2013). Surprisingly, research revealed that the ICT strategies employed during the integration of Literacy and National Numeracy into the curriculum was successful (OfSTED, 2002a; OfSTED 2002b), but that this same strategy, when applied to the use of ICT in classrooms, was not successful (Koohang, 1987; Cox et al., 1999a; OfSTED, 2002c).

Studies indicate that although many Teachers are aware of the potential of using ICT in the classroom, a considerable number of them hold back while those that make use of ICT in, for example, teaching deliveries, do so without any significant changes in their teaching methods (Bransford et al., 2000; Barak et al., 2011). This shows that integrating ICT into education has not been entirely successful (Pelgrum, 2001; Lin et al., 2012; Goktas et al., 2013; Cheah et al., 2016).

However, it is the issues of interest to senior management, technology providers or academics (Ahmad & Basden, 2013) that are usually discussed in the academic literature. These high-level

perspective issues are commonly related merely to a list of reasons Teachers do not use ICT in the classrooms, overlooking everyday life issues because they are seen as less meaningful or deserving less of our attention.

This study suggests that there is a discrepancy between the actual everyday real-life issues facing Teachers when using ICT in the classroom, called Down-To-Earth (DTE) issues and the kind of issues Researchers' report which are mainly focused on the high-level issues. The DTE approach concentrates more on a Teacher's everyday perspectives rather than that of senior management, technology providers or academics which are the high-level perspectives (Ahmad & Basden, 2013). The difference is that DTE issues are mostly not of interest to senior management but they are vitally important to Teachers (users) in the classrooms.

This study suggests that the fundamental problem is that existing approaches simply overlook many DTE issues. Therefore, there is a need for this study and its exploration of the diversity of DTE issues facing Teachers using ICT in classrooms.

1.2 Down to earth issues in the Literature

This section discusses the presence of DTE issues hidden in literature. It shows the need to pay attention to DTE issues of ICT use and gives further insight into how this can be achieved.

The literature on ICT issues in education has highlighted several high-level issues, mostly from the perspectives of policy makers, ICT suppliers and academics. These high-level issues differ from the meaningful issues to Teachers to such an extent that the Teachers' perspectives are often overlooked. These have been identified as DTE issues in this study. However, some literatures mentioned DTE issues, but largely in order to simply describe some high-level issues. This is further discussed in section 2.8.

This indicates that the extant literature does not fully give attention to the ICT issues facing Teachers (see section 2.8). Therefore, there is an urgent need to identify and give attention to the everyday issues Teachers face using ICT in the classrooms. From the current literature, this study identified the research needs, that is, the needs to fulfil in order to answer the main research question. They are:

- To draw out deeper DTE issues rather than surface or high-level issues

- To help reveal diversity of issues
- To help reveal value-laden issues of Teachers' ICT use in the classroom

Various relevant conceptual frameworks were considered to best fulfil each of the research needs. For example, Technology Acceptance Model (TAM) and Actor Network Theory (ANT) were considered for this study, but they were rejected as a way of understanding everyday issues as they tend to focus on a narrower range of aspects. TAM for example, tends to be restricted mainly to the formative and perhaps economic aspects of IS use. For a detailed discussion on the various frameworks examined, see section 3.3.

The conceptual framework used that can answer all three research needs is provided by the Dutch philosopher, Herman Dooyeweerd.

1.3 Rationale for the research

As discussed in section 1.2, the important roles ICT plays in education cannot be overlooked. However, there are some issues encountered by Teachers when using ICT in the classroom. This section sets a stage for some of the reasons of interest on this research topic.

Because of the promising potential of ICT to education, it unconsciously seduces and demands a high expectation from all beneficiaries. As earlier discussed in section 1.2, the huge investment and funding by the UK Government made to schools in an effort to equip all classrooms with ICT equipment came with a set of rigid policies, whose outcomes are mostly not measureable, indicates the high expectations stakeholders have from ICT integration and use (BESA, 2015).

The Teachers' role in the integration of ICT into classrooms is crucial to the success of these policies, and thus policy makers should take into account Teachers' knowledge, skills, beliefs and attitudes (Cuban, 2001). However, there are various reasons why using ICT in the classroom has been a challenge. For example, lack of access to computers, lack of training, a Teacher's lack of confidence and other factors, which will be further discussed in Chapter 2 of this study (Goktas et al., 2013; Hammond, 2014). Yet when these issues have been addressed there is little or no evidence on improvement in ICT use on teaching and learning in the classroom (Liu, 2011; Hammond, 2014). Nevertheless, when Teachers talk about the issues they face using ICT in the classroom, they provide their own interpretations of these issues with respect to their goals and in

the ways they evaluate learners and the learning process (Alexander, 2010; Osei, Larbi, & Osei-Boadu, 2014).

This study, therefore, aims to reveal and understand the everyday DTE issues of Primary Teachers' use of ICT in the classroom. These DTE issues are complex (diverse and deep) and value-laden – hence this study. Unfortunately, DTE issues are mostly taken for granted or overlooked issues, because they are viewed as insignificant or not worth our attention (Ahmad & Basden, 2013). In contrast to the issues mostly discussed in literatures, it is these DTE issues that affect the success and quality use of ICT and are meaningful to Teachers.

There is a gap between understanding and addressing the actual everyday issues facing Teachers using ICT in the classroom (for example, technology disappointments, stress, thinking up another option every time, and so on). As such, there is a need to pay particular attention to the everyday DTE issues occurring in the classroom. This is the main focus of this study.

1.4 Why Dooyeweerd's Aspects might be of interest

This section outlines why the use of Dooyeweerd's aspects would fulfil the research needs set out in this study. Further understanding of Dooyeweerd's aspects will be discussed in chapter 3.

Dooyeweerd's philosophy gives insight into everyday life as he recognises diversity of issues, including human and non-human in response to different spheres of law. For example, humans and computers may be seen as both similar and different though in different spheres. This study examines issues related to the use of ICT as well as the human activities that might influence the use of these technologies (ICT) in the classroom.

A particular aspect of Dooyeweerd's philosophy, his notion of irreducible aspects, has been applied to the field of Information Systems (IS) by several authors. There have been various usages of aspects to help reveal diverse issues (Eriksson, 2001; Bergvall-Kreborn et al., 1996; Winfield, 1996). Eriksson (2001) showed how Dooyeweerd's aspects helped to reveal some ignored issues. Winfield et. al., (1996) proposed that better knowledge, that is deep knowledge rather than just surface knowledge, can be elicited if a multimodal approach to the elicitation process is used. This multimodal approach is based upon the philosophy of Dooyeweerd. These authors specialised in Dooyeweerd's notion of irreducible aspects, and that is the part this study

focuses on. The use of Dooyeweerd aspect in this study will provide philosophical grounds for understanding diversity and to avoid overlooking important factors.

Dooyeweerd offers 15 suites of aspects which can help to classify the everyday issues faced by Teachers, so all issues are given due diligence. Further justification on the use of Dooyeweerd aspect is discussed in section 3.6.

The next section justifies the research aim and objectives set out in this study.

1.5 Research Aim and Objectives

This section states the aim and objectives and justifies them respectively.

1.5.1 Research Aim

The aim of this research is to answer the following main research question:

How can Dooyeweerd's Aspects discover the DTE issues Teachers face with the use of ICT in the classroom?

1.5.2 Research Aim Justification

The justification for this study will explain every phrase that makes up the research aim. This is done in order to clarify and seek the understanding of what this study requires.

The first part of the research aim says 'How can': this means the Researcher is aiming to come out with a methodology and explore its effectiveness.

The next clause of the research aim says 'Dooyeweerd': who is this referring to - not just for other ICT theories but also the use of Dooyeweerdian theory.

Therefore, the phrase 'How can Dooyeweerd' is not just a methodology but also an analysis method.

The next phrase says 'discover': this suggests that it is a research analysis and not just collation of information already available.

The next phrase says ‘issues Teachers face’: this study seeks to identify the issues that face Teachers and also why we need a research method for them. For instance, as earlier discussed in the Rationale for the Research in section 1.3, Teachers’ views of their everyday issues with ICT use are different to the high level issues currently discussed in much of the literature.

The problem that motivates ICT use in this study is among all Teachers and especially with Primary School Teachers.

The next phrase says ‘with the use of ICT’: this study focuses on the Teachers’ use of ICT rather than the school management's use of the same.

The next phrase says ‘in the classroom’: this research is not focusing on the back-office use, but in the classroom.

The term ICT in this study refers to both mobile and non-mobile technology and no differentiation between the two is outlined because Primary Teachers make use of both within a wide variety of applications (Kumar, 2015; Baran, 2014). This study does not focus specifically on children’s use of technology but all use within the classroom, with a predominant focus on its use by Teachers. Despite the posited importance of the role of ICT in education, this study does not focus solely on the hidden debate of whether ICT in classrooms is beneficial or not. This study is primarily concerned with the diversity of usage and application issues Teachers face; as such it does not make a judgement as to whether Teachers are right or wrong. It also does not concern itself with learning and teaching pedagogical styles.

This research study then, will focus on ICT use in the classrooms and not as a curriculum subject. Emphasis will be on ICT tools that are helpful to Teachers, rather than what forces itself on Teachers or make the teaching process difficult for them.

The following sub-section clearly justifies the research aim.

1.5.3 Research Objectives

This study aims to find a way to discover DTE issues (Ahmad & Basden, 2013) - those diverse, deep and value-laden issues that face Teachers who use ICT in the classrooms.

To answer the research questions, it is necessary to achieve the following objectives:

1. Explore the diversity of issues discovered in the literature, which are meaningful to Teachers using ICT in the classroom.
2. Determine from the literature the needs of the research with regards to using ICT in the classroom.
3. Establish a suitable conceptual framework for the research based on Dooyeweerd Philosophy
4. Use the conceptual framework developed to discover as wide range of issues as possible
5. Evaluate and refine the conceptual framework and method developed.

1.5.4 Research Objectives Justification

This section shows how each of the stated objectives connects with the research aim.

Objective 1 states: Explore the diversity of issues discovered in the literature, which are meaningful to Teachers using ICT in the classroom. This objective seeks to establish more strongly the need of the research and clarify the idea of DTE issues.

Objective 2 states: Determine from the literature the needs of the research with regards to using ICT in the classroom. This objective will elaborate what is meant by ‘discover DTE issues’ as stated in the research aim.

Objective 3 states: Establish a suitable conceptual framework for the research based on Dooyeweerd Philosophy. This makes specific how the Researcher intends to make use of Dooyeweerd or shows specifically what part of Dooyeweerd philosophy the Researcher intends to use.

Objective 4 states: Use the conceptual framework developed to discover as wide a range of issues as possible. This expands ‘How can’ and ‘issues Teachers face’ of the research aim

Objective 5 states: Evaluate and refine the conceptual framework and method developed. This objective aims to show how Dooyeweerd can discover the DTE issues Teachers face with the use of ICT in the classroom.

This section has clearly stated and justified the research aim and objectives set out in this study. The next section discusses the Researcher’s stance in experience to those being researched.

1.6 Research Execution

This section describes how this study will be carried out in order to successfully answer the core questions of this research.

This study introduces Dooyeweerd's different perspectives of understanding the issues facing Teachers who use ICT in classrooms to provide outcomes and insights beneficial to policy makers, management, ICT suppliers and IS Researchers. The focus of this study is on Primary School Teachers and how they engage with Information and Communication Technology (ICT) every day.

For the purpose of this study, to explore the diversity of issues Teachers face with the use of ICT in classrooms the Researcher will make use of the Interpretivist research approach and the use of Dooyeweerd philosophy as a conceptual framework. The use of Dooyeweerd's aspectual analysis is used as a lens to gain insight into the research topic.

Given the above method, in-depth interviews will be used for this research study. This approach was chosen for its ability to seek deeper information and knowledge as it concerns personal matters such as an individual's self, lived experiences, values and decisions (Gubrium et al., 2002). Its flexible style in gathering and revealing in-depth descriptions of the participants' information, opinions and exploring experiences, motivation and reasoning cannot be neglected but used as a leverage into DTE issues (Drever, 2003; Creswell, 2005).

The literature review has shown some needs to be focused on, and they are:

- To draw out deeper DTE issues rather than surface or high-level issues
- To help reveal diversity of issues
- To help reveal value-laden issues of Teachers' ICT use in the classroom

In answering the research needs, the data obtained via the interview will be analysed with the use of Dooyeweerd's aspects. This analysis aims to open up some down-to-earth (DTE) issues rather than assume the high-level issues that are usually discussed.

The next section discusses the role of the Researcher's experience or inexperience.

1.7 Role of the Researcher's experience or inexperience

This section declares the influence of the Researcher's position in experience to those being researched. It is important to open up on any form of bias that may influence this study. The Researcher's background and experience is of interest because this might have an impact on achieving the research aim as set out.

Establishing the essence of human experience in qualitative research will not be overlooked in this study. This study will shed light on how the Researcher's experience or lack of it influences the interview or analysis process.

This section discusses how the experience or inexperience of the Researcher is similar to those being researched. Reflecting on these terms, the Researcher occupies a position of both an insider and outsider (Dwyer & Buckle, 2009), although, more an outsider in relation to the participants. The Researcher's pre-understanding about this research study is based upon the knowledge acquired through experience in the use of ICT and knowledge of children; that is, as a mother of 2 toddlers of ages 2 years and 4 years old shows the role of an insider in this context. By contrast, the Researcher is an outsider with regards to her lack of teacher training knowledge with children and cultural differences as the Researcher is a Nigerian, but the research is being conducted in the United Kingdom. Hence, the Researcher plays more of an outsider role to those being researched.

The consequences of the Researcher's influence of stance (insider-outsider) will be discussed in the research method chapter. The benefits and challenges of being an insider-outsider Researcher during the interview process and analysis will also be elaborated upon. (See section 4.5).

1.8 Expected contributions to knowledge and practice

This research will contribute to the existing body of knowledge by signposting how Dooyeweerd's suite of aspects can be used to reveal the everyday DTE issues; giving Researchers insight into how to investigate the out-of-sight issues of ICT in education. It also puts in account what should be concentrated on and what ought not to be ignored in future researches. An additional contribution is the framework on using aspectual analysis as a way of looking at things meaningfully. It will also contribute to the existing literature by identifying

some DTE issues faced by Primary Teachers in ICT use. Finally, this study will propose a template on guidelines in practice for ICT developers, policy makers and other stakeholders.

The expected framework to be developed at the end of this research project can assist policy makers to act differently in policy formation by accommodating possible DTE issues. Also, through this aspectual analysis, it is hoped that informed judgments may be made on the exposure of these DTE issues to enable educational decision makers to assess the actual situation of ICT in educational practices periodically. As a result, the list of issues derived from this study can be used in staff training. Other contributions can be viewed in section 9.6. Therefore, it is needful for this study to explore the diversity of issues Teachers face using ICT in classrooms.

1.9 Thesis structure

CHAPTER 1: This chapter reviews the background knowledge in terms of the roles, benefits received and support given to ICT in education. It discusses the diversity of issues Teachers are concerned with regarding the use of ICT in the classroom. It discusses the rationale for the research, in terms of the benefits and challenges of ICT, establishing DTE issues and the research gap. It explains the role of Researcher's experience and how it might affect this study. It justifies the research aim and objectives of the study and gives an overview of the expected contributions to knowledge and practice of the research. It outlines the research execution process and the research needs and gives the structure of the thesis.

CHAPTER 2: This chapter seeks to develop a unique understanding that will give particular attention to the everyday DTE issues occurring in the classroom. It gives a review of the use of ICT in education covering the high-level perspectives identified earlier. From the literature the needs of the research are envisaged and how they can be addressed is explored in detail. It discusses learning and teaching theories, how they are and can be integrated with ICT and their drawbacks. It is organised to show why the issues focused on in the literatures are different from the issues meaningful to users on the ground and the need to address this gap. Then it establishes the concept of DTE issues and the need to focus on them. It establishes the research needs which are to elicit deeper issues rather than surface or high-level issues, the need to reveal the diversity of issues and the need to provide a way to understand values and assumptions that drive both research and practice in Information and Communication Technology in Education (ICTE).

CHAPTER 3: This chapter reviews six various theoretical frameworks, their nuance and their ability to fulfil the research needs. It reviews various extant theories of values that can help address appropriately the diverse normativity involved in ICT use. It sets out Dooyeweerd's suite of aspects and discusses how its use might help fulfil the research needs. It justifies how Dooyeweerd's aspect fits as the most suitable framework for this study, identifies how its lens can help to understand, classify DTE issues and identify what is seen as important issues in ICT in Education. It furthers its discussion by comparing the theoretical frameworks and the extant theories of values with Dooyeweerd's aspects as it relates with fulfilling the research needs. This chapter explains how Dooyeweerd's suite of aspects is the most suitable framework that takes all the research needs into account. It further discusses previous use of Dooyeweerd's aspects in resolving some information system use issues. It presents the theoretical design useful for this study.

CHAPTER 4: This chapter discusses and justifies the philosophical approach adopted in this study based on its appropriateness to the research topic, the aims and objectives of this study and the methods used to collect data. It discusses the Researcher's experience with the participants in detail including the benefits and problems and later gives critiques on the Researcher's own possible bias and preconceptions, identifying how these could influence the research study. It further gives a brief discussion on the research area. It justifies the Researcher's interest in UK primary schools, the peculiarities of the schools chosen; the process the Researcher implemented on the choice of the interviewees and the demographic profile of the interviewees. It describes the interview process and outlines how the Researcher's experience influenced the interview. It discusses the approach to analysing the data collected and the benefits and problems with these approaches with respect to research needs. It also discusses the data analysis method employed; the utilisation of an aspectual analysis tool derived from Dooyeweerd's philosophy and oriented to the everyday experience of Information Technology. It goes on to discuss the research standards and ethical considerations employed in terms of the validity and reliability of this study.

CHAPTER 5: This chapter gives an explicit description of the steps taken in the analysis process. It discusses the data analysis process according to the Dooyeweerdian framework. The analysis section aims to find out the aspects that are the main source of focus and also those overlooked or ignored.

CHAPTER 6: This chapter prepares the organised data. It focuses on the production of the organised data for the quantitative and qualitative analysis. This chapter presents the aspectual analysis process as earlier discussed in chapter 5 and gives a sample by using V7 to justify the framework developed. It further justifies the need to focus on issues meaningful to Teachers and gives an interpretative analysis on these issues.

CHAPTER 7: This chapter takes the Extra Information Volunteered (EIV) as its organised data from chapter 6, and generates findings about Teachers' use of ICT in the classroom, as well as going on to reveal the process of uncovering the DTE issues. It helps to bring out the types of issues that are of interest and how they relate to different cohorts from the quantitative and qualitative analysis. The simple categories this study divides the cohorts into are gender, year groups and schools. The gender cohorts includes only the male and female participants; the year group cohorts includes the Early Years; Year 1 up to Year 6 participants; and the schools, which includes the three schools A, B and C. This chapter also describes the value data analysis and further compares what Teachers find as values with the values discussed in the literature.

CHAPTER 8: This chapter will reflect on two main sets of findings. The first reflection is on what is meaningful to Teachers which include DTE issues in ICT use in the classroom in terms of their depth, diversity and values. It also reflects on the method used to answer the main research question. This chapter shows how Dooyeweerd has fulfilled the research needs. It presents the various findings derived. Such as the DTE issues support the literature and help to reveal findings that are not discussed in the literature. It discusses the findings in relation to the research needs. It also discusses how this study fulfils its research aims and objectives. It reveals the richness of Dooyeweerd's aspectual analysis when discussing many taken-for-granted issues compared with conventional approaches and how Dooyeweerd's aspect can enrich text analysis.

CHAPTER 9: This chapter draws together the research study as a whole from the theoretical and methodological contributions and signposts its relevance to the practitioner community. It summarises the research in terms of how Dooyeweerd helped with the three research needs. It gives a comprehensive critique of the study. It discusses the possible contributions and recommendations. It further discusses on the research limitations, suggests future research and concludes on the thesis.

1.10 Chapter conclusion

This chapter has reviewed the background knowledge in terms of the roles, benefits received and supports given to ICT in education. It has discussed the diversity of issues Teachers are concerned with the use of ICT in the classroom. It has also discussed the rationale for the research in terms of the benefits and challenges of ICTE, establishing DTE issues and shown the research gap. It has explained the role of the Researcher's experience and how it might affect this study. This chapter has justified the research aim and objectives of the study and has given an overview of the expected contributions to knowledge and practice of the research. It has outlined the research execution process and the research needs and given the structure of the thesis.

The next chapter gives a review of ICT literatures as they relate to this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter one outlined that the purpose of this study was to develop a unique understanding that will give particular attention to the everyday ‘Down-to-earth’ (DTE) issues occurring in the classroom. There are two parts to the literature review. The first looks at the theories in order to assess whether they are satisfactory with regards to understanding Information and Communication Technologies in Education (ICTE). It also discusses the three most influential learning theories and how they integrate with ICT alongside their drawbacks. It further discusses some of the teaching theories in ICTE. The second part looks at issues related to ICT in education that are being discussed in the literature. This second chapter critically reviews the literature of ICT in education covering the high-level issues discussed by policy makers, management and ICT suppliers as they relates to this study.

2.2 Literature review overview

Information and Communication Technologies (ICT) have integrated into human communication, facilitated information gathering, management and dissemination and has evolved the way humans interact (Benedict et al., 2014; Migone, 2013). The intention of ICT in education is to plan and teach using technology and to improve student’s learning (Koehler et al., 2007; Angeli et al., 2009).

What we know about the issues of ICT in education is largely based upon high-level issues and perspectives that commonly relate to merely a list of reasons Teachers do not use ICT in the classrooms, overlooking some important factors because they deserve less of our attention or are less meaningful.

This literature review aims to identify clearly what the Researcher needs to find out to answer the main research question.

The literature review will identify the research needs as follows:

- To draw out deeper DTE issues rather than surface or high-level issues
- To help reveal diversity of issues

- To help reveal value-laden issues of Teachers' ICT use in the classroom

The following sections will discuss about ICTE and some suitable learning and teaching theories that underpin ICTE to determine how ICT can be effectively used by Teachers in the classrooms.

2.3 Information and Communication Technology in Education

This section describes the impact of ICTE. It establishes the usefulness of technology in the classroom but also its shortcomings. It aims to give a background study of ICTE and a basis understanding to the need of this study.

In the present age, there are numerous reasons why the use of ICTE needs to be embraced and maximised for our effectiveness. For example, <http://www.capita-sims.co.uk/> SIMS promises that its use can be the difference between a good and outstanding OfSTED (Office for Standards in Education) rating in primary schools. SIMS is a web-based solution that can keep tab on every student's progress report and provide an overview on real-time data of the school's report which is helpful in staff meetings and decision making. In terms of involving parents on their ward's progress, SIMS promises easy online and remote access to daily attendance and attainment records. The use of ICT in education has made SIMS possible.

ICTE's flexibility and accessibility is an advantage as McKinney et al. (2009) explained. iTunes University sponsored by Apple Computers Inc. is a website with downloadable educational podcasts which are easily accessible 24h per day. Students can listen to the podcasts whenever and wherever they choose, but in a traditional lecture setting the professor cannot be put on pause or rewind, all of which is possible with a podcast (Yuan et.al, 2013). Therefore, ICT provides the opportunities to access varieties of information with varieties of resources 24 hours per day and seven days per week (24/7) and also provides the ability to view information from various perspectives and platforms, thereby enhancing the learning environment.

The use of ICTE has helped eliminate geographical barriers due to the accessibility of knowledge by students from any location and at any time. Access to sources of information help the student realise and develop their potential for learning and creating. In return, this makes education more effective thereby contributing to the growth of academic skills (Yusuf, 1998; Rashid et. al., 2013).

ICT, especially network technologies, have been found to encourage active learning, support innovative teaching, reduce the isolation of Teachers and also to encourage Teachers and students to become active Researchers and learners (Yusuf, 2007; Livingstone, 2012).

Moreover, in today's globalised society, ICT provides an effective learning and teaching style to improve the creative and intellectual abilities necessary for the twenty-first-century workplace. There is no doubt that ICT can aid the instructional process and facilitate students' learning. Many studies have found positive effect associated with technology-aided instruction (Burnett, 1994; Fitzgerald and Werner, 1996; Davies et. al., 2013).

Also, the ability of ICT to simplify complex processes through simulation in order to aid understanding, and the use of interactive white boards and touch screens, are revolutionising classroom learning while tablet technology and smart phones provide the opportunity to make personalised learning visible (Smeets, 2005; Romeo et al., 2012; BESA, 2015). The literature on ICT in early childhood has highlighted several benefits. For example, technology in primary school is a useful tool for learning and provides the opportunity for discovery and exploration, with access to varieties of activities such as creative play, tasks on cognitive development and acts in response to children's curiosity (Bolstad, 2004; Hatzigianni and Margetts, 2012). Other benefits of ICT in early childhood include language development and visual mathematical thinking through pictures and practice software, varieties of play activities and role-play and the support ICT renders to children with special learning needs and those from linguistically diverse backgrounds (Bolstad, 2004; Kalas, 2010; Kerckaert et al., 2015). There are some other potentials and contributions as mentioned earlier in section 1.2 that ICT offers to education which most Teachers value.

Contrarily, diverse research has shown that technology integration into the traditional classroom has not been entirely successful. It was observed that in-class laptop use had a negative impact on students' learning; students spent more time multitasking on their laptops and were therefore distracted from the primary lessons (Hembrooke et al., 2003; Fried, 2008). Based on this finding, distractions caused by in-class laptop use is a negative factor in ICTE. Likewise, other authors discussed boredom and disengagement in students as a negative factor in ICTE (Zhang et al., 2004; Hara et al., 2000; Maki et al., 2000).

Despite the rise in technology commensurate increasing access to computers and mobile devices, the actual use of technology in the classroom remains rare (Gray et al., 2010), especially in early childhood education (Vockley & Lang, 2011; Wartella et al., 2013). However, when technology is used, it is usually not used in meaningful, student-centred ways but is integrated into more traditional, educational practices (Cuban, 2001; Ertmer et al., 2013).

A survey of K-12 Teachers conducted by Project Tomorrow (2011) revealed that ICT is mostly used for homework and practice, while Eteokleous (2008) summarised Teachers' rare use of technology as "fancy chalkboards", suggesting technology is integrated as a substitute for traditional tools instead of it being as an extension of the curriculum. Other research also noted that Teachers primarily use technology for communicating with parents, preparing class materials instead of using it for student learning (Russell et al., 2003; Zhao et al., 2002).

Education also involves imparting values to others. Primary education is the stage where the foundations for behaviours and moral judgement are developed in children (Shih et al., 2015). Primary Teachers do not just want children to learn primary topics like Maths, English and so on, but want to develop values in the children such as honesty, patience and integrity.

However, values in education are interpreted differently by various people. To one cohort it involves an emphasis on democratic education and the rights and duties of citizenship. To another cohort values might be inseparably linked to religion. For some cohorts it is the core of developing children's character through various mediums such as teaching about values, community influence, extra-curricular activities, school discipline, charity work, pastoral care and school ethos. For others, education is about developing an individual's ability to think and act morally and to make moral decisions (Shih et al., 2015).

A Teacher is assumed to also function as an inculcator of values along with the primary role as a facilitator for acquisition of knowledge. Teachers need to maximise every situation to make students aware of values (Shih et al., 2015).

This section has discussed the potentials of ICT in education. It has shown the diversity, complexity, goodness and badness of ICT.

This chapter will further discuss this understanding by using theories and by using references to issues collated in literature. It will discuss three theories of learning (section 2.4); theories of

teaching (section 2.5). The section will also discuss two types of issues: high-level issues (section 2.6) and issues Teachers face (section 2.7). It will then be shown that none of these are sufficient for a full understanding. The limitation in all these is what motivates this research and section 2.8 discusses the approach of this research. In section 2.9, theories of values is discussed.

2.4 Learning Theories

Justifying the research aim in section 1.5, this section aims to explore if current theoretical understandings can help understand the situation of ICT in the classroom. This study does not give in-depth attention to various learning and teaching pedagogical styles, but instead focuses on ICT use in the classroom. However, as earlier stated, the core of education is about learning and teaching and this study needs to show how ICT plays a role in these arenas. This section examines the various learning and teaching theories and the effect of ICT.

2.4.1 Introduction

Learning can be described as the process of acquiring new knowledge by an individual (Alharbi et. al., 2011). Due to the unique differences that each person holds student methods of learning are different. There are three broad learning theories. They are: behaviourism, constructivism and cognitivism (Pritchard 2013). Although there are other sub-branches, this study will focus on the three models identified.

Wood (1999) explained that the design and aims of ICT are strongly influenced by traditions in educational philosophy and learning theory. Skinner's behaviourist theory, Piaget's cognitive theory and Vygotsky's social-constructivism theory are three of the most influential ones discussed in this study. The use of computers in education might in principle be based on these theories of learning and approaches in teaching.

This section discusses the three learning theories and starts by briefly explaining the theory and how it integrates with ICT and finally its challenges.

2.4.2 Behaviourism (B.F Skinner- 1904-1990)

Skinner was a leading American psychologist and proponent of the behaviourist theory of learning. Skinner explained the behaviourism learning theory as the belief that behaviour is shaped deliberately by forces in the environment and that the type of person and actions desired

can be the product of design. It measures observable behaviours produced by a learner's response to stimuli. Responses to stimuli can be reinforced with positive or negative feedback to condition desired behaviours. Punishment is sometimes used in disregarding or reducing incorrect actions, followed by making clear desired actions (Skinner, 1958, cited in Pritchard, 2013).

Learning with technology provides exercises, practices and tutorials using computer assisted learning whose contents are divided into several teaching steps from the easiest to the hardest. This learning style is common in Primary Schools as Teachers make use of various applications: for example, maths games, spelling programmes and so on in the classroom. The Teacher plays a principal role as a guide trusted with the responsibility for training the children. In order to improve the capability of learning children are asked to redo certain sections. Furthermore, children are expected to increase their learning skill by consistent practice with appropriate feedbacks. The messages of encouragement either from these software applications or verbally by the Teachers are used to increase the learner's motivation.

In summary, human behaviour is a result of the stimulus-response interaction and that behaviour is modifiable. Behaviourism learning is suitable to be used with primary school children. Behaviourism has its limitation in learning especially as it relates with the activities of the mind. However, there are some disadvantages to this learning theory. It does not make clear the learning that occurs with new language as there is no reinforcement structure involved with children. There is a limit on the drill and practice process as it overlooks how children work out problems, but focuses on the final answer which can be attributed to rote learning based on repetition that is a memorisation technique.

Unfortunately, children are limited in their learning as they have no initiative to explore other things. As a result children are limited in their understanding and mostly high-performing children will dominate the ICT activities as a reward.

2.4.3 Social-Constructivism (Lev Vygotsky- 1896-1934)

The social-constructivism learning theory means that each learner constructs knowledge for themselves. That is to say, that the individual constructs meaning as he or she learns and that this new knowledge is added onto the individual's current structure of knowledge, understanding and know-how skills (Pritchard, 2013). Constructivist learning is gained by active participation in

problem-solving and critical thinking regarding a learning activity which they find relevant and interesting.

Constructivist learning can take place using the search engine tools such as Google to acquire knowledge. Students make use of ICT to find relevant information and relate it with their prior knowledge before constructing a new knowledge. ICT provides access to a wealth of information, stimulates fruitful and intelligible interactions with contents and brings various knowledge together to challenge, support or respond to the status quo as earlier discussed in section 2.3.

In this learning environment the role of the Teacher is seen as one that facilitates learning rather than being a source of knowledge. Constructivism learning is appropriate for high-performing children and can be used for primary children. However, not all children in the class have the same conceptual development. Therefore, it is important for Teachers to go the extra mile in preparing varieties of activities with respect to the children's abilities. Unfortunately, children with low skills in ICT will not find this mode of learning enjoyable while children with high ICT skills will dominate these activities, leaving out the low ICT skilled children and potentially demotivating them. Therefore, a Teacher's lack of ability in managing ICT use in the classroom may hinder the constructivist theory of learning. Also, older generation Teachers will find creating an ICT-based learning environment more difficult compared to giving lecture notes or writing on the white board.

2.4.4 Cognitive learning theory (Jean Piaget- 1896-1980)

The cognitive theory of learning views learning as a process of comprehending and internalising facts and concepts about the world's view, with each individual developing a unique concept based on personal experiences. Cognitivism places its focus on mental activities and processes such as thinking, memorising, knowing and problem-solving. Cognitive theory gives attention to the reasons and the processes involved in learning using cognitive activity to understand that children actively process information and that learning occurs via the endeavour of the children as they store, systematically organise and find relationships between the old and new knowledge.

Cognitive learning can be gained through listening, watching, touching, reading and then processing and remembering the information. For example, for children in primary class, the Teacher can ask them to touch and identify some items in the classroom such as tables, chairs, keyboard, computer screen, mouse and so on. Through this kind of cognitive learning activity,

children can touch, watch, listen to the Teacher and at the same time experience the learning by themselves and then the learning may proceed to the mental process of remembering the information as earlier discussed. There are also various ranges of software and websites that can enable this learning theory, for example, www.bbc.co.uk/schools, www.bbc.co.uk/science

In cognitivists' theory view, mental activity is the primary focus of learning, where it is measured by how one thinks and not how one behaves. Cognitivism relies on both the Teacher and learner. The Teacher provides material content and directs the learning. The learner is responsible for internalising the material content provided by the Teacher. However, reliance of children on software and websites can hinder social interactions and building of relationships.

2.4.5 Overview of Learning Theories

Highlighting the key points discussed in section 2.4, the above has briefly explained the three most influential learning theories and how they integrate with ICT and their drawbacks. However, it highlights that each theory seems to cover a meaningful and different area in education, and that none of them adequately covers every area, and there is no link between each of these theories. These educational theories cannot help to understand the DTE issues that affect Teachers in practice (Burkhardt and Schoenfeld, 2003 cited in Picciano et. al., 2013). Behaviourist perspectives largely ignore cognitive and constructivist issues and all interchangeably. These theories can help bring insight but cannot help to understand ICT in education due to their narrowness of views.

The next section discusses the theory of teaching.

2.5 Theories of Teaching

A key aspect of education is that teaching and learning can be described as the two faces of the same coin (education). Hence theories of learning are, to a great extent, also theories of teaching and vice versa. Therefore, this section discusses additional teaching theories (Personal theories of teaching, by Dennis Fox, 1983) in addition to the three learning theories discussed earlier.

There are some advantages of teaching theory such as, it helps reveal some assumptions of teaching activities which in turn creates guidelines for teaching (Chaudhary, 2013). Another advantage of teaching theory is the opportunity it provides for classroom problems to be studied

scientifically (Chaudhary, 2013). Also, the use of a teaching theory can help Teachers achieve the objectives set out (Chaudhary, 2013).

The theory a Teacher uses to help think about the process will affect the strategies he uses and it will reflect on his attitudes to students and to any training programme he undertakes. Teachers do have their own personal theory of teaching which reflects and influences all aspects of the way they fulfil their roles.

Apart from Fox (1983) teaching theory classifications, Chaudhary (2013) also classified teaching theory into three broad categories such as the formal theory, descriptive theory of teaching and the normative theory of teaching.

This section discusses Dennis Fox's work on "Personal Theories of Teaching" (Fox, 1983) where he described fully the four basic theories of teaching: transfer, shaping, traveling and growing.

2.5.1 Transfer Theory (Fox, 1983)

The transfer theory treats knowledge as a commodity to be transferred from one vessel to another. Most Teachers think of the subject they teach as a "commodity that can be given or imparted or conveyed to students" (Fox, 1983, pp.151). This theory views the students as a container that needs to be filled up with all subject information. Teachers within this theory spend a great deal of time preparing their materials and making sure that it is accurate and up to date. Being that the transfer theory concentrates a Teacher's attention on the commodity before it is transferred and then on the act of transfer, it often causes him to overlook what happens to the commodity after transfer. From this theory, a successful learning is seen as the result of well-prepared materials, effectively organised and imparted. Unsuccessful learning is seen as poorly motivated, unintelligent, lazy, forgetful students (Fox, 1983). This theory might be useful for training but does not include values.

2.5.2 Shaping Theory (Fox, 1983)

The shaping theory treats teaching as a process of shaping or moulding students to a predetermined pattern. This theory views the students "as clay or wood or metal to be shaped or moulded into a predetermined form" (Fox, 1983, pp.152). Teachers that operate within this theory view students' brains and minds as raw materials to be shaped or moulded to

predetermined and often detailed specifications. They view teaching to be principally a matter of making connections in the students' minds. The usual teaching strategy is for Teachers to demonstrate the way of solving the problem by going through it at the blackboard or overhead projector and then for the student to be required to solve similar problems by the same methods (Fox, 1983). This theory does not take account of previous lives of the children.

2.5.3 Travelling Theory (Fox, 1983)

The travelling theory views the process of teaching as helping students on a journey through unfamiliar and often tough terrain. Education is seen as a journey and the subject being studied represents one of the many interesting and challenging areas of countryside to be explored. The Teacher in this analogy is a local guide. However, no guide no matter how competent or experienced can do your exploring for you. Exploration is a personal activity. Many guides, therefore, see their main responsibility to be that of continually monitoring the students' progress and providing them with detailed feedback on their developing skills and knowledge so that they may continue to improve. Travelling theories seem to place more emphasis on the subject. Travelling theories (and also transfer theories) seem to be more often associated with subjects that have a large factual content such as science and law. The verb 'teaching' is applied to the academic subject. It is likely to be one with a lot of detailed facts to learn (Fox, 1983). This theory does not have a measure to know if the students' exploration is fruitful, especially as it concerns primary students that demand a high valued educational foundation to be gained.

2.5.4 Growing Theory (Fox, 1983)

The growing theory focuses more attention on the intellectual and emotional development of the learner. This theory views teaching as being a matter of encouraging and helping students in their personal growth and development. The Teacher is seen as a gardener and the student mind as an area of ground. In the garden plants will tend to grow readily regardless of intervention from the gardener, and it is his aim to encourage certain plants at the expense of others; finding ways of acting as a catalyst in bringing out the best he can from the available ground. The gardener does not work towards a precisely defined end, since the garden is continually changing as different plants come to their prime. He has broad plans as to how he wants the garden to develop, but he does not attempt to specify the exact dimensions that each plant (or concept structure) is to achieve (Fox, 1983).

Growing theories (like shaping theories) seem to place more emphasis on what is happening to the student as a person. The driving force is internal, that is the emphasis is on what the student is becoming as a person rather than on where he is going in terms of mastery of the subject. These theories are common in subjects where attitudes, activities and personal skills are more important than detailed knowledge. The verb teaching is applied to people. The subjects are related to personal attitudes and skills (Fox, 1983).

2.5.5 Overview of Learning and Teaching Theories

Learning and teaching is multi-activity. It is believed that “Teaching and learning are elusive concepts, very difficult to pin down” (Fox, 1983, pp.151). Fox (1983) further explained in the simplest form that directly observing the process of learning occurring in itself is difficult, hence the need for theories to help explicitly. Teachers have their own personal theories of teaching which reflects and influences the way they teach. The summary (section 2.5) showed how Teachers respond to the question: ‘what do you mean by teaching?’ Fox (1983, pp.152) mentioned that amongst any of these four theories used by Teachers could affect their strategies and attitudes to students. Education is about learning and teaching, hence the need to discuss the theories that governs them. The key interest the Researcher found with these theories is that they reflect and influence the way learning and teaching is worked out in practice. Hence, understanding these personal teaching theories could help to resolve misunderstandings between Teachers, Teachers and students, and possibly with some issues Teachers face while using ICT to teach in the classroom.

Theories might bring insight but cannot help to understand the issues faced on the ground by Teachers in the classroom. These educational theories cannot help when it comes to understanding the DTE issues that affect Teachers in practice (Burkhardt and Schoenfeld, 2003 cited in Picciano et. al., 2013). These theories are narrow, some might not go very deep and very few of these theories help with an understanding of Teachers’ desire to help incorporate values into children. However, as discussed in section 1.7, this study is particularly concerned with the diversity of issues Teachers face using ICT in the classrooms and does not concern itself with the learning and teaching pedagogical styles. To gain a deeper understanding of this lacuna, then, the next sections will give an overview of what is involved in ICT in education and the issues Teachers face using ICT in the classrooms.

2.6 Understanding ICTE by Collecting High-Level Issues

Theoretical apprehensions of the links between values and technology are not sufficient to fully understand DTE issues, as mentioned at the end of section 2.3. Another way of appreciating DTE issues will be explored. This thesis seeks to emerge with an enriched understanding of the issues Teachers face with ICT use in the classroom.

This section focuses on revealing a few of the high-level issues that affect ICT in education. The high-level issues are, for example, the diversity of impacts ICT can have when in use as it relates to the policy makers, ICT suppliers and the academics in education. The goal of this section is not to give a comprehensive list of these issues, but to broadly indicate the type of issues that are often discussed in the literature. It aims to gain a broad understanding, depth and one that recognises that Teachers want to instil values in children.

It is helpful to separate the high-level issues from those issues that affect the primary users in schools: the Teachers who are using ICT in the classroom. The following sections clearly illustrate a few of these issues from the perspectives of the education strategist, ICT suppliers and academics respectively.

2.6.1 Issues with Education Strategists and Policy Makers

The universal goal sought around the world by educators and policymakers is to ensure that all learners reach their full potential by exploring best practices to prepare educators to improve student learning; prepare students for the future; increase student engagement; and integrate learning technologies into the curriculum (Schrump et al., 2015).

The ICT marketing campaigns are designed to influence the policymakers, educators and learners into the idea that ICTs are a major need that brings completeness and help us to learn (Pelgrum and Law, 2003; Kazanjian, 2010; Giroux, 2009 cited in Alvin, 2011). In line with this, Freedman (1981) cited in Alvi (2011) has exclaimed about the rush to fetishize technology: “The term fetishism worked its way into academic anthropology to denote the idea that people sometimes imbue objects with a magical spirit such that these objects become the focus of worship” (Alvi, 2011, pp.142).

As a result of this, policymakers, school administrators and education strategists have been colonised by dominant models of technology. Regrettably, however, they do not use these technologies efficiently and effectively in the educational sector as expected (Gee, 2004; cited in Donnison, 2007, pp. 9).

According to Pelgrum (2001), he presented three major issues that educational practitioners perceive as highly significant obstacles for realising their ICT-related goals:

- insufficient number of computers (ICT tools),
- Teachers' lack of knowledge/skills, and
- difficulty in integrating ICT in learning instruction.

Various authors reviewed that inadequately equipped ICT infrastructures can result in frustration, confusion and reduced learner's interest. (Hara et.al., 2000; Maki et.al, 2000; Webb et. al., 2015).

As earlier mentioned in section 1.1 some studies, for example, Zucker and Light (2009) revealed that technologies in education help adapt us for the global village economy. The ongoing debate regarding the impact of ICT in traditional classrooms has been an impediment by school administrators and policy makers to further integrate ICT tools into teaching and learning in the educational sector (Burbules & Callister, 2000; Bober, 2002; Hammond, 2014). Moreover, there has not been any convincing evidence that the use of ICT tools in the classroom enhances learning objectives or increases student achievements (Maderthaner, 2007; McKinney et al., 2009; Zucker, et al., 2009, Hammond, 2014). There is a need for educators to help students understand how ICT can both facilitate but also impede their ability to learn and develop their analytical thinking skills (Kazanjian, 2010; Alvin, 2011).

The next sub-section discusses further high-level issues as it relates to ICT suppliers interest.

2.6.2 Issues with the ICT Suppliers

Software development companies, who do not carry out a prior evaluation or software testing by Teachers and students before distribution, can end up supplying inappropriate educational software that does not meet the instructional requirements as described by various Researchers (Higgins et al., 2000; Mills, 2001; Sugar, 2001). If asked about the frequency of teaching usage on the following five activities in the classroom the results indicated that these are: on-line research, tool-based software use, subject specific software use, communication and assessment

purposes (Mueller et al., 2008; cited in Hsu, 2009). Dillon (2001) pointed out a factor hindering the widespread use of technology: user resistance. It was noted that many technologies have been perceived as highly usable and useful but were never accepted by the targeted users. A remark on this by Holden et al., (2011) suggested that Human Computer Interaction (HCI) Researchers genuinely need to understand and explore the determining factors of user technology acceptance to minimise user resistance.

The next sub-section discusses further high-level issues as it relates to academics' interest.

2.6.3 Issues with the Academics in Education

The advancement of ICTs such as laptop computers, electronic pads and smartphones, alongside the development of interactive Web 2.0 and cloud applications can enhance both teaching and learning (Barak and Ziv 2013). However, Latchman et al., (1999) explained the ineffectiveness and the enormously time-consuming process of delivering an instructional video via the internet – which could be a barrier to interactive learning.

Various quantitative and qualitative studies have been embarked upon to explore the connection to and impact of ICT on education. Unfortunately, the results of these studies are still inconclusive (Maderthaner, 2007; McKinney et al., 2009). Meanwhile, Kang et al., (2007) indicates that the meaning of educational performance is vague and diverse and cannot be measured despite the long history of related research and attention from academic Researchers, as well as practitioners.

In addition to these various ICT issues, there are more issues that have been mentioned in the theoretical discussions above: for example, learner behaviour, meaning construction by the learner, the cognitive process of learning and the process of knowledge transfer.

2.6.4 Overview of High-Level Issues

Extant works of literature on issues of ICT in education have been explored in the earlier sections of this chapter. As such, this study has drawn attention to some of the high-level issues of interest to policy makers, ICT suppliers and academics. The various ICT barriers mostly discussed in the literatures are considered as high or general level issues because of the diversity of impacts ICT

can have when in use as relates to policy-makers, ICT suppliers and the academics in education rather than users of ICT in the classroom.

The high-level issues discussed in literature then are already well known. I have repeatedly outlined them and argued that they are essential to the benefit of ICT in education. The goal of most management structures is to promote efficiency and effectiveness in order to gain more profits for their organisation or provide an improved quality of service. Thus these high-level issues differ from the meaningful issues to Teachers in the classroom that takes their everyday perspectives, perspectives that are often overlooked, perspectives that I have dubbed DTE issues that are covered by this study.

The issues discussed in this section are not meaningful to those active in the classroom but do have relevance to management. As such, for Teachers, these issues tend to be abstract to their experiences or, to put it another way, neither these high-level issues nor the theories attached to them are what Teachers find meaningful on the ground. Therefore, there is an urgent need to identify and give attention to the everyday issues Teachers face using ICT in the classrooms. The next section addresses this need.

2.7 Understanding ICTE by Collecting Issues of Teachers

This section aims to gain a broad deep understanding of, as well as dealing with the values that are important to Teachers, shifting attention away from the foci of other stakeholders. It will discuss the various issues Teachers face using ICT in education. This study assumes that there are some issues faced with the use of ICT in classrooms, especially by Teachers, that have hindered the maximum use of ICT potential to the benefit of education. This section will give a summary of some of the Teachers' issues with ICT use and expose the diversity of issues discussed in the literature. This will be done by categorising these issues.

2.7.1 Classification of Issues

This sub-section discusses the various classifications of issues with ICT use as described in literature. This is to give us an idea of how various literatures have handled the issues with ICT use.

Research into ICT barriers in education has a long history. Various Researchers have identified some areas of issues that influence the effectiveness of technology integration in schools. For example, in a study by Ertmer (1999) these issues are classified into the external and internal factors.

External factors include lack of access to computers and software; accessibility of ICT equipment; insufficient time to plan for instruction; inadequate technical and administrative support; lack of adequate training; school culture, faculty teaching load and management routine; lack of funding, technology reliability; and so on (Butler and Sellbom 2002; Chen 2008; Tezci 2011a; Al-Ruz and Khasawneh 2011; Lin et al., 2012).

The internal factors include lack of confidence; attitudes towards computer use; fear; pressure; resistance to change; Teachers' beliefs; and so on (Veen 1993; Ertmer 1999; Snoeyink and Ertmer 2001; Konstantinos 2013).

In another major study BECTA (2006) classified these barriers into Teacher-level barriers such as lack of confidence; shortage of or lack of time and resistance to change; and school-level barriers such as lack of effective training in solving technical problems and lack of access to computer resources.

Furthermore, the study by Balanskat et al. (2006) classified these ICT issues into micro-level barriers such as those related to Teachers' attitudes; meso level barriers, such as those related to school level; and macro-level barriers, such as those related to educational framework or system level.

Another classification discovered is by Pelgrum (2001) which focuses on material barriers such as the insufficient number of computers or copies of software; and the non-material barriers such as an insufficiency of Teacher ICT knowledge and skills or insufficient teaching time.

However, there are close relationships between many of these identified areas. Any factor influencing one area is likely to affect several other issues. For example, Teacher confidence is directly affected by levels of personal access to ICT resources, availability of technical support and the amount and type of training available – all of which are seen as issues to the effectiveness of ICT themselves (Ertmer 1999; Konstantinos 2013).

The classifications here are issues as they concern other cohorts such as schools and Teachers using ICT in the classroom. The issues that relates to Teachers cross these boundaries as they are sometimes both internal or external factors and both meso, macro and micro issues. This study will introduce another way of classification in section 2.8.

2.7.2 An examination of literature on issues Teachers face with ICT use

This section has discussed the various categorisation and types of issues and has shown that there is a need to discuss issues as they relate to Teachers. In the section below, some of these issues will be briefly discussed. An examination of literature on issues Teachers face with ICT use

The literature on DTE issues is very limited compared to those that discuss high-level issues. This section briefly elaborates some examples of authors who engage with Teacher-led issues indirectly, although they are usually combined with high-level issues in these studies.

The various categorisations earlier discussed, such as the first-order and second order barriers (external and internal factors), Teacher-level and school-level barriers and the micro, meso and macro level barriers and other examined literatures influenced the selection of the twenty issues listed below (Ertmer, 1999; BECTA, 2006; Balanskat et al., 2006).

These twenty issues were selected for two reasons. Firstly, they are mostly discussed as issues by many other authors and tend to be associated directly with Teachers. Secondly, the Researcher views these issues as those likely to be categorised as DTE issues by the Teachers:

i. Pressures

In the United Kingdom the OfSTED school inspections included a section to assess the degree to which the potential of ICT was being used in schools. This evaluation caused a degree of concern amongst Departments who were not effectively integrating new technology into their schemes of work (Harrison, 2003). However, the Department for Education appraises progress in the use of ICT in schools to be sufficiently important to partake in the biennial survey and to monitor the use of ICT in schools (DfE, 1993, 1995 cited in Haydn, 2008). Due to this standard, Teachers complained of being overloaded and stated that they could not cope with the pressures involved in preparing and practicing ICT integration into lessons (Abuhmaid, 2011). Also, the pressure on

Teachers to cover the required curriculum is another major factor that does not allow Teachers much flexibility in integrating ICT in their classroom teaching (Vrasidas, 2015).

ii. **Training**

The lack of training for Teachers in ICT has been emphasised in many kinds of literature (Simpson et al., 1997; Kirkwood et al., 2000; Preston et al., 2000). Over time, the concept of training Teachers through distance-learning in ICT demonstrated that it was more ambiguous and problematic than policymakers had envisaged (Naughton, 1998; Hubbard 2008). Teachers who do not realise the advantages of using technology in their teachings are less likely to make use of ICT. However, many of the competence specifications and testing mechanisms for new Teachers were found to be over-bureaucratic and unhelpful (Barton & Haydn, 2004). Therefore, training programmes needed to ensure that Teachers were made aware of the benefits of using ICT in teaching (Cox et al., 1999; Hubbard 2008).

A practical example is given in Swaziland where 34% of the ICT Teachers are degree holders in other subjects such as mathematics, science, business, accounting, geography, agriculture and so on. What these Teachers know about computing is what they learned while at university to help them accomplish their tasks and not to teach (Gilakjani, 2012).

There is evidence to suggest that within the UK some of the interventions, policies, investments and efforts made to address the need for ICT training have not been found to be important for Teachers (Leask, 2002; OfSTED, 2002; Preston, 2005). In 1997 the Government announced a major programme of ICT-training for all qualified and practising Teachers in the UK through the 'New Opportunities Fund' (NOF) Training Scheme (DfEE, 1997; Conlon, 2004).

Kirkwood et al. (2000) made several examinations regarding the possible reasons why the uptake of NOF training was slow. He mentioned that the providers were slow, which had an adverse effect on the speed of absorption of the training and discouraged Teachers due to the numerous set of competencies that confused them when it came to choosing an area of concentration.

Another factor in the NOF uptake was the slow roll-out of equipment, resulting in limited access for Teachers to practice what they had learned. The frustrations of Teachers at the end of the training when they discover they do not have access to the applications they had received training on has been noted (Manternach-Wigans et al., 1999; Kirkwood et al., 2000).

The use of multiple training providers created a weak structure to the NOF programme as it led to variations in the production, format, content and quality of materials in the training offered (Kirkwood et al., 2000).

At the end of it all the Government's NFO fund training programme was judged as being awkward, over-prescriptive and insufficiently geared up to meet the needs of different subject specialisms (Leask, 2002; OfSTED, 2002; Preston, 2005). Most programmes have failed to provide useful, timely and continuous training to improve ICT skills and manage a technology rich classroom (Hutchison et al., 2011).

In 2015 an investment of £3.6 million was made by the UK Government to companies including O2 and Google to help Primary Teachers, for the new computing curriculum, and to ensure pupils received the best standards of computing teaching (DfE, 2015). This is further evidence of the UK Government's huge funding injection into ICT in education.

iii. **Time**

A large and growing body of literature has investigated the lack of time as a barrier to Teachers mastering new software and explore the potentials of ICT in subject teaching (Fabry et al., 1997; Cuban, 1999; Preston et al., 2000; Cuban et al., 2001; Zhao et al., 2003; Barton et al., 2004; Almekhlafi et al., 2010).

In a Becta study (Becta, 2004 cited in Totter et al. 2006), which reviewed the research literature on barriers to the uptake of ICT by Teachers, the result brought together some factors in which a lack of adequate time to familiarise the use of ICT tools by Teachers was emphasised. Dang (2011) found that Teachers faced problems either in lesson preparation using ICT or when conducting lessons within the limited time.

Various studies also suggested that the biggest barriers to the use of computers by Teachers were the lack of time allowed for planning and to thoroughly prepare and research materials for lessons (Kozma et al. 2004; Mama 2013).

However, in evaluations of the NFO training scheme, it was suggested that expecting Teachers to train in their own time caused a slow uptake in the training (Kirkwood et al., 2000). Snoeyink et al., (2001) agreed, noting that lack of time was seen as a significant barrier and suggesting that

one way to overcome this would be to provide non-contact time for Teachers to undertake ICT training during school hours.

iv. **Existence of Discrepancy (age, gender)**

Literature showed that age affects the levels of ICT use by Teachers. Some Teachers consider themselves to be of the older generation and not interested in the use of ICT. Younger Teachers are more likely to make use of ICT in their work than their more experienced colleagues (Bradley and Russell, 1997; Blackwell et al., 2013). Chen et al., (2010) disclosed the existence of discrepancies in pre-service Teachers born after 1980, which limited their ICT adoption in teaching. It has been indicated that Teachers' gender has an effect on the degree to which ICT is used, with male Teachers making more use of ICT than female Teachers and with female Teachers reporting greater levels of computer anxiety than male Teachers. This result may have a significant effect on the use of ICT in primary schools where there are more female Teachers than male Teachers (Bradley and Russell, 1997; European Commission, 2003).

Nowadays there are different modes of learning with various types of learning environment (Howe & Strauss, 2000; cited in Dwyer et al., 2004). There is, overall, an assumption that educators need to catch up with the realities of the new generation which includes understanding how they learn; their desire to use computers to facilitate their learning; and accommodating their educational needs in order to have an effective ICT implementation in the educational sector. Thus, competence in the use of new technology was no longer to be considered an optional extra for Teachers (Dwyer et al., 2004; Alvi, 2011).

v. **Technology Integration**

Analysing the interim ImpaCT2 Report, it was found that relatively few Teachers were integrating ICT into subjects in a way that motivated students or that improved learning or encouraged rationality and logic (British Educational Communications & Technology Agency-BECTA, 2003). The final conclusions on ImpaCT 2 Report suggested that 60% of Teachers in the UK were making little use of computers in their day to day teaching (Harrison et al., 2002).

In spite of generous financial investment in ICT in education worldwide, many Teachers still struggle to integrate technology into their teaching (Phillips, 2002; Zhao et al., 2002; Zhao & Frank, 2003; Brown et al., 2013). However, the integration of ICT in teaching by Teachers who

have not had a good grasp of the know-how of these tools may be more harmful to pupils in the classrooms (Dakich, 2004).

Technology integration has suffered failure because of little or no professional development initiatives, the absence of national policies on ICT education and the lack of community involvement (UNESCO, 2006; Gilakjani, 2012).

vi. Lack of Technological Pedagogical Content Knowledge

The limitation of design and effective delivery on pedagogies in technology which enhance learning environments are attributed to the lack of technological pedagogical content knowledge (Angeli & Valanides, 2009). Difficulties arise, however, when selecting teaching materials online. It is very important to evaluate the qualities so as not to expose students to danger (Shetzer et al., 2000; Bitter et al., 2008; Crawford, 2013).

In contrast to conventionally published materials, that have clearly identifiable authors and publishers and which undergo reviews and editing, many online materials are used without critical evaluation of their suitability; there is a risk then that Teachers will present inaccurate, inappropriate or even dangerous content to learners (Burbules & Callister, 2000; Hafernik et. al., 2002).

In a study by Livingstone and Bober (2005), 49% of the children surveyed in the United Kingdom presumed that information on the Internet could be trusted and 38% trusted most of it. Serious problems may arise if young learners are exposed to materials that are immoral, commercial or dangerous (Shin, 2015).

However, poorly designed educational software can often discourage the use of ICT tools by Teachers (Guha, 2000). Thus there is a scarcity of literature on suitable educational software that can help enlighten and educate on ICT usage by Teachers in the classroom.

vii. Fear

The fear of ICT which is referred to cyber phobia or technophobia that exists in some Teachers can be a genuine concern for them, as the most common causes of computer anxiety were getting stuck and not knowing what to do next and not understanding the computer jargon, and the messages it gives deserves serious attention (Russell & Bradley, 1997; Gillespie 2006).

Another perspective on Teachers' fears regarding computers is on their loss of professional status, seeing the increasing use of computers in teaching as downgrading or replacing their traditional pedagogical skills (Fabry & Higgs, 1997; Ifenthaler et al., 2013).

Furthermore, the inadequate knowledge of Teachers in the use of ICT when exposed gives the chance of public humiliation in front of knowledgeable pupils and colleagues. This creates a culture of fear regarding their future use and becomes a genuine concern for them (Haaparanta, 2008 cited in Sipila, 2011).

viii. Copyright Infringement

Little attention has been paid to the safe and fair use of ICT (Ludlow, 2003; de Szendeffy, 2005; DuBravac, 2012). As a result, it is not clear how Teachers view the safe and fair use of ICT or how much they consider these factors in their lesson planning. When Teachers use images or audio-visual materials in class they run the risk of copyright infringement and, in some cases, issues of privacy violation or e-safety (Katz, 2012).

Most Teachers have limited knowledge about copyright regulations (Averill, 2003; Park, 2012). Using illegally obtained materials in the classroom is problematic and teacher-training programs should routinely teach what is and is not allowed, how to get permission from copyright holders and how to effectively instruct students on copyright issues.

Rather than merely advising Teachers to protect copyright and be careful not to violate it a more proactive approach is needed, such as providing reference materials like the Fair Use Checklist (Cornell University, 2009), classroom copyright chart (Davidson, 2002) and specific guidelines for educators (DuBravac, 2012).

In addition, Teachers have a responsibility not just to set a good example for proper ICT use but also to teach their students safe and fair ICT use (Bitter & Legacy, 2008; Crawford, 2013).

ix. Pedagogical Support

One major drawback is the general lack of collaboration of Teachers and pedagogical support. Even when there are cooperating Teachers the lack of experience is yet still an issue. When Teachers do not know the advantage of using technology in their teaching, then they are less likely to make use of ICT (Ertmer and Otterbreit-Leftwich 2010).

Moreover, the absence of specific know-how on technology, the lack of available support partnerships that can help Teachers share experiences on technology practices and the appropriate way to combine ICT with the existing pedagogical content to support student learning are all still active issues (Ertmer et al., 2010; Hutchison et al., 2011).

Perhaps the most urgent need is to provide workshops that allow Teachers to reflect on the hindering factors and suitable strategies on technology integration into teachings (Almekhlafi et al., 2010). Unfortunately, the professional development offered to Teachers does not fully concentrate on both ICT skills training and ICT integration strategies in the curriculum, therefore, there is a gap of knowledge for Teachers to successfully incorporate ICT tools into their lessons (Divaharan and Koh 2010).

x. **Confidence**

It is asserted that there is a close relationship between levels of confidence and barriers to ICT (Ertmer, 1999). For example, level of confidence is affected by the amount of access or engagement to ICT (Ross et al., 1999; Cox et al., 1999; Guha, 2000), the amount of technical support available (Cuban, 1999; Pamuk et al., 2013) and the quantity and quality of training accessible (Lee, 1997; Goktas 2013). There is no doubt that Teachers' confidence in using technology is determined by their level of engagement (Larner and Timberlake, 1995; Russell and Bradley, 1997; Dawes, 2000). Unfortunately, students who experience daily interaction with a broad range of technology are increasingly and sometimes unconsciously placing demands on Teachers, expecting them to be adequately knowledgeable in using technology to teach (Guha 2000; Wastiau et al., 2013).

Teachers' attitudes, incompetence, lack of knowledge and dependency are some of the factors hindering the readiness and confidence in using ICT in classrooms (Piper and Austin, 2004; Hennessy et al., 2010). However, the absence of programmes that help them to overcome apprehension associated with using technology (Ward & Parr, 2010) and the lack of technical support affects their confidence because they cannot retain control while teaching with computers (Ertmer and Otterbreit-Leftwich 2010).

In a study by Bosley et al. (2003) cited in Becta Study (2004), it was discovered that some staff did not have enough confidence to put into practice what they have learnt. Hence, inconsistencies were found between the amount of ICT training received by a Teacher and the extent to which

the Teacher applied that training in the classroom. Teachers who have little or no confidence in using computers in their work will try to avoid them altogether (Larner and Timberlake, 1995; Russell and Bradley, 1997; Dawes, 2000). Attempts of Teachers to use ICT in teaching is linked to the lack of confidence due to the fear of it breaking down during a lesson or the fear of them breaking the equipment themselves (Bradley and Russell, 1997; Cuban, 1999). However, the quality of training received is also related to their level of confidence (Pina and Harris, 1993; Lee, 1997).

When Teachers lack the confidence to integrate technology into their classroom, their technology incompetence is likely to contribute to anxiety. Teachers who experience anxiety are less willing to use ICT in teaching (Larner & Timberlake, 1995; Bradley & Russell, 1997; Fabry & Higgs, 1997; Bosley & Moon, 2003). Anxiety in Teachers is sometimes based on the avoidance of using ICT in front of a class of children who are more knowledgeable than they are, simply because they do not consider themselves to be well skilled in using ICT. Teachers were worried about exposing their lack of knowledge in ICT usage to students; compounding their anxiety and contributing to their loss of confidence. Unfortunately, student attitudes and expectations of the competence of their Teachers in ICT usage are likely to contribute to this stress (Larner and Timberlake, 1995; Pelgrum 2001).

xi. Technical Support

The urgent need to provide Teachers with technical support cannot be overemphasised as a lack of it can lead to total avoidance of the use of ICT (Totter et al., 2006; Yildirim 2007; Liu and Szabo 2009; Tezci 2011a). Recurring errors, and the expectation of faults to take place during teaching periods, are prone to reduce Teacher confidence and prompt Teachers to avoid using the technology in future lessons (Bradley and Russell, 1997). Technical problems encountered during teaching lessons have become a major barrier to further ICT use due to lack of technical and pedagogical support to the Teachers (Pamuk et al., 2013). Technical support should also encompass maintaining the infrastructures up to a certain standard (Voogt, 2013).

xii. Lack of Time

Lack of time to plan and think through and integrate digital resources into classroom activities and learning packages has been a challenge for Teachers (Harrison, 2003). Also the insufficient

amount of time to master new software and integrate its use during class period has been a challenge towards ICT use (Fu, 2013; Woo, 2016).

xiii. Recognition and Encouragement

When there is lack of recognition and support of the timely and efficient use of ICT it discourages Teachers (Tezci 2011a).

xiv. Limited Availability of Resources

Lack of ICT tools, either a physical absence or resource absence (Pelgrum, 2001). For example, difficulty in securing access to computer suites and the limited availability of data projector in classrooms (Fabry and Higgs, 1997; Guha, 2000; Mumtaz, 2000; Preston et al., 2000; Ogborn, 2000, pp. 26; Pelgrum, 2001; Bosley and Moon, 2003).

On the other hand, the poor quality of resources available can limit the use of ICT in classrooms by Teachers (Mumtaz, 2000). That is when the available ICT resources are not appropriately organised in schools it creates a false scarcity and this will affect Teachers' levels of use (Fabry and Higgs, 1997; Pelgrum, 2001; Mumtaz, 2000).

xv. Acceptance of Technology

Franssila and Pehkonen's (2004) study indicated that there are differences in how Teachers in different school levels regard ICT implementation in teaching. In this light, Anyan et al. (2000) found a dependency of the acceptance of technology on the teaching level; he discovered that elementary school Teachers were less positive in their attitudes toward ICT compared to their middle or high-school colleagues. On this finding, Carpelan (2005) disclosed that Primary School Teachers regarded themselves to be less ICT-skilled and less ICT-literate than their peers in secondary education and thus less likely to be using ICT in teaching to the same degree. If a primary school education is the foundation of education, this prompts for further discussion.

xvi. ICT Competence

There is some evidence to suggest that a Teacher's lack of ICT competence is mostly revealed by an assessment of Teacher experiences which shows that ICT has not been properly incorporated or assimilated into their teaching practices (Krumsvik, 2014; Insteffjord et al., 2016). Recent research has suggested that a lack of digital competence could be due to the gaps that occur

during Teachers' training and the working practices they encountered after training (Drent et al., 2008; Agyei et al., 2011; Krumsvik, 2014).

It has been reported that Teachers who do not have ICT competence could not integrate the ICT tools in their teachings (Knezek & Christensen, 2002; Becta 2004; Albirini, 2006). Various authors attest to the fact that the efficient use of computers in education is conditional on the level of Teachers' ICT skills as well as their motive for its use (Albalat & Tarrago, 1995; Hodgson, 1995; Chu, 2000; Braak, 2001; Venezky, 2004; Vanderlinde et al., 2009; Divaharan & Ping, 2010).

Kay (2006) is of the opinion that various training programmes such as workshops, training courses developed for the purpose of improving Teachers' pedagogical use of ICT, do not achieve their required and expected results. It is thus possible that there is lack of attention being paid to the everyday issues in ICT Teachers' training which also has side-effects on the kind of research being focused on. Teaching in ICT competence is one of the factors directly related to a Teacher's confidence level. Incompetency in Teachers can be attributed to insufficient or improper training (Kirkwood et al., 2000).

xvii. **Resistance to Change**

Resistance to change is a factor that hinders the full integration of ICT in the classroom (Veen, 1993; Albaugh, 1997; Ertmer, 1999; Mumtaz, 2000; Cuban et al., 2001; Cuban, Kirkpatrick, & Peck, 2001; Snoeyink and Ertmer, 2001; Schoepp, 2005).

xviii. **Attitudes**

The aversion attitudes of Teachers are yet another issue that hinders the introduction of ICT into traditional classrooms (Jegade et al., 2007; Teo, 2011). The attitudes of Teachers, and their unwillingness to accept technology, can have a significant impact on the success of a student cohort's learning with computer technology according to Huang and Liaw, (2005) and Teo (2010). There is a need for Teachers to accept ICT into the educational sector to make it a success.

xix. Insufficient Knowledge

According to a survey carried out among Agricultural Science Teachers in Secondary Schools in Kogi State, Nigeria by Agbulu et al. (2010), it was noticed that their findings corresponded to Lable and Hime (2006), Abah (2006), and Kareem (2004), all of whom noticed that the success of teaching with digital information technology in Nigeria would be difficult to achieve due to insufficient knowledge of the practical use of these technologies by the Teachers.

xx. School Culture

School culture includes the vision, mission, plans, norms and values that are shared by school members (Maslowski, 2001 cited in Fu, 2013). A possible explanation of school culture affecting ICT integration is that of Pelgrum & Law (2003) cited in Fu, (2013) who hold the views that to have an effective ICT integration is dependent on the vision and consciousness of the school leaders rather than a given Teacher's ICT skills. If the school culture emphasises the competition system, then this can discourage Teachers from integrating technology into their classrooms and if a school culture becomes positive, the Teachers' ICT usage level is increased (Chai et al., 2009). Thus school culture has an influence on a Teacher's actions, beliefs and attitudes in ICT use in the classrooms (Chai et al., 2009). However, new teaching approaches and technical support should be provided by schools to allow Teachers maintain control while using ICT in teaching (Ertmer and Otterbreit-Leftwich 2010).

2.7.3 Overview of Teachers' Issues

This section has discussed twenty issues as a summary of the various issues based on an extensive review of the literatures associated with the teaching cohort's issues that can influence the effectiveness of ICT use in the classroom.

The issues discussed in this section have been shown to be diverse, meaningful and sometimes related to each other. Yet when these issues discussed in literatures are attended to, they tended to be treated in too general a way and that there is little or no evidence of improvement in ICT use on teaching and learning in the classroom (Liu, 2011; Hammond, 2014). For example, Teacher confidence is a meaningful issue, but it tends to be treated as a generic issue of interest to academics rather than being any help in guiding the design or use of ICT in the classroom.

Two lines of understanding on issues in literature have thus opened up. One line expresses the diversity of issues and the other line indicates some DTE issues, including overlooked or ignored issues. These issues are diverse hence we need to classify and clarify them. As discussed in section 2.7.1, various classifications are discussed but none of them could do justice to the diversity. Therefore, there is a need for a theoretical basis that engages these two views.

In the subsequent section, an explanation of down-to-earth issues will be provided and what characterises these issues.

2.8 The Idea of Down-To-Earth Issues in ICTE

The theories discussed do not work and the collated high-level issues are focused at the wrong people. This section aims to establish the idea of DTE issues in ICTE. Further justification on DTE issues from this study will be discussed in chapter 7. DTE issues are of the everyday life situation meaningful to users as they engage with technology. Ahmad & Basden (2013) suggested the term Down-to-earth issues, it indicates the kind of issues that ICT users find meaningful to their work or life tasks. In contrast to high-level issues which are meaningful to management, ICT suppliers and academics, mostly in abstract and of a narrower perspective. However, these DTE issues put into consideration a wider perspective of meaningful issues in the users' daily activities. Sometimes these issues might not involve the direct use of ICT, but they indirectly influence the successful integration of ICT in the classroom. These DTE issues are intuitive and can loosely be described as issues that focus on everyday activities of system user and meaningful to those 'on the ground', that is, the direct technology users themselves rather than the Researchers, ICT suppliers, academics or senior managers.

These DTE issues are closer to a user's daily life experience than issues discussed in literatures, which tend to be governed by the author's perspective, because the process of defining issues in literature is largely affected by the Researcher's interest of the literature. Until DTE issues are addressed adequately the attempt to integrate ICT use into education will remain subject to high failure rates. As a result of these DTE issues, the use of ICT in education is resisted even when it has been accepted. This indicates a need of an in-depth understanding of the issues Primary Teachers face with the use of ICT in the classroom.

The DTE approach focuses on the everyday life of people which is the DTE perspective. It concentrates more on the user's everyday perspectives rather than that of senior management, technology providers or academics which tend to focus more on the high-level views (Ahmad & Basden, 2013). In this case the user is referred to as the Teacher. The DTE approach admits the importance of indirect and hidden issues which are often overlooked (Ahmad & Basden, 2013).

As earlier discussed in section 2.7.1, issues are classified into two segments, the high-level issues and the DTE issues. In line with the various classifications of barriers from literatures as earlier explored, some of these high-level issues are viewed as the school-level barriers, meso level and macro level barriers. The second classification the Researchers have dubbed as Down-To-Earth (DTE) issues. When viewed in line with the various classifications earlier discussed, some of these issues can be seen as the Teacher-level issues (BECTA, 2006), meso and micro level issues (Balanskat et al., 2006) but these issues are not restricted to these levels.

The key aspect about DTE issues is the stakeholder(s) of interest. As Balanskat et al. (2006) explained meso level barriers are those related to school level, which could mean school management. This could mean the issues of cost to the school. However, there is a possibility of occurrence of issues that are distinctively meaningful to users on the ground and other issues related to school management. An example of a school level (meso) issue that affects users is the issue of internet connection, which can be seen as a DTE issue. By contrast, trying to persuade the local authority to get more money or increase the budget is a management issue and that is a high-level issue. Therefore, the concept of meso level issue from the DTE approach is quite inappropriate. Rather meso issues can sometimes be DTE or high-level issues, hence the need for these two classifications in this study.

In this study, the term DTE issues are an everyday life situation of ICT use. They encompass the variety of issues that are meaningful to users as they engage with technology.

As earlier emphasised, DTE issues are mostly taken-for-granted or overlooked, because they are viewed as insignificant or not worth our attention (Ahmad & Basden, 2013). However, it is these DTE issues that affect the success and quality use of ICT and are meaningful to Teachers in contrast to the high-level issues mostly discussed in literatures.

The focus of this study gives a DTE approach to ICT use that pays keen attention to issues derived when researching, teaching and learning, evaluating, planning for or improving the area

of education. However, the fundamental problem is that contemporary approaches simply overlook many DTE issues without knowing. This will be further elaborated on, in the Chapter 3.

A good illustration of DTE issue may be found in the major failure with the Socrate rail ticketing system, which revealed the diversity of issues IS can have when in use – not just Government policies or technical, but personal social and legal (Mitev 1996, 2001 cited in Basden, 2008). The following paragraph from (Mitev, 2001 cited in Basden, 2008) summaries the findings briefly:

“Technical malfunctions, political pressure, poor management, unions and user resistance led to an inadequate and, to some extent, chaotic implementation. Staff training was inadequate and did not prepare salespeople to face tariff inconsistencies and ticketing problems. The user interface was designed using the airlines logic and was not user-friendly. The new ticket proved unacceptable to customers. Public relations failed to prepare the public for such a dramatic change. The inadequate database information on timetable and routes of trains, inaccurate fare information and unavailability of ticket exchange capabilities, caused major problems for the SNCF (the French national railways) sales force and customers alike. Impossible reservations on some trains, inappropriate prices and wrong train connections led to large queues of irate customers in all major stations. Booked tickets were for non-existent trains whilst other trains ran empty, railway unions went on strike, and passengers’ associations sued SNC” (Mitev, 2001 cited in Basden, 2008 pp. 121).

The above brief summary shows clearly the diversity of impacts an Information System can have when in use both on the high-level and on the everyday life of people. For example, the Socrate rail ticketing system impacts were not just on the formal aspect, which is high-level, such as budgets and policies, but on the everyday life of people which is the down-to- earth perspective.

Several reasons are attached to overlooked or ignored DTE issues which indicate that there are problems with current research that needs to be tackled. Highlighted below are some of them as discussed by (Ahmad & Basden, 2013).

- The wrong perspective aims to acknowledge the perspective of the actual user that engages with Information System in work or life (Ahmad & Basden, 2013).
- Narrow focus sees the need to recognise issues beyond organisational performance or task (Ahmad & Basden, 2013).
- Indirect issues want to consider those issues that have an indirect impact on IS use (Ahmad & Basden, 2013).
- Hidden issues have to open up meaningful issues that might not be known to the IS user (Ahmad & Basden, 2013).

- Plethora issues aim to discover a way of managing the countless number of issues that might result (Ahmad & Basden, 2013).

As emphasised, there are lots of meaningful issues to Teachers in their everyday use of ICT in the classroom and this should not be ignored by way of contrast with high-level issues. The collated twenty Teachers' issues are sort of DTE issues but are still abstract and are sometimes intertwined with high-level issues. Dealing with DTE issues encourages Teachers to use ICT to its optimum level. This is because the overall success of ICT working well within education is mostly hindered by DTE issues which are often ignored.

The literature review showed that it does not deal with DTE issues properly. However, in order to fulfil the research aims, there are three needs to explore.

2.9 Extant Theories of Values

Human activity exhibits diverse normativity. The importance of normativity cannot be overlooked in developing a successful Information System (IS). The Researcher's sensitivity to the importance of values to Primary School Teachers influenced the modification of this study's research needs. This approach is backed up by the principle of dialogical reasoning (Klein & Myers, 1999) after an initial observation of Teachers' value such as, how Teachers behave and how they want children to behave and live. As a responsive Researcher there was a need to investigate the kind of values Teachers place on technology in the classroom in response to what Teachers were discussing. The subsequent sections discuss literature on values reviewed to support that investigation.

2.9.1 The Theory of Basic Values

The Theory of Basic Values was developed through surveys of people across 67 countries based on three universal requirements of the human condition. These were defined as: the needs of individuals as biological organisms, the need of coordinated social interaction and the survival and welfare needs of groups. From these, ten basic values were derived. These are power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity and security (Schwartz, 2007).

Power value types include values related to social status and prestige, wealth, authority, social power and recognition. Achievement value types emphasise personal success through demonstrating competence in order to win social approval. Hedonism value types includes values related to pleasure and sensuous gratification for oneself, whereas Stimulation value types are based on excitement, novelty, and challenges in life that keeps the level of activation and attention at an optimal level. Self-direction value types includes values related to independent thought and action, for example, freedom, creativity, exploration and choosing one's own goals. These five value types elaborated upon primarily serves individual interests. The next five serves collective interests. Universalism value types emphasise understanding, appreciation, tolerance and protection for the welfare of all people and nature. Benevolence refers to values contributing towards the preservation and enhancement of the welfare of people with frequent interaction, for example, helpfulness, loyalty, honesty and responsibility. Tradition values emphasise respect, commitment and acceptance towards customs and ideas that traditional culture or religion provides. Conformity value type includes values related to restraining actions likely to harm or upset others, or violating social norms. Security refers to safety, harmony and stability of oneself, relationships and the society (Schwartz, 2007). Schwartz's (2007) view of values is based on the principle that values are ordered by relative importance.

2.9.2 Values in General

Values in general can be described as the basis for the social, intellectual, emotional, spiritual and the overall development of an individual. Values are seen as the qualities of behaviour, thought and character accepted by consensus as being good by and for the society, and worthy of emulation by others. In essence, values reflect an individual's sense of right and wrong or what "ought" to be (Singh, 2015).

Existing research indicates that values have been found to direct attention. For instance, personal values that are upheld by persons motivate them to seek certain types of information when making a decision. It is, therefore, ideal to say that our values also influence our general reading interests and ICT designs (Hsieh et al., 2014).

From extant discussions, it is useful to believe values are diverse and incorporated in various ways. Values vary from one person to another and it is important to be comfortable with the values of others as well as one's own. Examining the adoption of loyalty card schemes and the

rise of social network platforms shows that consumers are willing to sacrifice their privacy for benefits they value. Consumers may give higher value to the benefits derived from revealing information and underestimate their privacy and digital footprints (Spiekermann et al., 2009).

2.9.3 Value in Information Technology

However, values also intersect with information systems. Research into the philosophy of technology has shown that technologies greatly influence the behaviour and experiences of their users. It is then reasonable to say engineers are actively involved in ethics through other means (Verbeek, 2006). There is then, a need to reveal the ways in which values are transferred from human actors to technological objects. For instance, the technical design, technical culture, social values, aesthetic ethos and political agendas of the designers must be examined. It has been highlighted that values of order, system and control have been purposefully embedded in machines, devices, processes and systems (Pfaffenberger, 1992). An interesting example suggests that the terms and conditions that most users accept without reading could be made easier to read and understand if the values inherent in fair contracting were imbibed in the design of such agreements (Knobel, 2011).

The Human Computer Interaction (HCI) community are increasingly interested in accounting for human values in the design of computer systems. That is, to show how values are exposed, negotiated and introduced into technical features during the process of design. One of the recognised developments from HCI research is the Value Sensitive Design (VSD) methodology developed by Friedman, Khan and Borning (Friedman et al., 1997). The VSD methodology is a collection of twelve human values with ethical import, they are: Human Welfare, Ownership and Property, Privacy, Freedom from Bias, Universal Usability, Trust, Autonomy, Informed Consent, Accountability, Identity, Calmness and Environmental Sustainability (LeDantec et. al., 2009).

Values can be built in consciously or unconsciously by designers into features of a technology. For example, bias in a computer system occurs when it systematically and unfairly discriminates against certain individuals, or groups of individuals, in favour of others. Unfair discrimination can occur when a system denies an opportunity or if it assigns an undesirable outcome to an individual or group of individuals on inappropriate grounds (Friedman et. al., 1997). For example, a credit manager advisor that systematically assigns poor credit ratings to individuals with ethnic surnames discriminates unfairly (Friedman et al., 1997).

Literatures in Human Computer Interaction (HCI) define values as the principles, standards and qualities that guide actions. For instance, value may involve economic factors and whether something is, or is not, a good value for money (LeDantec et al., 2009).

Technology that helps users to achieve certain behaviours that correspond with the high values on their personal hierarchy of importance can provide the highest value benefit. However, if the technology provides values on an area that is not high on the personal hierarchy of importance, the benefits accrued is not significant to the user (Isomursu et al., 2010).

2.9.4 Value in Education

Education involves imparting values to others. The primary education is the stage where the foundations for behaviours and moral judgement are developed in children. Educational decisions could be a value-laden activity; for example, decisions about school uniforms, school meals and the allocation of children into schools are all based on value judgements (Shih et al., 2015).

The value Teachers place on the usefulness of new technologies is essential as this will make it easier to acquire related skills and implement educational technologies in the classroom (Ma et al., 2005).

However, values in education are interpreted differently by various people. To one cohort, it involves an emphasis on democratic education and the rights and duties of citizenship. To other cohorts, values are inseparably linked to religion. For other cohorts, it might be about developing children's character through various mediums, such as teaching about values, community influence, extra-curricular activities, school discipline, charity work, pastoral care and school ethos. For others, values in education might mean developing an individual's ability to think and act morally and to make moral decisions (Shih et al., 2015).

In this context, a Teacher is assumed to also function as an inculcator of values along with the primary role as a facilitator for acquisition of knowledge. Teachers need to maximise every situation to make the student body aware of values (Shih et al., 2015).

However, the necessity of exploring values in the technology-laden or informed aspects of education has been argued for by some authors (Layton 1991; Barlex 1993; Prime 1993; McLaren 1997; Breckon 1998; Holdsworth & Conway 1999). Many literatures classify values in

technology education under the following headings: “economic, aesthetic, moral, environmental, technical, spiritual and so on” (Layton 1991) and this might be a narrow view.

2.9.5 Overview on Value

The way literature engages with value seemed different from how Teachers discussed about values. A tentative observed difference between literature and Teachers as one between high-level and down-to-earth. For example, literature on values in education discusses Democratic Education, Rights and Duties of Citizenship, School Discipline of ICT in the classroom while Primary School Teachers are concerned about “...*finding the right balance between invading children’s privacy and keeping them safe*”. Due to this seeming difference, a research need of this study is to investigate what values Teachers actually bring out and then compares them with the literature; in order to find out in what way they differ. Thus, it can be seen that there is a need to further understand the kind of values Teachers place on technology in the classroom.

The following section will discuss the three research needs explored in this study.

2.10 Identifying what this research needs

This section aims to identify what this research needs to do in order to fulfil the research question set out in this study. Discussed below are the three research needs. In view of this, this study will look at the issues this research needs to address.

2.10.1 The need for understanding diversity

In reference to the twenty issues highlighted in section 2.7 as an example, it has been argued that there are close relationships between many of the identified areas of issues. As such, any factor influencing one area is likely to influence several other areas. These are exemplified in the work undertaken by Ertmer (1999). To reiterate an earlier example, Teacher confidence is directly affected by levels of personal access to ICT resources, available technical support and the amount and type of training available – all of which can be seen as issues central to the effectiveness of ICT integration. There are a lot of types of issues that are overlapped with each other and there are relationships between these issues.

The diversity of issues in the everyday working environment of an organisation shows how these issues are also important to users (Ahmad et al., 2013). An example of a DTE issue that is clearly different from the high-level issues discussed above is the fear Teachers have on losing their professional status due to the increased use of computers in the classroom (Ifenthaler et al., 2013). Another example of such issue is that Teachers are sometimes unable to make full use of technology because they lack the time needed to prepare materials for lessons (Jones, 2004). Comparing the DTE examples, and the high-level examples highlighted above, show there are diverse issues faced with ICT use in the classroom. Most especially there are lots of meaningful issues to Teachers in their everyday use of ICT in the classroom.

There is an enormous gap between the theoretical solutions provided to these high-level issues, mostly discussed in literatures, and the actual everyday issues users encounter with the use of ICT in the classroom. Therefore, it is reasonable to argue that the various classifications of issues are viewed as being too narrowly restricted to do full justice to the diversity of issues found with ICTE. Hence, there is a real need to understand the need on handling diversity of the issues Teachers face using ICT in the classroom.

2.10.2 The Need for Revealing Deep Issues

Knowledge can be categorised into two: explicit and tacit knowledge (Nonaka and Takeuchi, 1995). Explicit knowledge can be easily digitised and transferred to others while tacit knowledge (Polanyi, 1966) is difficult to communicate to others as information or digitised.

Deep issues are generally intuitive and tacit because they are of the everyday life of the user (Ahmad and Basden, 2011). Polanyi (1966) was the first one to introduce the concept of tacit knowledge and expresses the meaning of the concept as “We can know more than we can tell”.

Tacit knowledge is the most valuable and significant part of human knowledge that resides in the individual mind in form of experience, know-how, insight, and so on (Abidi, 2005; Mirza, 2009). For example, tacit knowledge is seen as an important asset in improving decision making, productivity, organisation learning, serving customers and so on (Haldin-Herrgard 2000; Selamat et al., 2004). Difficulties arise, however, when an attempt is made to disseminate tacit knowledge without experience sharing (Nonaka, 1994).

In reviewing the literature on Winfield et al., (1996), there are a number of possible reasons why managers appear to run out of information from an information system. These reasons can be related to the understanding of the issues Teachers face using ICT in the classroom.

Firstly, an overload of information can result in the user being unable to identify relevant and suitable ones, leading to a lack of accurate information known as a form of information blackout (Winfield et al., 1996). However, information blackout occurs because the system is presenting information from the wrong perspective; due to a problem that may be connected to a poor system design (Winfield et al., 1996).

Secondly, the user is unable to interpret the information presented with correctly. Due to this active users complain that the information provided to them is depleting. Thirdly, because the wrong information is given it results in misuse or a wrong decision being made (Winfield et al., 1996). Many means have been suggested to overcome these issues. Among these are sophisticated interview techniques, knowledge acquisition strategies, action research and cultural dislocation (Hart, 1986; Basden et al., 1994; Henshall, 1995).

The string of issues above illustrated by Winfield et al., (1996) shows the likelihood of deep issues. However, deep issues sometimes do not come as a string, but perhaps as simple issues that are easily overlooked but have overwhelming repercussions.

The main weakness with the various ICT barriers classifications is their limited and narrow perspective, resulting in a rather rigid system once the policies for ICTE are implemented. In view of the above issues, a deep knowledge rather than surface knowledge is suggested to understand the type of issues pertinent to Teachers and users on-the-ground.

To this end, there is a need to uncover the deep issues Primary Teachers face when using ICT in the classroom. Uncovering the deep issues, rather than focusing on the surface issues, is likely to give a more robust understanding of the everyday issues faced by Teachers in ICT use. Therefore, this section has shown a need to reveal the deep issues Teachers face when using ICT in the classrooms.

2.10.3 The Need for Revealing Values

Literatures in psychology define values as attributes held by individuals. Values are viewed as deep rooted, abstract motivations that guide, justify and explain attitudes, norms, opinions and actions.

Rokeach (1973) defines values and the values system as follows:

“Values is an enduring belief that a specific mode of conduct, or end state of existence, is personally or socially preferable to an opposite or converse mode of conduct or end state of existence. A value system is an enduring organisation of beliefs concerning preferable modes of conduct along a continuum of relative importance” (Rokeach, 1973, pp. 5).

Another definition of values provided by (Pang, 1996) is given below:

Values can be defined as “taken-for-granted beliefs about the proper functioning of a school”. They may mean “the ways we do things here”, “what ought to be”, and “the ways a school should be operated” (Pang, 1996, pp.66).

The value Teachers place on the usefulness of new technologies is essential as this will make it easier to acquire related skills and implement educational technologies in the classroom (Ma et al., 2005). A majority of authors have classified values in technology education under the following headings: “economic, aesthetic, moral, environmental, technical, spiritual and so on” (Layton 1991).

However, Prime (1993) proposed a justification of value categorisation by categories developed by Schwartz and Bilsky (1987, 1990). The categories include: “(a) values that relate to the biological needs of individuals; (b) values as requisites of co-ordinated social interaction; (c) survival and welfare needs of groups”.

Due to this six sub-categories of values in technology education were identified by Prime (1993): personal, social, economic, political, cultural and environmental. However, other authors (Breckon 1998; Holdsworth & Conway 1999) added moral, technical and aesthetic values to the list.

According to Pavlova (2002), the main theoretical assumption for categorising values is that values in technology education are related to human needs and are all treated equally. However, on the practical terms, Teachers put forward the following priorities on teaching values:

technical, aesthetical, economic, environmental, social, culture, moral and political (Holdsworth & Conway, 1999).

Teachers are the keys to the effective use of computers in the education system (Zhao et al., 2001), to understand values better; Teachers must understand the relationship between effectiveness and responsibility so as to provide comfortable learning experiences to students (Pavlova, 2002).

Pavlova (2002) summarised (McLaren, 1997) as: Teachers have a responsibility to increase understanding and raise awareness of social, ethical, environmental, economic values and issues related to design to enable students to make informed, considered and sensitive value judgements (pp. 259).

One criticism on much of the literature is that the interpretation of values in technology education, presented by the aforementioned authors, is not sufficient for improving Teachers' understanding of using ICT in classrooms, nor does it provide clear guidelines for development of their practice (Pavlova, 2002). Therefore, it is important to understand their values towards educational technologies.

However, the insufficiency to enhance Teachers' understanding in using ICT in classrooms and the inability to produce a clear guideline for the development of Teachers' practice is still a major drawback, therefore, it is important to understand Teachers' values towards educational technologies.

Therefore, there is need to examine values that represent how Teachers behave and how they want children to behave and live. For example, honesty, integrity, courtesy and so on.

2.10.4 Overview of Research Needs

This section has outlined the importance of these research needs. However, for the purposes of this study, there is a need for a theoretical basis for the following: the need for a way to understand diversity of issues, the need for a way to reveal deep issues and the need to help reveal value-laden issues of Teachers' ICT use in the classroom.

The following section discusses the gap in knowledge identified as it relates to this study.

2.10.5 Gap in Knowledge

Understanding the issues Teachers face with the use of ICT in the classroom requires attention to many everyday life experience DTE issues. However, most of the discourse in the ICTE field has focused on issues of interest to management, such as productivity, profits and other economic variables; to ICT suppliers, such as being part of the cutting edge technology, technology advancement; or to academics, such as power.

This revealed that literature does not fully give attention to Teachers' DTE issues, because these high-level issues differ from the meaningful issues, to users on the ground, that takes the Teachers' everyday perspectives that are often overlooked.

However, because most of the discourse in ICTE focuses on issues of interest to management, ICT suppliers or academics, there is a knock-on effect to the Teachers who have to integrate this technology into the classroom; hence understanding the issues Teachers face with the use of ICT in the classroom is a continuing concern (Mueller et al., 2008; Hermans et al., 2008; Kerckaert et al., 2015).

Furthermore, with reference to the various classifications of issues earlier discussed in section 2.7.1, it has been agreed that sometimes these issues are not directly related to the direct ICT users and other times the issues that are directly related to ICT users are not well classified. Values are diverse and incorporated in various ways, some to include normativity, that is, the distinction between benefit and detriment. There is a need to reveal what is described as values by literatures and by Primary Teachers using ICT in the classroom. Also, there is the possibility of Teachers experiencing a string of issues, many of which may not be understood and unsolved if they remain hidden, hence the need to uncover depth. The diversity of issues from everyday life of both practice and research is rich and full of surprises, many of which are often overlooked. Hence, there is a gap to understand the need on handling diversity, depth and value of issues Teachers face using ICT in the classroom.

As discussed in section 1.3, there is a gap that exists on the need to develop a unique understanding that will give particular attention to the everyday DTE issues occurring in the classroom, for example, technology disappointments, stress, thinking up another option every time and so on, is an area this research will give attention to.

2.11 Conclusion of Literature Review

The literature review chapter has discussed some of the benefits and challenges facing the integration of ICT in education. This is essential to show the impact of ICT on education. This chapter has shown the need to develop a unique understanding that will give particular attention to the everyday DTE issues occurring in the classroom. It has given a review of the use of ICT in education covering the high-level issues. This chapter has also discussed the theories of learning and teaching and its influence on ICTE. It has clearly identified the research needs in order to answer the main research question. A detailed overview of ICT in education and the illustration of high-level issues as they relate to the education strategists, ICT suppliers and academics in education are examined. Explanations on down-to-earth (everyday) issues and its characteristics have been done and finally the justifications of the research needs were clearly elaborated on.

Therefore, this research needs to find a way to do the following listed below:

- To draw out deeper DTE issues rather than surface or high-level issues.
- To help reveal diversity of issues and handle complexity.
- To help reveal value-laden issues of Teachers' ICT use in the classroom.

The next chapter will select a theoretical framework for fulfilling the research needs.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.1 Introduction

The aim of this chapter is to outline a theoretical framework that can fulfil the research needs. It discusses six various frameworks and the possibility of their suitability. The chosen framework is based on the philosophical notion of Herman Dooyeweerd, particularly the notion of aspects. It justifies the use of a framework that takes all the research needs into account separately from each other and not reduced to each other. The chosen framework seeks to reveal the diversity of ICT issues, uncover the hidden issues and also help to understand the value-laden issues of Teacher ICT use in the classroom. Also, this chosen framework seeks to develop a method for analysing the collated DTE issues.

3.2 The need for a Theoretical Framework

In light of this study, it is difficult to ignore the issues Teachers face using ICT in the classroom. There is a need for a suitable conceptual framework to meet our research needs.

To answer the need for research, the Researcher will investigate some theoretical frameworks, including of the system thinking. The main criteria which a framework needs to fulfil are:

- To draw out deeper DTE issues rather than surface or high-level issues
- To help reveal diversity of issues
- To help reveal value-laden issues of Teachers' ICT use in the classroom

3.3 Extant Framework and Theories for Understanding ICT in Education

Below are brief discussions on the suitability of six possible frameworks or theories that might be employed to meet the research needs.

3.3.1 Hard System Approach

A hard system approach is a method proposed by Daellenbach et al. (1983). It suggests that for a problem to exist there must be an individual or group of individuals (decision-makers) who have

needs to be satisfied or objectives to be achieved. Hard system approach is about defining the problem solving sequence (Clayton et al., 2015). The problem solving sequence includes the following steps, problem definition, choice of objectives, system synthesis, system analysis, system selection, system development and current engineering (Clayton et al., 2015). However when a hard system approach is applied to soft systems, especially systems that involve humans, it leads to the rise of problems. Most times, hard system analysis is used when the problem is highly defined and does not give room to a continuous learning process (Clayton et al., 2015).

There might be a possibility for this approach to handle the diversity of issues Teachers face using ICT in the classroom. The main weakness with the hard system approach is that it is seen as being too narrow because of its common base in technological determinism, and because of its way of dealing with human problems only as they affect productivity, profit and other economic variables.

Therefore, this approach is not suitable to help reveal the diversity of issues and handle complexity; nor is it suitable to reveal deep issues, nor adequate to reveal value-laden issues of Teachers' ICT use in the classroom.

3.3.2 Soft System Methodology

This methodology evolved due to a reaction against the inability of contemporary management science to handle complex real-world problems brought about the Soft System Methodology (SSM), (Checkland 1979b; Checkland and Jenkins, 1974 cited in Bergvall-Kareborn, 2002). The complexity evolved because of a gap between what was theoretically possible, using all the techniques of management science, and what was put into practice. The SSM process usually starts because someone perceives a real world situation as problematic and wants to do something about it. Basden (2008) explained the four stages of SSM: the first is finding a situation that needs to be improved, modelling, comparison and taking action, all done by participants. He further explains these four stages “brings out a rich picture, modelling produces root definitions and conceptual models of systems that might provoke improvements and change, comparison falls between identified models and the actual situation, and lastly, taking action produces results” (Checkland, 1981 cited in Basden, 2008, pp. 257-8). A weakness of this approach is that SSM takes issues at face value and does not analyse the similarities between them or seek an explanation for this regarding structure of society (Bergvall-Kareborn, 2002). However, a good

root definition and conceptual model points to at least six elements, these are known as “CATWOE” explained in (Checkland, 1981 cited in Basden, 2008, pp. 257-8) Basden’s terms:

C-customers: “Beneficiaries or victims affected by the system’s activities” (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

A-actors: “Agents who carry out, or cause to be carried out, the main activities of the system, especially its main transformation” (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

T- Transformation process: “The means by which defined inputs are transformed into defined output” (where the term input represents current situation and output represents desired situation) (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

W- Weltanschauung: “An outlook, framework or image that makes this particular root definition meaningful” (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

O- Ownership of the system: “Some agency having a prime concern for the system and the ultimate power to cause the system to cease to exist” (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

E- Environmental constraints: “Features of the system’s environment and/or wider systems which it has to take as ‘given’” (Checkland, 1981 cited in Basden, 2008, pp. 257-8)

This is exemplified in the delivery of health care services planned by DHA (District Health Authority) to define population using the current health technology. The system manages the delivery via both ongoing services and specific projects and responds to *ad hoc* issues arising outside the framework described. In the CATWOE model, *T* and *W* were used, where *T* shows the population in a given health state; that is, a given population in improved health as a result of this system's contribution, while *W* shows that the organised provision of health care is feasible and desirable and that it can be planned and organised (Bergvall-Kareborn, 2002).

According to (Bergvall-Kareborn, 2002) there are two key questions that need to be asked; is why is it meaningful to plan and organise for improved health of people and why is it meaningful to improve the health of people at all? This approach might be able to fulfil one of the research needs that is to draw out deeper DTE issues rather than surface or high-level issues.

However, one of the limitations of this approach is that the *W* does not answer these questions; it does not explain nor address the issue of why improved health, or planning for it, is desirable and meaningful to achieve. Rather, it focuses on how to achieve improved health (through an organised provision of health care) (Bergvall-Kareborn, 2002). While it is important to state both what is to be done and how it is to be done, it is equally important to state why it should be done (Bergvall-Kareborn, 2002). One other criticism of much of the literature on the CATWOE model is that the *W*'s seem too general, and Checkland (1981) stated that the more general a *W* is, the larger the number of possible interpretations that can be generated.

Therefore, this approach is not suitable to help draw out deeper knowledge neither is it suitable to achieve the other research needs.

3.3.3 Bandura's Self-Efficacy Theory

Bandura (1989) defines self-efficacy as people's judgments of their capabilities to organise and execute courses of action required to attain designated types of performances.

This methodology explains that people control their behaviour on the basis of belief systems. Personal efficacy is described as the power to produce desired outcomes and prevent undesired ones; and self-efficacy is the belief in one's own ability to execute a certain course of behaviour successfully. The self-efficacy theory has been used to use ICT, for example, in the case of Teachers. Research has suggested that a strong sense of computer self-efficacy among Teachers affects both how often and the way ICT is used in everyday instructional practice (Compeau et al., 1995; Chang & Tung, 2008; Papastergiou, 2010).

This theory might help to deal with one of the research needs, which is to help reveal the value-laden issues of Teachers' ICT use in the classroom. However, the self-efficacy theory is not perfect on dealing with values because one of the main obstacles found with this theory is that self-efficacy beliefs vary widely among individuals, and that they are thus difficult to assess (Pajares, 1996).

Another great challenge is that high self-efficacy can sometimes lead to overconfidence, resulting in an individual applying less effort to a task (Redmond, 2009). A study carried out on Teachers' self-efficacy, as related to the use of ICT and attitudes towards ICT and ICT competences,

revealed that Teachers estimated their self-efficacy highly, whether they use ICT in the classroom or not (Mueller et al., 2008).

Therefore, this theory cannot provide a way to reveal the diversity of issues neither can it draw out deep issues nor can it help reveal the value-laden issues of Teachers' ICT use in the classroom.

3.3.4 Activity Theory (AT)

Activity theory (AT) arose via the attempt to explain the interactions between human beings and the material world. Activity theory was developed between 1920-1930 by Lev Vygotsky which is centred on the development, function and unity of consciousness and activities (Lantolf, 2006; Nardi, 1996a). It is a framework that provides “a unified account of Vygotsky’s proposals on the nature and development of human behaviour” (Lantolf, 2000, pp.8).

Activity theory focuses on practice. It shows how language and tools mediate human activity. AT suggests that activities consist of processes both at the individual and social level which includes the mediational tools and artefacts such as ICT that connects these processes together.

It explains that all human experience is shaped by the tools and sign systems we use which connect us intimately to the world. By tools we act on the physical environment and by language we act on the conceptual and social environment. From an AT view, the computer is simply another tool mediating the interaction of humans with their environment (Bannon & Kaptelinin, 2000).

It is a powerful and descriptive tool rather than a strongly predictive theory. The object of activity theory is to understand the unity of consciousness and activity. Carey and Rusli (1995) argue that simply observing users does not disclose enough to the Researcher rather what the users are thinking, that is, what goes on behind their faces must be discovered.

Activity theory combines strong notions of intentionality, history, mediation, collaboration and development in constructing consciousness. Activity theorists argue that consciousness is located in everyday practice, that is, you are what you do; rather than being a set of disconnected disembodied cognitive acts (decision making, classification). AT proposes that activity cannot be understood without understanding the role of artefacts in everyday existence, especially the way artefacts are integrated into social practice.

AT is a philosophical and cross-disciplinary framework for studying various human practices with both individual and social levels interlinked at the same time. Therefore, understanding the interpretation of the individual, other people and artefacts in everyday activity is the aim of activity theory.

AT is useful as a lens to analyse the activity of an organisation that involves computer use (Kaptelinin, 1996). Although there are some limitations of AT faced by Researchers. According to Cole's (1995), ecological circles address the narrow view of culture that is adopted by AT while Kaptelinin (1996) showed that AT is not operationalised enough. That is, the field lacks adequate methods and techniques that can be utilised directly to answer research questions of ICT in education. This theory is not suitable for revealing depth, as observing users only it does not disclose enough of an issue; also it is not suitable to disclose the diversity of issues with ICTE because it is limited as it mostly views all in language and tools. For example, AT might not reveal issues on fun or beliefs, etc.

3.3.5 Actor Network Theory

Actor Network Theory (ANT) developed by Bruno Latour, refers to a theoretical framework that describes the world as a network of hybrid (social and technological) actants. It explains the ways in which technological artefacts are constructed by society. In ANT, it is possible to study both people and technologies using the same tools.

Hence, ANT consists of a set of basic principles that constitutes a conceptual framework with emphasis on social factors and interactions between agents and their environments. It shows that activities consist of processes at the individual and social level.

Based on ANT theoretical framework, the actants (both human and non-human entities) are identified and networks in which they are embedded are explored in order to identify ways in which social context is bound up with the different actants (Latour & Woolgar, 1986).

Studies have revealed an advantage of ANT in understanding technology-rich programs, since it treats both people and technological artefacts equally. As such it can expose relationships and contexts easily (Tatnall & Gilding, 1999; Doolin & Lowe, 2002). ANT can help to study both people and technology. It can help with this research study as it involves the Teachers' use of ICT. This theory proposes that social and technological actors should be studied on an equal

level. It is most productive when applied to cases where the social and technological actors are embedded within each other (Elbanna, 2009).

ANT does seem to provide a basis of looking at DTE issues because it looks at actants and how they relate (relationship) in their environment. However, ANT tends to focus on both micro and macro levels, and downplays the normative differences between benefit and detriment.

3.3.6 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Fred Davis (1989) which was the most widely used model for identifying the factors that contributed to user acceptance of technology. TAM helps to address why users accepted or rejected computer technology.

TAM was a reworking of the theory of reasoned action (TRA) proposed by Martin Fishbein and Icek Ajzen (1975) and Icek Ajzen and Martin Fishbein (1980). TAM uses TRA as a theoretical basis for determining the random linkages between two key beliefs. These are the perceived usefulness and the perceived ease of use, and the user's attitudes, intentions and actual computer adoption behaviour. Technology Acceptance Model (TAM) shows how perceived usefulness affects take up of technology. TAM theorises that an individual's behavioural intention to use a system is determined by two beliefs: perceived usefulness, which is the extent a person believes that using the system will improve one's job performance; and perceived ease of use, which is the extent a person believes that using the system will be free of physical and mental effort.

Researchers have shown that such beliefs about technology lead users to firstly form positive attitudes towards technology and, secondly, develop intentions to use the technology and, thirdly, to use the technology (Karahanna & Straub, 1999).

TRA included subjective norms (SN) as a variable in its model, which is explained as the person's perceived social pressure to perform or not perform the behaviour in view (Fishbein & Ajzen, 1975). In Information System (IS) use, these people might be supervisors or colleagues. However, because TAM is tested at the initial new system design and its implementation stage, the user will most likely not receive information from supervisors or colleagues. As such, TAM excluded subjective norms from its model.

The main objective of TAM is to provide a foundation to know the impact of external variables on determinants of computer acceptance (Legris, et al., 2003); it incorporates the following variables as shown in Table 3.1 below:

Table 3:1 Technology Acceptance Model Variables and Definitions

Variables	Definitions
External variables	Are those that influence Perceived Usefulness (PU) and Perceived Ease of Use (PEU). For example, training, opinions of others and experience with previously used system.
Perceived Usefulness (PU)	This is the user's subjective probability that using a specific application system will increase the job performance within an organisational context.
Perceived Ease of Use (PEOU)	This is the degree to which the user expects the use of a system to be free of effort.
Attitude toward Use (A)	This is the attitude towards using a system which is formed by relevant beliefs about the usefulness and ease of use.
Behavioural Intention to Use (BI)	Is the intention of a user to use a system.

Source: (Legris, et al., 2003)

However, there are limitations as TAM focusing on factors that influence the acceptance and adoption by groups who might not be interested in using technology (Curran et al., 2003; Dabholkar & Bagozzi, 2002; Wang, Wang, Lin, & Tang, 2003; Meuter et al., 2005).

The reasons why TAM might not be suitable as an approach to answer the research question are highlighted as follows. TAM has a view which is to measure, as earlier discussed, perceived usefulness and perceived ease of use and has taken the attention away from what actually makes a system useful. However, this research study seeks to understand the DTE issues faced by ICT users (Primary School Teachers) in the classroom. Therefore, the use of TAM in this study will constrain the Researcher to a narrow focus on issues that might mostly concentrate on achieving tasks, thereby overlooking other DTE issues.

3.3.7 Overview of Frameworks and Theories for Understanding ICT in Use

Taken together, six likely relevant theories and frameworks have been explored to explain how they might be able to fulfil the three research needs listed, but cannot due to their limitations.

This research study has chosen not to rely on any one theory in finding the issues that are important because any one theory will only focus on its limited scope or area. For example, activity theory will only focus on language and tools and forget economic and self-giving aspects respectively.

None of these theories enable us to explore the wide range of issues or draw out deeper or meaningful issues; nor can they provide a way to reveal value-laden issues of Teachers' ICT use in the classroom.

Consider the following as an example why these extant frameworks might not be well-appropriate to fulfil the research needs in this study: See a quoted example, from Basden (2017):

“Olive Cook was a charity worker in the UK, who took her own life in 2015. She liked to give to charity whenever asked, but had become bombarded with requests for donations and this overwhelmed her. Computer-controlled mailing systems adopted by charities would not only repeatedly solicit donations from those who showed any willingness, but the amounts solicited would be 'tailored' to what the person had previously given, each time suggesting an increased amount. Since news of this case broke, trust in charities and tendency to donate to them has reduced”. “Were the mailing systems a success or failure? How can we tell?” (Basden, 2017 pp. 121).

Basden (2017) expressed that the mailing systems might be defended as being a success if success is narrowly viewed in relation to achievement of goals by an IS tool. However, success can be seen from a wider perspective especially considering the Olive Cook's example. Reflecting on the above example, some questions need to be pondered on.

Did the content give its readers their due? Was the content merciful to the reader, who may be a novice reader, or was it mean spirited? Was the content believable? The juridical, ethical and pistic aspect helps us understand issues that pertain to appropriateness, generosity, considerateness, commitment and trust of ICT, which might be unrecognised with TAM or ANT for example. In such ways, Dooyeweerd's suite of aspect can help enrich this discourse by widening it and opening up its overlooked aspects. This will further be argued in the discussion of Dooyeweerd's suites of aspects.

Having listed and discussed the importance of the research needs and discussed the limitations of other extant theories in fulfilling these needs, this study so far has demonstrated the need for a

better strategy that can provide an insight into the everyday life of Teachers' use of ICT in the classroom.

3.4 Theoretical Framework Employed

There is a need for a tool that can handle diversity, draw out deeper issues rather than high-level issues and help reveal the value-laden issues of Teachers' ICT use in the classroom. This tool is Dooyeweerd's Aspects.

The conceptual framework used in this study is provided by the Dutch philosopher Herman Dooyeweerd. A particular portion of Dooyeweerd's philosophy, his notion of irreducible aspects, has been applied to the field of Information Systems (IS) by several authors. This is further discussed in 3.7.1. Further on this section discusses the suitability of Dooyeweerd's suite of aspects as the most preferred theoretical framework. The use of Dooyeweerd's aspect in this study will provide philosophical grounds for understanding diversity and help avoid overlooking important factors (Basden, 2008).

The next sections describe Dooyeweerd Aspects in details.

3.5 Dooyeweerd's Suite of Aspects

Herman Dooyeweerd (1955) produced a suite of fifteen aspects, that are meaningful in everyday experience, which cannot be reduced to each other as shown in Table 3.2 below. Each of these aspects has a distinct sphere of meaning and law (good/bad) that we experience in our everyday lives. This means that aspects are ways of looking at things and also ways in which things function. Hence, aspects underline human life rather than being mere subjective categories. Also, each aspect is dependent on all other aspects for its meaningfulness. This study introduces the fifteen aspects which, in contrast to mere categories, constitute spheres of meaning and law (Brooke, 2009). This suite of aspects has been philosophically grounded and has been employed in various IS fields (see: section 3.8.1). Aspects are introduced as "a way that appeals to our intuition, only later gradually exposing their nature" (Basden, 2008, pp.63). Each aspect is irreducible to others, yet depends intrinsically on one another (Basden, 2008). Dooyeweerd's aspects provide philosophical grounds for understanding and managing diversity in everyday experience.

The Table 3.2 below shows the lists of aspects and their kernel meanings. They are listed from the earliest (quantitative) to the latest (pistic). The meaning of each aspect is expressed briefly.

Table 3:2 Suites of Aspects

Aspects	Kernel Meaning
Quantitative	Discrete amount
Spatial	Continuous space
Kinematic	Movement
Physical	Energy + mass, forces
Biotic/Organic	Life functions + organisms
Sensitive/ Psychic	Sense, feeling, emotion
Analytical	Distinction, conceptualisation
Formative	Achievement, construction, history, technology
Lingual	Meaning carried by symbols
Social	‘we’: relationships, roles, convention
Economic	Frugal management of resources
Aesthetic	Harmony, play, enjoyment
Juridical	Due: responsibilities + rights
Ethical	Self-giving love, generosity
Pistic	Vision, aspiration, commitment, belief

Source: (Basden, 1997)

3.5.1 Explanation of Dooyeweerd Aspects

Dooyeweerd’s set of fifteen aspects can be grouped into five. They are mathematical aspects, pre-human aspects, human life as individuals, aspects of our living together and health of society. The first three aspects are quantitative, spatial and kinematic. They are called the mathematical aspects because they are pre-physical. The quantitative aspects explain the amount or quantity of things. Spatial aspects are about shape, size, etc. while the kinematic aspect is about any form of movement, for example, speed, route, path etc. (Basden, 2010).

The next three are physical, biotic and psychic/sensitive which are the pre-human aspects that rule materials, plants and animals and sometimes they apply to human reasoning. The physical aspect is experienced intuitively as forces, energy and matter. The biotic aspect deals with the organic aspects such as cell, tissue, organ etc. The sensitive/psychic aspect is experienced intuitively as feeling, sensing and responding (Basden, 2010).

The subsequent three are analytical, formative and lingual which governs individual human cognition. The analytical aspect has a strict meaning which is distinction in terms of conceptualising, clarifying, and categorising. The formative aspect is the deliberate creative

shaping of things which can be illustrated in terms of forming, designing, constructing, purpose, goals, skills and technology. The lingual aspect can be portrayed in expressing, recording and interpreting. This can be in form of writing, pictures, gestures and speech (Basden, 2010).

The next sets of three aspects are social, economic and aesthetic. These are aspects of our living together. The social aspect is experienced intuitively as we, us and them by associating, agreeing, appointing and togetherness. The economic aspect is experienced when managing limited resources. These could be time (deadlines), money (budget), goods and services. The aesthetic aspect is experienced in harmonising, enjoying, playing, leisure, art and music, etc. (Basden, 2010).

The final sets of three aspects are juridical, ethical and pistic/faith. These are important for the health of society. The juridical aspect is experienced as what is appropriate in a situation; what is fair, just, judging and due. It deals with policies, rules and regulations and as a standard of performing in an appropriate manner. The ethical aspect is expressed in terms of attitude, self-giving, love, moral goodness and sacrifice. The pistic/faith aspect is expressed in vision, commitment, certainty and belief (Basden, 2010).

The next section argues for the need of aspects and shows how Dooyeweerd's aspects solved issues in IS and its possibility of helping with our research needs.

3.5.2 Justifying Down-To-Earth Issues with Dooyeweerdian Framework

In chapter two, section 2.8, the idea of the DTE approach has been established. This section aims to give a deeper insight on how DTE approach can be developed with the Dooyeweerdian framework.

The idea of DTE approach as characterised by whom they are meaningful to might differ, for example, to a manager budget might be a DTE issue, whereas to a Teacher, budget is a high-level issue. Hence it is not enough to characterise DTE approach as to whom they are meaningful to. Therefore, there is need to rethink (Ahmad & Basden, 2013) through and take it further by enriching the DTE approach.

Dooyeweerd states that "Meaning is the being of all that has been created and the nature even of our selfhood" (Dooyeweerd, Vol.1. pp 4); that is the existence of everything is meaning, which also means being is rooted in meaning; this is very significant in developing a DTE approach

from a philosophical point of view. For example, poetry is tied up in the functioning of the aesthetic aspect as poetry rather than as a report or email. Another example is the being of a tree, which functions in the biotic aspect. Therefore, meaning is the foundation of everything that exists.

Furthermore, the being of a computer involves many aspects: physical aspect of electronics, psychic aspect of signals, the analytic aspect of separating tables, the formative aspect of structuring data. It also involves the lingual aspect of the meaning of the data. Also, the being of ICT at school includes the aspectual beings of the computer, as earlier mentioned, in addition with the lingual purpose of teaching, the economic purpose of helping the Teacher manage resources, the social purpose of registering the children and so on.

From the explanations given we can, therefore, say that the being of something lies in its functioning. There are various streams of philosophy that agree with this from Dooyeweerd's point of view but stated in different ways. For example, Alfred North Whitehead tried to get away from using the word 'being', as argued by Aristotle, to the word 'process' which is known as 'process philosophy', while Martin Heidegger (1927) tried to understand the concept of Being which led to the book *Being and Time*.

When we think of aspects we tend to separate things out, whereas Dooyeweerd shows that even with those aspects there is coherence with each aspect pointing to the other and no aspect really can be understood on its own. In Dooyeweerd's words, it is stated as,

"In this inter-modal cosmic coherence no single aspect stands by itself; every-one refers within and beyond itself to all the others. The coherence of all the modal aspects of our cosmos finds its expression in each of them and also points beyond its own" (Dooyeweerd, Vol.1. pp 3).

This explains that coherence is part of the nature of reality that is coherence of meaning.

The 'Meaning' that is the root of all being is coherent, it is diverse in its aspects but it is coherent. This means that all beings, for example ICT in the classroom, we can understand in aspects but all the aspects are important as a whole. That is, one cannot understand the situation of ICT in the classroom until we understand the whole in their coherence of all the aspects. Hence, any attempt to understand ICT in the classroom without looking at all aspect in their

coherence is a wrong approach or method and this provides the need for a DTE approach or method.

The DTE approach is grounded in the idea of being as coherence of meaning. To truly understand the being of a situation on anything we need to understand its diversity and coherence of meaning. DTE issues are to do with people functioning or in the being of a situation, therefore, its coherence and diversity of meaning.

DTE approach is a way to analyse the whole coherence and diversity of meaning of a situation without limiting it and yet making sense of it.

3.6 How we understand the research topic via Dooyeweerd

This section discusses how Dooyeweerd's philosophy can give understanding to DTE issues as discussed in section 2.8. Following the earlier discussion in sub-section 3.5.2, Dooyeweerd understands the human use of computers as one that involves functioning in many aspects that reveals the meaningfulness of issues Teachers' encounter in ICT use. This section will discuss further how a Dooyeweerdian framework benefits understanding DTE issues.

3.6.1 Multi-aspectual Functioning

This section will discuss how Dooyeweerd's philosophy helps us to understand the use of ICT as multi-aspectual functioning.

As previously mentioned, the conceptual framework used is provided by the Dutch philosopher, Herman Dooyeweerd, which understands the use of ICT (in classroom) as multi-aspectual functioning of humans with objects (ICT), in relation to other humans (children) in a subject-subject relationship (Basden, 2008). Basden (2008) explains that to be an active agent is to be subject to law, while to function as an object is to be involved in some entity's subject functioning. He further explained that to Dooyeweerd the difference between human and non-human is not in the subject-object relationship, but is a response to different spheres of law, for example, computer and human may be seen as both similar and different though in different spheres.

A vital contribution of Dooyeweerd's approach to theory has been "to put the human knower at the centre" (Geertsema, 2000 cited in Basden, 2008. pp.92). Basden further explained that

Dooyeweerd emphasised that the knower is part of what is known rather than being a detached observer, that is, in actual life we experience ourselves in coherence with the world around us. To know or experience is to function as subject in the aspects of knowing, while to be known is to function as object in those same aspects (Basden, 2008).

Dooyeweerd expresses that the multi-aspectual functioning of human behaviour involves functioning in a variety of aspects. This does not refer to different parts of such behaviour, but the different ways in which it occurs meaningfully. This involves functioning in many aspects simultaneously, where aspects are ways in which activity is meaningful (Basden, 2008). A being may simultaneously function as subject in an aspect and object in another aspect. An example given is the use of a computer to compose email, from the perspective of two aspects, physical and lingual. This study examines issues related to the use of ICT as well as the human activities that might influence the use of these technologies (ICT) in the classroom.

Subjects in this multi-aspectual functioning are the human beings involved in the ICT use and, thus, there can be subject-subject relationships especially in the lingual and post lingual aspects. From the perspective of this study subjects include Teachers and children as well as anyone else, such as support or management staff. So subject-subject relationships are Teacher-children and Teacher-Teacher relationships or activities. That is they are joint functioning. For example, a Teacher speaking and children listening is an example of a lingual subject-subject relationship, while a Teacher supporting and children being supported would be a social subject-subject relationship. Also children speaking and Teacher listening is a lingual subject-subject relationship.

Objects are anything involved in the subject functioning. That is, a subject-object relationship. Objects can either be generated or prior (Basden, 2008). For instance, some objects are generated by the functioning; this can be illustrated briefly by what is written on the board during a lesson, for example, or the things the Teacher says, the things that children say and so on. Another instance what is learned by the children, for example, frustration in Teachers, models the children make and so on. Generated objects do not exist prior to the functioning.

As earlier mentioned, objects can either be generated or prior. The Researcher has briefly explained when objects are generated.

Some objects are prior to the functioning. That is they exist before the functioning begins. An example of this is the ICT that is used, the lesson plan, the pens and papers (writing materials) used during the lesson, the materials from which the children create models and so on. Dooyeweerd multi-aspectual functioning recognises the complexity of ICT use and that there are many relevant issues therein.

Multi-aspectual functioning is not just a mere category of aspectual functioning, but reflects the coherence of meaning in it which happens by the inter-aspect relationships and harmony. It shows that everything is interconnected, and the meaning of any aspect of our functioning cannot be figured out properly without reference to other aspects. Understanding human behaviour from a multi-aspectual functioning perspective is richer than a uni-aspectual functioning perspective which is mostly offered by psychology, linguistics or economics. Multi-aspectual perspective is very rich and useful in understanding everyday life, especially human use of ICT. It shows the whole picture of functioning and how it is meaningful in a variety of aspectual ways.

Though aspects are distinct, each one is connected to each other. That is, each aspect is dependent on earlier aspects for its functioning and discloses its full meaning on later aspects. In analysis this implies that each aspect should be taken into account separately and none may be overlooked (Clouser, 2005). Hence, all aspects are important and none can be ignored in design evaluation and system usage. Thus aspects help to understand and reveal meaningful issues to the ICT user.

Basden (2008) defined aspect as the ‘distinct spheres of meaning and laws that we experience’ that is good/bad (a ‘sphere of law’). Dooyeweerd explains that if we function well in all aspects then the repercussions are beneficial in so many ways, if we ignore any of the aspects it can jeopardise the overall success of the project. This is an approach on understanding normativity in Information System (IS) use also known as the shalom principle.

Basden (2008) has identified three engagements between users and ICT in this functioning; with the interface and the technology and with meaningful content and with life using ICT. It is in life that the use of ICT in the classroom becomes either problematic or beneficial. In this study most of the DTE issues discussed can be categorised as engagement in life with ICT. However, this study is open to other issues too if the Teachers want to mention them. The three multi-aspectual functioning are intertwined in any case (Basden, 2008). However, in this study, the Researcher did not separate out these three multi-aspectual functioning, but bound them together because to

understand Teachers' ICT issues properly there is need to give attention to all aspects of every engagement.

The Researcher chose Dooyeweerd's aspect as the most useful tool to help reveal the meaningful and important deep issues Teachers face with the use of ICT in the classrooms. This is also because human use of computers involves human and IT activities which functions in varieties of aspects that should be taken into account separately from each other and not reduced to each other (Basden, 2008).

This section has discussed how Dooyeweerd's philosophy helps us to understand the use of ICT as multi-aspectual functioning. The next section will explain how the use of Dooyeweerd's framework helps to understand high-level issues from down-to-earth issues.

3.6.2 Using a Dooyeweerdian Framework to Understand High Level from DTE Issues

This section discusses how the use of Dooyeweerd's framework helps to understand high-level issues from down-to-earth issues.

As discussed in section 2.6, high level issues focuses on senior management, technology providers or academics. However, Dooyeweerd's view states that *"If I consider reality as it is given in the naïve pre-theoretical experience and then confront it with a theoretical analysis, through which reality appears to split up into various modal aspects then the first thing that strikes me is the original indissoluble"* (Dooyeweerd, 1969, Vol.1. pp 3).

This statement means that when we apply a theoretical analysis we split it up into its aspects; this process is called abstraction, that is bringing out of a situation a particular aspect of it. Abstraction can also mean "to extract or remove something (mentally) from some wider context" (Clouser, 2005, pp.54).

Therefore, a high level approach involves splitting up into aspects things via who they are of interest to; that is management, academic and ICT suppliers. High level issues are usually of a particular aspect. For example, some might think that management are focused on the economic and social aspect, while ICT suppliers might be focused on the formative and economic aspect, and academics focused on the social and juridical aspect.

Therefore, discussing the high-level issues there is an acceptance of limiting the discourse to the aspect. That is, the meaningfulness that happens to suit the purpose of management, ICT supplier and academics, rather than the full situational life of the users that is the coherence of meaning in all the aspects.

The key thing about high level approach is not primarily to who it is of interest to that is management, ICT suppliers and academics, rather it limits the range of aspects that is being talked about.

Therefore, as earlier discussed in chapter 2, high level issues are defined as of interest to management, ICT suppliers and academia. While to Dooyeweerd high level issues are defined as limiting the aspects to role of interest which breaks the coherence of meaning. Limiting the aspect in high level approach is determined by the role the analyst plays.

In summary, in Chapter 2 DTE are characterised as to whom they are meaningful for. But in this chapter the Dooyeweerdian characterisation of DTE approach refuses to limit the aspects of the situation, but focusing on its whole coherence and diversity of meaning in the situation. Hence Dooyeweerd helps us ground DTE approach while also affirming that DTE issues can be characterised to whom it is meaningful. Therefore, DTE issues are the meaningful issues to the users that is primary Teachers, brought out using the DTE approach.

3.7 How Dooyeweerd can be useful to meet these research needs

This section discusses how Dooyeweerd can be useful in meeting the three research needs earlier explained in section 2.9. However, there is a need to establish a justification on how aspects have been used in Information Systems, while the later part of this section shows how Dooyeweerd fulfils the research needs.

3.7.1 Information System issues resolved via Aspects

This section describes and discusses ways Dooyeweerd's aspects have helped to reveal issues and probably solve them. Some articles similar to our areas of focus are specially selected for a considerable discussion.

The literatures of Grahn (1994) and Bergvall-Kreborn (1995) have used the ideas of Dooyeweerd's multimodal approach to discuss ways in which soft systems may be enhanced to

improve the design of IS. In their paper aspects were used as a tool to enhance system designs by considering all performance indicators in a harmonious way. As mentioned in the literature review, the use of aspects in system design has shown that there can be order within complexity. The suite of fifteen aspects that emerge from Dooyeweerd's philosophy was applied to understand IS use that gives attention to the everyday 'Down-To-Earth' (DTE) issues that affect the success or quality of IS use (Ahmad and Basden, 2011).

One major suggestion by Winfield & Basden et. al., (1996) was that better knowledge, that is deep knowledge rather than just surface knowledge, can be elicited if a multimodal approach to the elicitation process is used. In this article the multimodal approach is based upon the philosophy of Dooyeweerd. This is evident in the case whereby MAKE was used to guide discussions with a veterinary practice wishing to investigate the feasibility of computerising the practice. The partners were interviewed in order to find out a little more about the process that takes place in the practice. It is interesting to note that every aspect played a role in the working of the practice, although initially the partners were viewing the practice from the biological and economic aspects only. As a result of this the partners became more aware of all the activities which they undertook as part of their day to day activities but which were just taken for granted. In this study aspects were used to draw out some of the tacit knowledge used by partners. Another important finding was that the process of using aspects identified areas of the practice that could potentially be computerised but had not been apparent at the outset.

It is interesting to note that in the literature on Winfield & Basden et. al., (1996), the resulting system built using deeper knowledge is likely to be more robust particularly if the context in which the knowledge is being used within the system is different from the context in which the expert, whose knowledge was elicited, was using the knowledge.

Therefore, deep knowledge rather than surface knowledge can be elicited if a multimodal approach to the elicitation process is used.

It has been clarified with reference to literatures how the key needs listed below can be solved using aspects. The next section shows how the use of Aspects solved issues in Information System (IS) relevant to our research needs.

For the purpose of this study there are three key areas Dooyeweerd's aspects can help with. These are:

1. To help draw out DTE issues rather than surface or high-level issues.
2. To help reveal diversity of issues.
3. To help reveal value-laden issues of Teachers' ICT use in the classroom.

Having listed out the three key areas Dooyeweerd's aspects can help on, it is necessary to argue why these areas are important with reference to literatures. The next sub-section does this.

3.7.2 To Understand the Diversity of Issues

The need to reveal the diversity of issues Primary School Teachers face in ICT use has been justified in sub-section 2.10.1. This sub-section gives an account of some ways Dooyeweerd's suite of aspect has helped to reveal diversity of issues in IS use.

In Information System (IS) use there have been various practices of aspects to help reveal diverse issues (Eriksson, 2001; Bergvall-Kreborn et al., 1996; Winfield, 1996). Below are brief summaries of some articles that have applied Dooyeweerd's aspects to reveal diverse issues in IS.

An example of this is the study carried out by Bergvall-Kreborn and Grahm (1996) in which they used the idea of Dooyeweerd's aspects to discuss ways in which soft systems may be enhanced to improve the design of information systems. In their paper, aspects were used as a tool to enhance system design by considering all performance indicators in a harmonious way. It was revealed that the use of aspects in system design has shown that there can be order within complexity.

The distinction of Dooyeweerd's aspects is further exemplified in Basden (2002) study in the research paper titled "A Philosophical Underpinning for ISD" it was revealed that aspects can furnish us with a model of success and failure of IS that can address diversity of types of failures.

By way of illustration, Eriksson (2001) showed how Dooyeweerd's aspects help to reveal some ignored issues based on a study where implementation of a new business process model, supported by a new computerised information system, took place causing some unpredicted and unwanted consequences.

A great deal of previous research into a methodology that evolved due to a reaction against the inability of contemporary management science in handling complex real-world problems brought about SSM (Checkland 1979b; Checkland and Jenkins, 1974 cited in Bergvall-Kreborn, 2002).

The complexity evolved because of an enormous gap between what was theoretically possible, using all the techniques of management science, and what was actually put into practice. One interesting finding was that the use of aspects in system design helped with order within complexity.

There is some evidence to suggest that Bergvall-Kreborn and Grahm (1996a) argued on Weltanschauung's view as being too narrowly restricted to do full justice to diversity found in different perception in design situations. The most interesting finding was that aspects have the potential to help people in a particular situation to view the situation from new and different perspectives (Basden 2002). Hence, aspects can help to clarify the complexities of various issues Teachers face in ICT use.

This sub-section has discussed some ways Dooyeweerd's suite of aspect has helped to reveal diversity of issues encountered in IS use. The following sub-section presents Dooyeweerd's aspects in revealing deep issues.

3.7.3 To Draw out Deeper Issues rather than surface Issues

Following the discussion on the need for revealing deep issues Primary School Teachers face when using ICT in the classroom (see; sub-section 2.10.2), this sub-section gives an account of ways Dooyeweerd's suite of aspect has helped to reveal deep issues in various IS literatures.

Research into Dooyeweerd's aspects has a long history of engagement (Basden, 2008). By way of illustration, Winfield et. al., (1996) proposed that better knowledge, that is deep knowledge rather than just surface knowledge, can be elicited if a multimodal approach to the elicitation process is used. This multimodal approach is based upon the philosophy of Dooyeweerd. As earlier discussed in section 2.10.2, the literature has emphasised the importance of showing that the resulting system, built using deeper knowledge, is likely to be more robust particularly if the context in which the knowledge is being used within the system is different from the context in which the expert, whose knowledge was elicited, was using the knowledge (Winfield & Basden et. al., (1996).

In a similar case Winfield et al. (1996) showed how multi-aspectual knowledge elicitation (MAKE) was useful for determining/checking the requirement specifications of a proposed information system, or knowledge-based system, based upon the Dooyeweerdian multi-modal

approach using the veterinary practice as a pilot study. The use of aspects help to detect issues that have not being uncovered in Teachers' ICT use in the classroom.

This sub-section has shown the capability of Dooyeweerd's suite of aspect to help reveal deeper issues Primary Teachers face when using ICT in the classroom as applied in IS use. The following sub-section presents Dooyeweerd's aspects in revealing value-laden issues of Teachers' ICT use in the classroom.

3.7.4 To provide a way to reveal Value-Laden Issues of Teachers' ICT Use in the Classroom

The need to reveal Teachers' values towards educational technologies has been discussed in sub-section 2.10.3. This section presents how Dooyeweerd's aspect can help to reveal value-laden issues of Teachers' ICT use in the classroom.

Aspects are spheres of law, Dooyeweerd's aspects provide a set of basic types of good and evil that is irreducibly distinct (Brooke, 2006). They are normative in human activity. Each sphere distinguishes what is good or bad, right or wrong, beneficial or detrimental, blessing or problem and so on.

All aspects have values. The holding of values by people in society is the last three aspects which are Juridical, Ethical and Pistic. People have the feeling of ought about issues. For example, social values; People 'ought' to be polite. However, in the true sense what value is placed on can be any of the aspects. For example: Courage-Pistic, Selflessness-Ethical, being a just person- Juridical, being a fun person- Aesthetic, being a frugal person- Economic, to be able to express oneself well- Lingual, being industrious-Formative, being a curious person- Analytical. Therefore, all the earlier stated examples are qualities people might call values.

Table 3:3 Distinct Kinds of Normativity

Aspect	Beneficial/Positive	Detrimental/Negative
Biotic	Vitality, health	Disease, threat to life
Sensitive	Sensitivity	Sensory overload or deprivation
Analytical	Clarity	Confusion, illogicality
Formative	Forming, creating, achieving	Destroying
Lingual	Conveying truth, understanding	Deceit and misunderstanding
Social	Friendship, respect	Enmity, disrespect
Economic	Care, frugality	Waste, squandering resources
Aesthetic	Harmony, fun	Disharmony, boredom
Juridical	Justice, giving due	Injustice, denial of what is due
Ethical	Generosity, giving, sacrifice, hospitality	Selfishness, taking advantage of others, competition
Pistic	Loyalty, trust, orientation to true God	Disloyalty, cowardice, idolatry

Source: (Basden, 2008 pp.78)

Human living is multi-aspectual. That is all aspects apart from the earliest aspects are normative. Therefore, the multi-aspectual approach can fully explain what it means to be human. This has earlier been discussed in sub-section 3.6.1.

The Table 3.3 above shows the beneficial or positive repercussions from functioning in line with the laws of aspects and the detrimental or negative repercussions from going against the laws of the aspects. This view of normativity is useful in understanding success and failure in Information System use (Basden, 2008).

The first four aspects in Table 3.3 are purposely omitted because the users of ICT might not function fully in these aspects compared to the aspects listed below.

For example, Winfield et al. (1996) showed how multi-aspectual knowledge elicitation (MAKE) was useful for checking the requirement specification of a proposed information system, based upon the Dooyeweerdian multi-modal approach, using the veterinary practice as a pilot study. Ericson (2006) is a good illustration of modal norms of the investigated buyer-salesman relation in the sales prior to the process re-design.

The importance of normativity cannot be overlooked in developing a successful IS. It will be a great benefit not to ignore the benefits Primary School Teachers derive from using ICT in the

classrooms. However, the benefit of ICT use in classrooms by Primary School Teachers is beyond the scope of this research. The use of aspects helps to understand more clearly the range of interest of Teachers' ICT use issues.

This sub-section has shown the capability of Dooyeweerd's suite of aspects to help reveal values in research and practice.

This section has revealed the possibility of Dooyeweerd's aspects to help deal with complexities in IS, address diversity of failures and reveal ignored issues.

3.8 Justification of Dooyeweerd's Suite of Aspects

The purpose of this section is to discuss the reasons for the chosen theoretical framework. It begins by discussing that there are various tools that can help give meanings to issues.

A good illustration is Maslow's hierarchy of needs which is a suite of aspects, and Hartmann who suggested the historical and the four "strata" and also - inorganic, organic, animal-psychic and supra individual-cultural (Basden, 2008). Husserl mentioned that there are three aspects; material, psychological and social. Bunge suggested four aspects which are; physical, biological, technical and social. Habermas identified five action types; instrumental strategic, communicative, strategic, dramaturgical and normatively regulated.

Table 3:4 Comparison of some suites of aspects

Aspects	Maslow	Husserl	Hartmann	Bunge	Habermas
Quantitative	-	-	-	-	-
Spatial	-	-	-	-	-
Kinematic	-	-	-	-	-
Physical	-	Material	Inorganic	Physical Chemical	-
Biotic	Biological	Material	Organic	Biological	-
Psychic	Safety	Psychological	Psychic	-	-
Analytical	Enquiry	-	-	-	-
Formative	-	-	Historical	Technical	Instrumental, Strategic
Lingual	Expression	-	-	-	Communicative
Social	Affiliation, Esteem	Social	Supra- individual	Social	(Strategic)
Economic	-	-	-	-	-
Aesthetic	Aesthetic	-	-	-	Dramaturgical
Juridical	-	-	-	-	Normatively
Ethical	-	-	-	-	-
Pistic	Transcendence, Self- actualisation	-	-	-	-

Source: (Basden, 2008)

Dooyeweerd did not view the suite of aspects as absolute, but rather as a proposal. However, in comparison with alternative sets of aspects like Maslow's hierarchy of needs, Hartmann's four strata, Husserl, Bunge and Habermas to a large extent they accord reasonably well with Dooyeweerd's aspects as a subset. The Researcher chose to use Dooyeweerd's aspects as a tool rather than Hartmann, Maslow's hierarchy of needs and the other examples, because Dooyeweerd went further than them in explaining what aspect is.

A key strength of Dooyeweerd's aspects is that they help us take a set of things that should be taken into account separately from each other. In light of this no aspect can be eliminated in favour of another. Also no aspect can be treated as essentially the same as another and no aspect causes another (Basden, 2008). This comparison is illustrated in Table 3.4 above. Also it is important to mention that Dooyeweerd's suit of aspects have been critically examined in order to properly explore their potential through philosophical and historical consideration by thinkers over the past 2,500 years (Dooyeweerd, 1955, Vol. II, cited in Basden, 2008). Aspects provide philosophical grounds for understanding diversity and handling complexity, it helps us to avoid

overlooking important factors by revealing deep issues, and it is suitable to understand the values that drive both research and practice in ICT education (Basden, 2008).

The next section compares Dooyeweerd's suite of aspects with conventional theories such as Activity theory, Actor Network Theory and Technology Acceptance Model.

3.9 Comparison of Dooyeweerd's Suite of Aspects with Conventional Theories

This section discusses the suitability of Dooyeweerd's suite of aspects as a theoretical framework to employ in this study as compared with some of the earlier outlined IS frameworks. Detailed similarities and differences of Dooyeweerdian framework with other extant frameworks will be explored. This will produce a justified argument as to how Dooyeweerd aspect can help fulfil the research needs as discussed in section 2.9.

3.9.1 Activity Theory

This sub-section sheds more light on the suitability and limitations of activity theory as a theoretical framework for understanding ICT use in education as it relates to this study. It further compares Dooyeweerd's philosophy with activity theory and shows how it can help enrich AT.

Activity Theory (AT) has been discussed in detail (See section 3.3.4). AT has shown some possibilities to be used in this study, showing its similarities with Dooyeweerd. However, as earlier discussed, AT is not suitable to fulfil the research needs in this study.

The following tables (Table 3.5 and Table 3.6) will compare and contrast AT with Dooyeweerd, which is the chosen theory that can fulfil the research needs in this study.

Table 3:5 Comparison of some suites of aspects

S/N	Activity theory	Dooyeweerd's theory
1.	Activity theory recognised distinct areas of human activities (of the opinion that concept and language are distinct).	Dooyeweerd recognised aspects of human functioning.
2.	Activity theory believed that tool-mediation, language-mediation and stimulus-response cannot be reduced to each other.	Dooyeweerd believed that aspects cannot be reduced to each other.

Source: (Basden, 2008)

Differences between Activity Theory and Dooyeweerd Theory

The differences between Activity theory and Dooyeweerd's theory show how AT can be enriched. An example is by suggesting Vygotsky exploration of other aspects.

Table 3:6 Differences between Activity Theory and Dooyeweerd Theory

S/N	Activity theory	Dooyeweerd's theory
1.	Considering the formative aspect, the tools Activity theory describes are physical tools that are hand-held.	Dooyeweerd's formative aspect involves the formation of either or both physical and conceptual tools.
2.	Activity theory focused on distinct areas of human activities, separating activity on stimulus and response, from activity mediated by tools, from activity mediated by language.	Dooyeweerd believed we function in all aspects simultaneously which is described as multi-aspectual human functioning.
3.	Activity theory's exploration of different aspects and mediators started from within one aspect, the psychic, to the next three aspects.	Dooyeweerd's exploration led to the recognition of fifteen aspects.

Source: (Basden, 2008)

This sub-section has described the similarities of AT with Dooyeweerd and also discussed the differences in order to inform Researchers on how AT can be enriched with Dooyeweerd.

The next sub-section briefly describes the similarities and differences of Actor Network Theory (ANT) with Dooyeweerd Theory.

3.9.2 Actor Network Theory

This sub-section sheds more light on the suitability and limitations of Actor Network Theory (ANT) as the theoretical framework for understanding ICT use in education as it relates to this study. It further compares Dooyeweerd's philosophy with ANT and shows how it can help enrich ANT.

ANT has been discussed in detail (See section 3.3.5). ANT has been used in recent ICT studies and there was the possibilities of using it in this study. However, as earlier discussed ANT might not be appropriate to fulfil the research needs in this study.

The following tables (Table 3.7 and Table 3.8) will compare and contrast ANT with Dooyeweerd's theory.

Table 3:7 Similarities of Actor Network Theory to Dooyeweerd Theory

S/N	Actor Network Theory	Dooyeweerd Theory
1.	Actor-Network Theory treats human and non-human actants equally.	Dooyeweerd too places humans and non-humans into one framework; the aspects.
2.	Latour's actantiality provides actants with their actions, with their subjectivity, with their intentionality, with their morality.	Dooyeweerd's aspectuality action occurs when as entity functions in an aspect and it gives such an activity meaning. Subjectivity occurs when an entity functions in an aspect and it responds to the laws governing such aspect. Intentionality occurs when an entity functioning in an aspect gets its meaning and purpose from it and the suite of aspects provide diversity of meaning. In terms of morality, an overall view of the suite of aspects shows the normativity of each aspect that provides norms.

3.	Latour tends to focus on both micro and macro levels and observed how each theorist study human life in a way that acknowledges their aspect and ignoring all other aspects. For example, social scientists study human life on the social aspect.	To Dooyeweerd human living involves functioning in all the aspects, so almost everything we do has both micro and macro aspects.
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Source: (Basden, 2008)

Table 3:8 Differences between Activity Network Theory and Dooyeweerd Theory

S/N	Activity Network Theory	Dooyeweerd Theory
1.	Latour explains what actantiality provides, "actantiality is not what an actor does... but what provides actants with their actions, with their subjectivity, with their intentionality, with their morality."	Dooyeweerd further explained how being, doing, meaning all relate to each other, how diversity and coherence can be integrated and how human and non-human can be understood from the same perspective without reducing the effect of each other.
2.	Focus on description against explanation.	Aspects are spheres of meaning and laws that ensure neither description, nor explanation, nor norms can be separated from each other. For instance, each of the suite of aspects defines ways things can be meaningful (description), and the ways each aspect functions and relate to each other (explanation), and also each aspect yields a distinct type of good and evil (norms).
3.	Actor-Network Theory treats human and non-human actants as equivalent in meaning (synonymous). For example, a computer system could be an actant just as its users could be.	Dooyeweerd aspects separates humans, animals, plants and non-living things from one another by the aspects in which they function as subject. For instance, humans function in every aspect, animals function up to the sensitive aspect, plants up to the biotic aspect and non-living things up to the physical aspect.

Source: (Basden, 2008)

This sub-section has described the similarities of Actor Network Theory (ANT) with Dooyeweerd's theory and also discussed the differences in order to inform thoughts on how ANT can be enriched with Dooyeweerd's theory.

The next sub-section briefly shows the differences of Technology Acceptance Model (TAM) with Dooyeweerd Theory.

3.9.3 Technology Acceptance Model (TAM)

This sub-section explores the suitability and limitations of Technology Acceptance Model (TAM) as the theoretical framework for understanding ICT use in education as it relates to this study. It further compares Dooyeweerd's philosophy with TAM and shows how it can be enriched.

TAM has been discussed in detail (See section 3.3.6). It has also argued on the use of TAM in fulfilling the research needs.

The following tables (Table 3.9 and Table 3.10) will compare and contrast TAM with Dooyeweerd, which is the chosen theory that can fulfil the research needs in this study.

Table 3:9 Similarities between Technology Acceptance Model and Dooyeweerd's Theory

S/N	Technology Acceptance Model	Dooyeweerd Theory
1	TAM recognises that there are various issues with various aspects.	Dooyeweerd acknowledges that life is multi-aspectual.
2	TAM is concerned about humans living with computers.	Dooyeweerd is interested about humans living with computers.
3	The way TAM defines Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).	One of the ways Dooyeweerd revealed the multi-aspectual functioning that is, the Human-Computer Interaction (HCI), is between what the user experiences of the interaction and the computers' functioning.

Source: (Basden, 2008)

Table 3:10 Differences between Technology Acceptance Model and Dooyeweerd Theory

S/N	Technology Acceptance Model	Dooyeweerd Theory
1.	Consideration of Human Living with	To Dooyeweerd human living involves all the

	Computer is narrow because its concern is restricted mainly to the formative and perhaps economic aspects of IS use.	aspects. Hence does not have to squeeze the diverse variety of use into only two aspects.
2.	The high focus placed on perceived usefulness and perceived ease of use has taken the diversion away from what actually makes a system useful.	Aspects are in harmony. If we function well in every aspect then things will go well, but if we function poorly in any aspect then our success will be jeopardised.
3.	TAM covers both ease of use and usefulness, but tends to do so in a managerial way.	Aspects allow us to take an everyday approach to human use of computer. It looks at each aspect of the user's experience of interacting with a computer.

Source: (Basden, 2008)

This section has discussed some of the various suitable theories with Dooyeweerd's theory by showing their similarities and differences. This process has revealed the ways in which Dooyeweerd's theory can enrich these theories and the suitability of Dooyeweerd's theory to help fulfil beyond the research needs of this study.

Therefore, Dooyeweerd's aspects serve as the most useful tool in answering the research question. Evidence of this comes from the use of aspects by other authors in ICT which are discussed in section 3.8. It further strengthens the example of Olive Cook given in sub-section 3.3.7.

The following subsection compares the usefulness of Dooyeweerd's suite of aspects with extant theories of values.

3.9.4 Comparison of Dooyeweerd's Suite of Aspects with Extant Theories of Values

This section compares the values of various authors as discussed in chapter 2 with Dooyeweerdian aspects. The literature examined are theory of basic values which consists of ten basic values (Schwartz, 2007); values in information technology (Pfaffenberger, 1992); Value Sensitive Design (VSD) methodology to account for human values in the design of computer system (LeDantec et. al., 2009); values in education, values in technology education and values

discussed in general. This discussion will help to understand more clearly the range of interests and show the areas that are being overlooked. The aspectual interpretation of extant texts, as with literatures on values, can indicate to what extent the authors are focusing on certain aspects at the expense of others. This will help to develop a successful Information System (IS).

The value literatures are interpreted differently by various people. Some classify values in aspectual headings, others use other words. Schwartz (2007) offered his theory of basic values which are based on three universal requirements of the human condition such as, the need of individuals as biological organisms, the need of coordinated social interaction and the survival and welfare needs of groups as discussed in section 2.6. Value in general shows the diversity and incorporation of values in various ways such as social, intellectual, emotional and spiritual (Spiekermann et al., 2009; Hsieh et al., 2014; Singh, 2015). Some try to discuss how values intersect with information systems such as technical culture, social values, aesthetic ethos and political agendas (Pfaffenberger, 1992; Verbeek, 2006; Knobel, 2011). To the Human Computer Interaction (HCI) community, they are interested in how values are introduced into technical features during the process of design. One of the recognised developments from HCI research is the Value Sensitive Design (VSD) methodology developed by Friedman, Khan and Borning (Friedman et al., 1997). VSD methodology is a collection of twelve human values as discussed in section 2.6.

Dooyeweerd's aspects are useful for integrating, such as to gain a whole picture of the literature, by assigning aspects to values. This is revealed in the table of aspectual literature value. Table 3.11 of aspectual literature values will be used in the reflection chapter. This is not intended as a comprehensive aspectual analysis of the literature value. Discussed below is an aspectual analyses of values found in various literatures. The next stage is to compare Dooyeweerd's suit of aspects with each of the literature analysed values.

Table 3:11 Aspectual Analysis on Values

Dooyeweerd Aspects	Theory of Basic Values	Values in Information Technology	Value Sensitive Design (VSD) Methodology	Values in Education	Values in General	Values in Technology Education	Values in Teaching
Quantitative	-	-	-	-	-	-	-
Spatial	-	-	-	-	-	-	-
Kinematic	-	-	-	-	-	-	-
Physical	-	-	-	-	-	-	-
Biotic	-	-	Environmental Sustainability	-	-	Environmental	Environmental
Psychic	Stimulation	-	Calmness	-	Emotional	Personal	
Analytical	-	Principles, Qualities that guide actions	Freedom from Bias	Ability to Think, To make Moral Decisions	Intellectual, Thought	-	
Formative	Self-Direction, Achievement	Technical Culture, Actions	-	Act Morally	-	Technical	Technical
Lingual	-	-	Informed Consent	Teaching about Values	Worthy of Emulation by Others	-	
Social	Benevolence	Social Values	Human Welfare	Community Influence, School Ethos	Social, Accepted as Essentially Good by the Society	Social, Cultural	Social, Culture
Economic	-	-	-	-	-	Economic	Economic
Aesthetic	Hedonism	Aesthetic Ethos	-	Extra-Curricular Activities	-	Aesthetic	Aesthetic
Juridical	Power, Conformity, Security	Political Agendas, Order,	Ownership and Property, Accountability	Democratic Education, Rights and	Accepted as Essentially Good by the	Political	Political

		System, Control, Standards		Duties of Citizenship, School Discipline	Society, Individual's Sense of Right and Wrong or What "Ought" To Be		
Ethical	Universalism	-	Privacy, Universal Usability	Charity Work, Act Morally	Character, Qualities of Behaviour	Moral	Moral
Pistic	Tradition	-	Trust, Autonomy, Identity	Religion, Pastoral Care	Spiritual	Spiritual	-

3.9.4.1 Overview of Analysis of Values

The above aspectual analysis on values discusses some benefits that Dooyeweerd's theory has helped to reveal. Benefits such as being able to unearth values that the literature does not discuss or at least not treat them very well. Also the use of Dooyeweerd's aspects have helped to reveal the overlooked and over-emphasised values literatures discuss.

If we should consider the whole of value literatures, then users will function very well in the social and juridical aspect but very poorly in the economic and biotic aspects. Users of Information Technology, when compared across the board, will be constrained in placing values on the ethical and pistic aspects because values in IT guidelines are missing in these aspects.

It is surprising that system designers function poorly in creativity, planning and achievement of the formative aspect and harmony, decoration, beauty and simplicity of the aesthetic aspect. Values placed on the economic aspect such as frugality, waste, limited resources and budgets are downplayed across the board apart from literature engaging in technology education. Interestingly, values on life, environment and health are also downplayed across the board except on literatures on Value Sensitive Design methodology (VSD) and technology education. This section has presented a broad view in which values are considered and clearly revealed many aspects that have been ignored and how this has a ripple effect on ICT design used in the classroom. The next section will reveal the theoretical approach this study takes to understand the issues Primary Teachers face in ICT use.

3.10 Theoretical Framework Design

This section is based on earlier justifications made for the chosen theoretical framework. It mentions the specific areas of Dooyeweerd's philosophy that will be focused on in this study. The justification for each has been explained in earlier sections. The theoretical framework design is shown below:

- ICT use in education is multi-aspectual functioning of subject with object
 - Subject- Subject relationship
 - Subject-Object relationship
- Down-to-earth issues: the multi-aspectual functioning raises many meaningful DTE issues

- Diversity: The need for understanding diversity of issues
- Depth: The need for revealing deep issues
- Values: The need for revealing value-laden issues
- Aspectual Analysis: use of Dooyeweerd's suite of aspects to understand diversity and reveal depth and values

This section has summarised the theoretical framework for this study. The next section concludes this chapter.

3.11 Conclusion on Theoretical Framework

This chapter began by emphasising the need of a theoretical framework that can meet the research needs. The evaluation of six various suitable frameworks to fulfil the research needs have been explained. It also reviewed various extant theories of values that can help address appropriately the diverse normativity involved in ICT use.

A key strength of Dooyeweerd's aspects is that they help to take all of the research needs into account separately from each other. Dooyeweerd's aspects were chosen as the philosophical framework from which to construct the theoretical framework to understand ICT use in the classroom. Dooyeweerd was chosen because it covers a wide range of issues including normativity from a perspective of meaning.

The theoretical framework used in this research is that ICT use is multi-aspectual functioning of human beings in a subject-subject in relation to each other and subject-object in relation to ICT devices and other things. This theoretical framework enables us to draw out deeper or meaningful issues and also it provides a way to help reveal value-laden issues of Teachers' ICT use in the classroom.

This chapter also provides discussions, characteristics and justifications for this employed framework. The use of aspects to make noteworthy contributions by the resolved issues in IS were briefly discussed. Evidences using extant literatures on how the employed framework can help towards our research needs are also considered. The Researcher feels justified to proceed with empirical testing of the framework. The next chapter gives an illustration and discussion on the research methods that can help answer our research question.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the philosophical approach adopted by this study. It will also explain the methods used to collect data and how the data collated was analysed. It discusses the Researcher's experiences with the participants in detail, including the benefits and problems and later offers critiques on the Researcher's own possible bias and preconceptions and how these could influence the research study.

Considering the research aim of the study, the philosophical assumptions the Researcher takes about the nature of reality are crucial to understanding the overall viewpoint from which the study is carried out. It further gives a brief discussion on the research area. It justifies the Researcher's interest in UK Primary Schools, the peculiarity of the schools chosen, the process the Researcher implemented on the choice of the interviewees, and gives the demographic profile of participants.

A useful way to understand what is going on is to become immersed in it which calls for a personal interaction with each participant. This chapter describes the interview process and further outlines how the Researcher's experience influences the interview. The interpretivist approach is more reliable in capturing the participants' views and experiences in a detailed way. The rationale is to gain insight into participants' views, experiences in their social setting and this will help to reveal the diversity of DTE issues faced using ICT in the classroom.

It discusses the approach to analysing the data collated and the benefits and problems with these approaches in relation to the research needs. It also discusses the data analysis method employed. It further discusses the research standards and ethical considerations employed in terms of the validity and reliability of this study.

4.2 Research Philosophy

This section discusses and justifies the chosen research philosophy and how it is helpful to the fulfilment of the research aim.

A research philosophy is the theoretical explanation of underlying assumptions of how the Researcher perceives the world (Saunders et al., 2015). Two major ways central to social research ways of thinking about research philosophy: ontology and epistemology. Ontology is

concerned with nature of reality; that is, the way the world operates and the commitment to particular views (Saunders et al., 2011). Epistemology can be described as the theory of knowledge that provides a philosophical grounding for deciding suitability, adequacy and legitimacy of knowledge (Crotty, 1998; Collis & Hussey, 2013). In simple terms, epistemology can be described as the philosophy of knowledge or how the Researcher comes to the knowing of reality (Trochim, 2006). According to Easterby-Smith et al. (2012), two paradigms are considered to be mostly used in social sciences in line with this study, they are Interpretivism (Constructivism) and Positivism.

4.2.1 Justification for chosen Philosophy

Several considerations were made when deciding to adopt the most suitable research methodology for this study. This section explains the stance of positivism and interpretivism and indicates why these are adopted in this study and how it is helpful to the research aim.

Positivism adopts a philosophical stance drawn from natural science (Collis & Hussey, 2013; Zhou & Nunes, 2015). In the positivist paradigm the object of study is independent of Researchers; knowledge is discovered by collecting data about an observable reality and search for regularities and casual relationships in data in order to create law-like generalisations (Saunders et al., 2012; Kant 2014). Research in positivism is often proven through the testing of hypotheses (Collis and Hussey, 2013). Positivist Researchers also study the pattern of an organisation in the past and presume that these patterns would repeat themselves in the future (Klein and Myers, 1999). However, positivist Researchers are likely to ignore the fact that people think and act, that is people are active makers of their physical and social reality (Orlikowski et al., 1991; cited in Klein and Myers, 1999).

Constructivism also referred to as interpretivism (Collis and Hussey, 2013). It is an alternative view and a response to criticism of positivism (Saunders et al., 2011). Constructivism is described as the assumption that social reality is highly subjective and not objective because it is shaped by our interpretations (Collis and Hussey, 2013). Interpretivism relies on perception and social understanding to define reality and is mainly interested in the meaning of the actions presented by various people which then give a subjective data of results (Oates, 2006; Merriam, 2014). It gravitates towards the qualitative research approach (Maxwell, 2012). It is also valuable to mention that this research is unique with focus on the DTE issues of Teachers with technology which has not been adequately researched, hence, classified as an exploratory research (Collis and Hussey, 2013).

Klein & Myers (1999) found Information Systems research to be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools and other artefacts. In distinction to the positivist Researcher's view of a repetitive organisational pattern earlier discussed, an interpretive Researcher's claim that any observable organisational patterns are constantly changing (Klein and Myers, 1999). In line with this, interpretivists argue that organisations are not static; that is the relationship between people, organisations and technology are not permanent or fixed but constantly changing.

Therefore, in reaction to this interpretive research seeks to understand a moving target, in as much as each situation is treated as a unique historical occurrence (Klein and Myers, 1999). In line with aforementioned justifications, interpretive research aims to produce an understanding of the social context of the phenomenon, and the process whereby the phenomenon is influenced by the social context (Rowlands, 2005). Therefore, in line with the research aim, understanding Teachers' issues with the use of technology in the classroom fits well into the interpretivist argument.

Interpretivist research is more reliable in obtaining the human perception and experience in a rich and detailed way (Rakic & Chambers, 2011). This aligns with the study aim which is to gain insights into the Primary School Teachers' view point and experience, and reveal DTE issues Teachers face using ICT in the classrooms; hence the interpretivist paradigm is adopted for this study. The choice of the interpretivist paradigm will not exempt the use of numeric data, but rather will help provide a way for speculation and to validate the Researcher's findings in the qualitative analysis.

This study mainly deals with Primary School Teachers in which it is absolutely necessary for a personal interaction with each participant in order to have a better understanding of their perception on DTE issues which is required as a contribution to knowledge in this study. Also, the Researcher needed to position herself with the research aim because reality is socially constructed (Thomas et al., 2014) since we all experience a different reality; hence both the participants and Researcher will interpret their social world in terms of the meaning given to a phenomenon of interest. It is necessary to mention that interpretation can be influenced by the culture, social background, class, gender and other factors of both the participants and Researcher. This will be further discussed in section 4.5. How the bias by the Researcher's perception is mitigated is further discussed in subsequent sections 4.7 and 5.2.1.3.1.

Further justification will be given in line with Klein & Myers (1999) seven principles of interpretivist research in Section 9.4. The next section will discuss the research methodology used to achieve the set objectives of the research.

4.3 Research Methodology

Research methodology can be described as the procedures and techniques used to implement the methodological process of enquiry aimed at achieving the set objectives of the research (Saunders et al., 2015).

It is necessary to state the deductive part of this study, which is the literature review where the research needs became known (Bryman, 2015). However, the literature review was used as a guide because it mainly focused on high-level issues. Therefore, this research study adopted the inductive approach to establish the meanings humans place on events. Also, another reason is that there were inadequate literatures that focus on Down-to-Earth issues of Primary Teachers with ICT use, hence inadequate research theories to develop hypotheses. Saunders et al. (2015) mentioned that a blend of deductive and inductive methods are a more appropriate approach of conducting a research. Therefore, both the deductive and inductive approaches were adopted in this study. The inductive approach is generally associated with qualitative data collection methods (Easterby-Smith et al., 2012). Bryman (2012) explains quantitative research as a research strategy that emphasises quantification in the collection and analysis of data; that is, Researchers emphasise careful control and measurement by assigning numbers to measurements. The major advantage of the quantitative methodology is that it is useful for testing large samples while its major disadvantage is that it tends towards representativeness.

Bryman (2012) clarifies that qualitative research emphasises words rather than quantifying the collection and analysis of data. The major advantage of the qualitative methodology is its in-depth investigation of a subject matter and its ability to yield deeper understandings of it. Its major disadvantage is its difficulty in generalising to a larger population.

The qualitative approach compared to the quantitative approach allows the Researcher to work closely with participants by collecting information such as personal thoughts and experiences (Yin, 2009). This approach allows the Researcher to grasp the point of view of the participants.

The following sub- section explains the chosen research methodology to achieve the research objectives.

4.3.1 Justification of the chosen methodology

The qualitative method accommodates the research aim, which suggests the Researcher interacts with participants being researched. The aim is to discover and understand the participants' perceptions based on their personal experiences, stories and scenarios (Sokolowski, 2000; Creswell, 2005; Klenki, 2008). Hence, it will be possible to gain a rich and holistic understanding of the diversity of issues by investigating the view of the Teachers.

Other authors with regards to Matthew Miles and Michael Huberman (1994) identified the richness, holism, strong potential for revealing complexity and thick description as the strengths of qualitative data. This makes it the appropriate method for this study in addressing the diversity and depth of the research question. This research focuses on Primary School Teachers' experiences, and the meaning the participants place based on their personal experiences, stories and scenarios. The Researcher aims to get qualitative data from this study which will be analysed both quantitatively (numerically) and qualitatively (investigatively).

Therefore, in view of the reasons given above, the adoption of a qualitative research methodology is the most suitable in evaluating and producing valid data within this study.

The next section discusses the techniques used in collecting the data needed to achieve the research aim for this study.

4.4 Research Method

Research methodologies can be described as a technique for collecting and analysing data (Collis and Hussey, 2013). There are several ways of collecting research data. Barnes (2001) suggests that Researchers should choose the methods that best suits the research aim and providing maximum validity within the conceptual context of their specific research topics.

Therefore, to gain a clear understanding of the issues Primary School Teachers face using ICT in the classrooms, one-to-one in-depth interviews were chosen as the primary data collection method as it allows a cross-section of informants to be involved and, at the same time, it provides a starting point for perspectives to be explored in some depth. The data for the study was collected within the teaching and learning environment in three primary schools in Salford, United Kingdom.

The following sub-sections describe in detail the method of data collection and justify the most appropriate one implemented.

4.4.1 Interviews

The interviews occurred in a social and relaxed setting that allow holistic descriptions that are real life related and it provides opportunity for participants to get clarity on questions and answers as required (King and Horrocks, 2010; Miles and Huberman, 2013 pp.12). Some other advantages of interviews are their ability to gain detailed information as well as a higher rate of questions answered and the opportunity to demonstrate with visual aids (Harvey, 2011)

A structured interview is a verbal questionnaire with limited interactions by a fixed set of questions. These questions are answered using standardised response categories for consistency, and to be reliably grouped and compared easily. These interviews have a specific format with little or no deviation as possible, which the interviewer must adhere to (Wilson, 2013).

Structured interviews are mostly preferred to be used after a detailed understanding of a broad issue is known and there is a subsequent need to collate detailed and consistent information about these known major issues (Wilson, 2013).

It helps achieve a collation of uniformity of data from a large sample of participants. Hence data analysis is easier due to its uniformity. However, interviewers are hindered from gaining rapport or connecting with participants due to the rigid script and standardisation. Also, participants are more on a passive role; this portrays a notion that the interviewer already knows what is important (Wilson, 2013).

Semi-structured interviews combines a predefined question with an open-ended exploration. Interviews in this category usually follow an interview guide. This guide comprises of an introduction to the purpose of the interview, a list of topics and questions to ask about each topic, suggested probes and prompts and closing comments (Wilson, 2013).

Semi-structured interviews aim to collate systematic information about a set of topics and also allowing exploration when new issues emerge. This type of interview is used to collate data on issues the interviewer has knowledge about, but is still in need of new issues important to participants. It helps collate data on complex issues where probing is required. It helps uncover previously unknown issues and enables participants raise additional concerns and issues. However, participants might be unwilling to divulge information due to the interview's background, gender, age and other demographic factors. Due to the data derived which might consist of quantitative and qualitative data, this can be time-consuming to analyse (Wilson, 2013).

Unstructured interviews are conversations with participants on a general topic without predetermined interview questions. The general goal of this style is to collate rich, in-depth data on participants' experiences without imposing restrictions on what they can express. Both the interviewer and interviewee influence the direction of the interview (Wilson, 2013).

Unstructured interviews help to gain new insights about the user's interactions with technology. It also helps to understand how users solve problems through the tacit knowledge they possess which are unknown to them. This interview style can reveal issues the interviewer had not thought of. However, due to the large amount of data derived, the analysis and interpretation of the data can be time-consuming (Wilson, 2013).

In view of the above summary, the use of face-to-face in-depth interviews is the most appropriate method for this research study. This approach was chosen for its flexible style in gathering and revealing in-depth descriptions of the participants' information, opinions and exploring experiences, motivation and reasoning (Moustakes, 1994; Drever, 2003; Creswell, 2005).

Using unstructured interview over semi-structured interview is based on a plain reason, which is to avoid an unconscious default thought process settings in participants minds based on my interview guide questions. As revealed earlier on the fact that literatures mostly discuss high-level issues, there are chances that designing interview guide questions from literatures can hinder the research aim, which is to open up the discussion of DTE issues.

The following sub-section duly justifies the use of in-depth interview as against many other relevant methods for this study.

4.4.2 Justification for the Use of Interviews

The use of one-to-one in-depth interviews provides proximity to the participants which helps to observe and clarify body language (Irvine et al., 2013). This access to the experiences of participants is not gained by mere proximity but requires true empathy and the understanding and appreciation of the issues Teachers face with ICT use in the classroom. In order to obtain a rich data, and in view of the limited time available along with the aim of the research question, an in-depth interview presents itself as the most appropriate method that helps fulfil the research aim.

Other methods were looked into as possible options to achieve the research aim but were not found to be the most appropriate. One possible method was observation. The key problem

with observation is the lack of availability of the appropriate set of interpretive tools, including linguistic skills and overall cultural knowledge of the practices (Babbie, 2000). Perhaps another reason this method was not chosen is due to Teachers' use of ICT facilities and online resources which would be difficult to track, as the use of ICT can be done at any time and at any place and other forms of issues they encounter cannot be adequately expressed as the recipient.

Another reason is that issues while using ICT can arise at any time and it would be a challenge to carry out observations given the study's sample size. Besides, to base interpretations on observations for each respondent is also a contentious issue as earlier stated. Validity and reliability of the data obtained this way can easily be questioned, for instance on the grounds of selectivity and subjectivity (Babbie, 2000).

Yet another option was the questionnaire. Although this is a qualitative study, a questionnaire could be used to gather information about Teachers' perceptions and beliefs based on quantifiable item responses, but this method was not chosen for four reasons, three of which the Researcher can agree with based on their previous observations and experiences with answering questionnaires; one, questionnaires are limiting in the types of questions that can be asked, so that if the majority of questions are open-ended potential participants may not be inclined to take part, also it is limited to the range and depth of responses available to the respondents completing them (Gundgaard et al., 2008); two, the return rate is not likely to be sufficient as there is no obligation for recipients to answer the survey, especially if the topic of enquiry is not something they are interested in, also the method of distribution and return can lead to bias in estimates of the population (Gundgaard et. al., 2008); and three, although the questionnaires could be sent electronically (which is preferable as it would aid tracking of the survey forms), mass emailing at the research site is generally not viewed kindly. The fourth reason is the possibility of designing the questionnaire from literature which are mostly discussed high-level issues; this can hinder the research aim, which is to open up the DTE issues which are rarely discussed in literatures. For these reasons the questionnaire was not chosen as an appropriate data collection method. The last method that was considered was the focus group interviews. This might have allowed the data collection more quickly, but some participants may hesitate to provide their perspectives in a group setting (Creswell, 2005).

As earlier discussed, the use of one-to-one in-depth interview is perceived as the most suitable method to help understand Teachers' ICT use DTE issues. However, a limitation is often the quality of data collected as it depends on the skills of the interviewer (Randall et al., 2013). In

view of this, the Researcher attended several comprehensive training sessions on how to carry out in-depth interviews which enhanced her ability to collect quality data.

This section has clearly justified the suitability of how in-depth interview can help fulfil the research aim.

The next sections discuss the Researcher's experience in relation to the participants and how it has influenced the research study.

4.5 Researcher's Experience with the Participants

This section elaborates on the Researcher's experiences in relation to the participants and how it has influenced the research study. It shows the benefits of being an insider and outsider Researcher, also the challenges that come with being an insider or outsider Researcher.

4.5.1 General Knowledge

Sonya Corbin Dwyer & Jennifer L. Buckle (2009) positions a Researcher as an insider or outsider in relation to those being researched. To help understand these terms, an insider is when the Researcher has experience and shares some characteristics with the participants, while an outsider is one without any experience or relations with the participants.

A critique of the Researcher's role in qualitative research has motivated the opening up of this investigation in this study. Dwyer & Buckle (2009) commented on the direct and intimate role the Researcher plays in data collection and analysis approaches of qualitative methodology. As earlier discussed in chapter 1, the Researcher can either or both be an insider or outsider in relation to those being researched, which is an important aspect to be considered in a qualitative research method.

The most common problem Researchers may encounter during the analysis process is when they write themselves into the research by using words like we and us and they and them Dwyer & Buckle (2009). Another problem raised was the Researcher's over emphasis on shared factors between the Researcher and the participants whilst placing less emphasis on discrepant factors, also the influence of the Researcher's interpretation of the text and analysis (Dwyer & Buckle, 2009).

The next section discusses on the benefits and problems of being an insider or outsider Researcher.

4.5.2 Benefits and Problems of Being an Insider or Outsider

This sub-section reflects on the Researcher's experience based on Dwyer & Buckle (2009) and sheds light on the benefits and problems of being an insider or outsider Researcher. The understanding acquired will further be reflected as it relates to this study.

The study on being an insider-outsider qualitative Researcher, thus far, provides evidence of its effect on the research study. There are various benefits and detriments derived for having or not having experience in the area of study in relation to the participants.

The benefits during interviews of the Researcher having experience of those being researched are numerous, but to mention a few, it allows the Researcher to access more knowledge helpful beyond the research study. As an insider Researcher, one is privileged to acceptance and accessibility to key participants and this gives the data more credibility. There is an opportunity for the Researcher to appreciate and fully understand the experience of the participants because of the Researcher's experience. Participants are more open to the Researcher's interview so there is opportunity to greater depth to the data gathered.

In contrast to the earlier benefits mentioned, the challenges of having experience with those being researched can raise the chances of biases and preconceptions in influencing the Researcher's understanding. There might be chances of role conflicts, for example, the Researcher separating out a personal experience rather than that of the participants. Also, the Researcher is liable to make spontaneous assumptions based on similarity of experiences, hence cutting short the participants from fully explaining their own individual life experiences. There is the chance that the Researcher might not fully appreciate the participant's experiences and the Researcher is likely to represent them inadequately. Due to the Researcher's experience with those being researched, there is a chance that the Researcher might not be able to clearly see through the complexities of the participant's experience. Also there are possibilities of the authenticity of the research to be questioned because the Researcher knows too much or may have too similar experience to those being studied.

Dwyer & Buckle (2009) argue that there are problems during the interviews of the Researcher not having the experiences of those being researched. The Researcher cannot appreciate or fully understand the experiences of the participants due to their own lack of direct experience of the situation of the respondents. Also access to relevant participants may be difficult as a non-native Researcher. This is confirmed by the Researcher as access to a few schools were given. There is a likelihood of constraints on participants to open up during the interview

process and this hinders the opportunity to greater depth to the data gathered. In some instances a Researcher's study tends to lack legitimacy due to differences in identity and language with the participants.

On the other hand, the benefits of the Researcher not having experience of those being researched are as follows; the Researcher appreciates and handles the participants' experiences shared and represents them with more honesty and impartiality. Another benefit being an outsider Researcher during the interview process, is the ability to conceptualise and clearly see through the complexities of the participant's experience. There is little or no chances of the Researcher's understanding being influenced. There are no conflicting roles as the Researcher can focus on the participant's experience. The Researcher is fully concentrating on the participant experience and can also learn from them. Also the authenticity of the research cannot be easily influenced by the Researcher due to the gap of experience in the area of study.

This section has discussed both the benefits and challenges of the influence of the Researcher's experience on the interview and analysis process. The following sub-section will give a critique on Dwyer & Buckle's (2009) paper in order to enrich it.

4.5.3 Critique of Being an Insider or Outsider Qualitative Researcher

The qualitative Researcher's perspective is a valid stance and the paper examined (Dwyer & Buckle, 2009) has given an insight into the awareness of the Researcher's own possible bias and preconceptions and how these could influence the research study. However, the paper only focuses on the social interactions and suffers from the organisational perspective. The paper overlooked ordinary lives in organisation with technology use.

The paper discussed the problems and benefits of being an insider or outsider, however, too much focus was placed on being an insider with less discussion on being an outsider even when the paper tried to portray a balance. The Researcher being an outsider was affected by this imbalanced discussion.

Dwyer & Buckle's (2009) study of the Researcher being an insider or outsider is considered to be valuable in qualitative study, but it does suffer from the fact that little or no attempt was made to give any guidance, criteria, recommendations or precautions on how to be a good outsider or insider Researcher.

This section has discussed the Researcher's experiences and influence on this study. It has discussed the benefits and challenges of being an insider and outsider Researcher. Furthermore, it has shown ways Dwyer & Buckle (2009) paper can be enriched.

The next sections discuss the Researcher's interest in primary schools, the various chosen schools' background and the interview style used to achieve the data collection process.

4.6 Selection of Interviewees

This section gives a brief discussion on the research area. It justifies the Researcher's interest in UK primary schools, the peculiarity of the schools chosen, the process the Researcher implemented in the choice of the interviewees and gives the demographic profile of the interviewees.

4.6.1 Justification of Focus on UK Primary Schools

Studies show that many activities in Early Years focus on children developing an understanding of their environment. It is advised that in Early Year settings children should be encouraged to develop the following skills; the ability to explore, observational skills, problem solving and so much more which ICT resources can help achieve (TDA, 2007; McManis et. al., 2012). In this modern era of Information Technology (IT), children of Early Years are surrounded by ICT and the proper use of it can support their learning. Hence a viable reason to focus on primary schools.

However, it is more beneficial if the findings from this study are given due congruence by a developed country such as the UK. This will make it easier for Researchers in developing countries, such as Nigeria, to initiate their thinking along these lines. In addition, differences in background, culture and probably differences in the ways of thinking which the Researcher possesses can bring fresh perspectives to this study.

However, it will be helpful to apply this study to third world countries, for example, Nigeria, although the lists of issues might not be totally relevant in the Nigerian context, the methods used might be useful.

This next sub-section describes in detail the background overview of the schools where the interviews were conducted.

4.6.2 Background Information on Schools Interviewed

The Researcher conducted this interview using a qualitative research method. Initially, fourteen letters were sent to the Head Teachers of the compiled primary schools in Salford and three of these schools gave a positive and welcoming response. A sample of the letter sent out is found in Appendix III.

As discussed in section 1.2.1, the Researcher's motivation to focus on Salford primary schools is to add practical solutions to the body of knowledge that can be helpful to ICT education in deprived communities. Another reason is that Salford primary schools were very accessible for carrying out this research.

The schools interviewed are state-funded primary schools, whose rating is based on their results, teaching, progress and attendance. The ranking system uses 33 different measures from publicly available data covering up to the 2012/13 school year. Hence this rating is the 2014/2015 results as inspected by OfSTED.

The UK Government established the Office for Standards in Education, Children's Services and Skills (OfSTED) in 1992 to raise standards of education. What is known about standards of primary schools in England is largely based upon the reports from OfSTED. "OfSTED is the Office for Standards in Education, Children's Services and Skills. We inspect and regulate services that care for children and young people, and services providing education and skills for learners of all ages" (OfSTED, 2012).

Below is an analysis based on UK Government data on the local primary schools interviewed in Salford. These schools are given code names A, B and C in order to respect the confidentiality pledged in the consent forms. The overall scores are in relation to other schools in the Salford area.

School A is a one star rating and an overall score of 20.4/100 with a rank of 12,929/14,865. It is a mixed gender community school whose age range is 3-11 with an open religion.

School B is a three-star rating and an overall score of 36.2/100 with a rank of 7,267/14,865. It is a voluntary aided mixed gender school whose age range is 3-11 and religion is Church of England.

School C is a five-star rating and an overall score of 57.7/100 with a rank of 2,034/14,865. It is a voluntary aided mixed gender school whose age range is 3-11 and religion is based on the Church of England.

This section has given an overview of the research area. It has discussed the Researcher's interest in UK primary schools and the peculiarity of the schools chosen.

The next section will discuss in more details those involved in the interview process.

4.6.3 Background Information on Teachers Interviewed

This sub-section describes the process involved in the selection of participants for this study. It further gives a demographic profile of the participants.

The Researcher, to organise the interview process, sent emails to the Head Teachers from the three schools. The content of this email was precise (See Appendix III), it stated the length of the interview to be around 30-40 minutes and suggested three options on arranging the interviews, but all the three Head Teachers preferred the first option which is for them to discuss with colleagues and allocate preferred time slots and venues for their interviews. The Researcher attached to the email the Participant Information Sheet (PIS) and Consent Form (CF) ahead of time to the Head Teachers so interested Teachers would have ample time to make decisions on their participation in the research study. The content of the PIS and CF can be found in Appendix II.

The range of ICTs that are used in primary schools are, but not limited to, whiteboards, iPads, desktop computers, projectors, spelling programmes, maths games and other teaching applications. It was thought helpful to interview at least one member of staff for each year and, if possible, to have a mix of both male and female staff and a mix of those who tend to use ICT and those who tend to avoid or minimise its use. This will provide a diversity and richness of the kind of everyday issues Teachers face with ICT use and other important reasons why some Teachers tend to avoid or minimise its use.

In response to the selection of Teachers to be interviewed, the Head Teachers were of the same opinion as the Researcher in the selection process, that is to have both male and female staff committed to various year groups, but the Head Teachers emphasised this would depend on the availability of staff. For one of the schools, the Head Teacher suggested the best time for the interview to commence would be just after the school day ends (3.15pm) while with others the Researcher worked with the Teachers during their break time.

The school heads did not select the staff to take part in this study, rather Teachers showed their interest while the school head compiled details of staff and communicated time structure to the Researcher. For the Teachers' selection, it was emphasised that Teachers who use ICT and those who do not use ICT are welcome to take part in the interview process.

However, there were occasions where scheduled interviews were cancelled and rescheduled at short notice due to extra staff training sessions. Also, there was an occasion an interview could not take place because the interviewee was in poor health. This was also rescheduled.

All participants in this research study were full-time Teachers at primary school. The term 'full-time' is an appropriate way of referring to Teachers who are on pension or contract schemes, as opposed to part-time Teachers who are employed just for the weeks that they are needed. To this effect, 'full-time' Teachers have a bigger stake in the schools than part-time Teachers.

Table 4:1 Demographic Profile of Participants

School	Gender	Occupation	Date	Name Code	Year (other information)
School A	F	All subject areas	08/01/15	V14	
School A	F	All subject areas	08/01/15	V12	Year 3, 7-8 years old
School A	M	All subject areas	15/01/15	V7	Year 6, 10-11 years old
School A	M	All subject areas	15/01/15	V8	Year 4, 8-9 years old
School A	F	24 years' experience	15/01/15	V17	
School B	F	Deputy Head Teacher	20/01/15	V1	Year 4 Teacher
School B	F	School's admin	20/01/15	V2	
School B	F	Head Teacher	20/01/15	V4	
School B	F	Teaching for over 20 years. ICT co-ordinator	20/01/15	V5	Year 2; 3-5 years old
School B		Administration	20/01/15	V9	
School A	F	All subject areas	22/01/15	V15	Year 1, 5-6 years old , (but a lot of children in my year group come up from reception way below age expectations)
School B	M	All subject areas	27/01/15	V6	Year 1, 5-6 year olds
School B	M	ICT lead; Middle Management	27/01/15	V13	Year 6, 10-11 yrs. old. (Final year in primary school before going to high school)
School C	F	All subject areas	02/02/15	V16	Year two, 6-7 years old
School B	F	I assist the year 6 Teacher	02/02/15	V18	Year 6; 10-11 years old
School C	F	All subject areas	11/02/15	V11	Reception, 4 -5 years old
School C	F	All subject areas	12/02/15	V10	Year 4, Stage 2 (8- 9 years old)
School C	F	Administration	12/02/15	V19	
School C	F	All subject areas	12/02/15	V20	Year3, 7-8 years old
School C	F	All subject areas	12/02/15	V3	

4.7 Description of Interview Process

This section gives a detailed description of the interview process. It discusses the stages involved in the interview, the interview guide content and gives a detailed example with the use of a participant (V5) and further discusses various useful lessons learnt during the interview process. Taking a cue from the discussion on Dwyer & Buckle's (2009) paper (see: section 4.5) it reflects on the effect of the Researcher's role during the interview process.

Based on this study, in-depth interviews were conducted with twenty staff from three primary schools in the local authority of Salford. A breakdown of this interview count is six staff from school A, eight staff from school B and five staff from school C.

The interviews were conducted in a quiet, private setting at a location of the interviewee's choice, which was usually an empty classroom. The interviewer gave primary considerations to the accommodation of the interviewee's schedule and comfort in order to minimise distractions.

In qualitative research interviews between twenty and twenty-five participants might be sufficient (Kvale, 1996). Although in the context of this study, the Researcher noticed the issues Teachers were discussing became repetitive and had to stop at a sufficient number. Twenty participants were involved in this research study across subjects and year groups. This number was arrived at when it was determined that no new information could be obtained with further sampling. There was no gender restriction as both male and female participants were included in the interview. The data collection method included face-face interviews, recorded digitally and later transcribed using Microsoft Word (MS).

In this study, the Researcher did not involve participants in the use of aspect. Neither did the Researcher tell the participants about thinking of aspects as Winfield (2000) had done, but instead asked questions based on what the interviewees had said in order to encourage them to open up. The Researcher could have designed the questions around aspect, so as to ask at least one question around each aspect, but did not do so because the Researcher needed as much openness in the thought process as possible without any restriction.

However, a study by Ahmad (2012) started with a couple of aspects during the introduction, namely, the job (formative aspect) and the role (social aspect). But the Researcher's introductory questions were designed as normal questions to ask Teachers without any reference to aspects. However, the Researcher was sometimes intuitively aware of which

aspects made what she was told meaningful, and might use this intuition to guide gently the discussion away from over-emphasised aspects (e.g. technology: formative aspect) to others that the interviewee had earlier mentioned (e.g. OfSTED: juridical aspect). For example, ‘... in your comment, you mentioned about OfSTED, please can you tell me more?’ This is done not just to get more details about OfSTED, but to get the Teachers’ view on some juridical issues. Although this was not planned it was at the back of the Researcher’s mind and intuitive at the time. Also the reason the Researcher repeated the phrase used by the interviewee is to diagnose any form of inaccuracy and to help stimulate the interviewee to say more.

The interview process was very engaging, highlighting not only the Teachers’ current knowledge of ICT, but also their perception of the facts of what helps or hinders their use of ICT. The use of open-ended questions during the interview session helped explore the topic deeply and produced a rich and full account from each participant (Saunders, Lewis & Thornhill, 2003). To minimise bias the Researcher focused more on the issues participants voluntarily gave. This is further discussed in section 5.2.1.3.1.

4.7.1 Stages of the Interview

This section paints a picture and aims to justify the validity of the interview process. It briefly describes the three stages of the interviews and their content.

- **Introduction of the Interview**

To start the interview, the Researcher gave a personal introduction, presented the Participant Information Sheet (PIS) and explained what is going to happen and what would be required of the interviewee. The Researcher explained the reasons behind recording the interview and reassured the interviewee of the aim of conducting a piece of genuine research, and the participants will remain anonymous. The Researcher emphasised one of the objectives of the interview process which is to listen and to make sure that certain areas of particular interest to the interviewees were covered.

- **Main Part of the Interview**

In this interview there were no structured questions in place as this would defy the aim of getting the ignored/overlooked diversity of issues. Instead the Researcher developed an interview guide questions aimed towards a conversational flow for both the interviewee and the interviewer to open up more questions to get what is meaningful to the interviewee. These

questions were mostly used as introductory phrases that encompass content relevant to the research objectives and designed to aid valid and reliable responses. The Researcher found it easier to get interviewees to discuss their use of ICT in teaching generally, before asking them to discuss their experiences specifically.

- **Concluding the Interview**

At the end of the interview, the Researcher asked the interviewees if they had any comments or questions and, at the same time, the Researcher checked through the interview guide to make sure that all essential areas had been covered. The Researcher also asked the interviewee for feedback on how they felt about the discussion.

4.7.2 Content of the Interview Guide Questions

This section highlights the kind of questions designed mainly as a conversational flow between the interviewer and the interviewee. The guide lists are the general questions to start a line of inquiry and a checklist that can serve as a memory aid.

The Researcher had an introductory question on the use of ICT at the beginning and developed questions as the interview unfolded. There were no pre-planned guide questions. However, every question asked tended to come from what was earlier mentioned, e.g. “tell me more”, “tell me why”. The Researcher asked if there were ICT facilities the participant could use, but chose not to because of the main research question and the needs of the research. This reveals more about issues that are important to the participants. Often asking the negative question can give more information and raise extra issues.

Listed below is the interview guide questions used in this study. They are:

1. Define the term ICT based on examples (interviewer): PC, laptops, tablets and smart phones
 - a. What ICT equipment do you use in your teaching? Are there any others?
 - b. In what ways do you use the above?
 - c. Do you have problems using them?
2. Would you like to give an example when that happened?
 - a. Why was that a problem?
 - b. What went wrong because of that?

- c. Did you solve the problem?
- d. Can you tell me more on how you were able to solve the problem?
- e. What else could you have done if you were not able to solve the problem?
- f. Why did you do this?
- g. Why didn't you do something else?

3. Are there ICT facilities you could use, but chose not?

- a. Why don't you use them?
- b. Have you ever used them?

Other phrases used during the interview in order to get more depths were:

What do you mean exactly?

Could you please explain that?

Please can you tell me more about that?

What else?

Can you think of an example or a scenario?

4.7.3 Interview Probes

This section briefly describes the interview probes used and the reason for using them. The following probes are segmented into perspectives for easier clarification.

To show interest: During the interview process expressions of interest and understanding, such as "hmmm", "uh-huh", "Waooh" and "yes", conveyed the message that the response of the interviewee has been heard and more is expected.

Conscious pauses: The interviewer used silence for two reasons. Firstly, to tell the interviewee that the Researcher is waiting to hear more and, secondly, not to cut short the interviewee's thought process or in case they were about to say more.

Repetition of the question: This aims to help the interviewee who has not understood, misinterpreted or strayed from the question to get back on track

Repetition of response: The reason repeating what the interviewee answered is to stimulate the interviewee to say more or recognise an inaccuracy.

For the transcript of the interviews all answers were written out verbatim and not paraphrased. Below is an excerpt from V6 transcript:

ME: Waooh, great, are there any other things on your mind that I have not asked or probably I

A: Uhhmm,

I don't think so, like I said, it's just something that's there- I have used it lots and lots in some schools when---because I have taught in college, so when I was teaching in college, it was easier for everyone to be on the computer because the students were doing their work on a computer, and I would be sat at mine and I could click a button and I could see what they were doing. So you can watch what they are doing.

ME: How? Can you explain...?

A:Uhhh, it was a special network programme, it allowed me to see every single computer-say there was 20 computers in the room, I can press a button and all their computer screens would appear in little boxes, so I could watch them all, and if I wanted to watch what one person was doing, I could click on it, make their screen bigger so I could see their monitor so I could watch them, and then if I wanted to teach them something, I could then press a button and took control of their computer,...

This section has discussed the stages involved in the interview process and the content of the interview guide questions. The next section will discuss a peculiar interview process which stood out from the rest.

4.7.4 Example Interview (V5)

This section describes the interview that occurred with one of the interviewees whose code name is V5. This code name is simply Voice (V) and a random number was chosen. It is appropriate to clarify that V5 is not the fifth interviewee; a full detailed lists of interviewees with dates of interviews is shown in the demographic profile (See Table 4.1).

The interviewee (V5) is a female Teacher at school B. She has been teaching for over twenty years as a Primary School Teacher. V5 was the ICT coordinator and presently in charge of Early Years students whose age group is between 3-5 years old.

This specific interview was chosen for three reasons. Firstly, she had a prior interest in this research study and was selected to be interviewed. Also V5's background and involvement in ICTs with various year groups gave her additional recommendation by the Head Teacher. Secondly, she has a wealth of experience as she used to be the ICT coordinator, an Early Years Teacher and has also taught a range of classes and, thirdly, her interview stood out from the rest based on reasons which will be discussed below.

4.7.4.1 Description of V5 Interview

In order to protect confidentiality the interviewee will be named V5.

During the selection of participants V5 already showed prior interest in this study. Maximising every opportunity given at the primary schools in Salford, the Researcher learned about V5 through the school head, who was previously a Teacher in the same school as V5. The Researcher initially conducted an interview with the school head, V4, which opened up various issues; hence V4 mentioned V5 was interested to be interviewed and mentioned briefly V5's background and how her wealth of experience might be useful to the research topic. Description of V5 interview process is as follows:

- **The Interview**

The interview began with the interviewer setting up the voice recorder which is a recording application on her mobile phone, repeating what is on the PIS form, explaining what she expects from V5 and apologising about the questions if they appear repetitive. The interviewer further explained to V5 her deep interest in her stories, examples and scenarios. The interviewer mentioned that the question guide was just for conversational flow. Then the interviewer began by introducing herself and asked for V5's introduction. The interviewer explained what she meant by ICT in case she uses the word often.

- **Interviewer's Barriers**

Upon reflection the interviewer was cautious at the beginning for two reasons. Firstly, the differences in background, class, culture and probably differences in ways of thinking (Mullings, 1999). Because of this the interviewer aimed not to focus on such things, but rather show empathy to the interviewee's stories (Thompson, 2000) and appreciate the motives and causes that are beneath their actions and the issues they encounter with ICT use in the classroom. Secondly, the interviewer was worried about her African accent which might be misinterpreted or distort the flow of conversation. To solve this the interviewer reminded herself to speak slowly and more clearly than usual.

Furthermore, the interviewer recorded that there was an opportunity to learn as the interviewee had a wealth of experience and did not give the interviewer any chance to follow the designed conversational question guide which was optional (Thompson, 2000). The interviewer quickly recognised this limitation and used it to her advantage by not cutting the interviewee short or diverting her train of thought, instead she allowed V5 to feel very

comfortable to divulge the diversity of issues in using ICT in the classroom which are meaningful to her as a Teacher. The interviewer began to overtly express interest in V5 because of what V4 had said concerning her.

During the interview process the interviewer responded with “waooh” which meant “that’s interesting” and “hmmm” which meant “go-on” and sometimes affirming what V5 said by a positive nodding of the head and humming “That’s true”. In a few instances both the interviewer and the interviewee engaged in positive assessment to statements of opinions by demonstrating high involvement and harmony (Fairclough, 1995; Merriam et al., 2001; Ryan, 2001).

Close to three minutes into the interview, the interviewer departed from the interview guide by showing empathy in response to V5. For example:

"That's true, I am guilty. I have never seen it from this part, honestly"

V5’s voice on the recording became more convincing, suggesting a change in the interaction level and a deeper connection into the interview process. V5 went on displaying her wealth of experience and extensive knowledge on the use of ICT with children of Early Years. V5 assumed the position of expert, with the interviewer taking the role of learner and affirming V5’s statements. For example: *"I am speechless, I don't feel it's an interview. I feel this is true, a warning. It's so true"*. This could be because of some shared experiences which they both valued.

Based on this, V5 bonded more with the interviewer and opened up further issues meaningful to her.

"With this conversation, I'm going back home to start reading stories to my... I have a son he's 16 months, I will start reading stories to him, teach him how to hold a pencil, even if he writes rubbish".

These responses seemed to prompt V5 and gave her another opportunity to demonstrate her expertise and for both the interviewer and the interviewee to connect as women (Finch, 1984; Oakley, 1981).

The conversation opened up even more when the interviewer agreed to V5’s words and stated her personal reflection on it. For example, *"Personally, these are things I do"*. Moreover, the interviewer felt these comments showed similarities and shared interests which resulted into deeper discussions.

This response seemed to prompt V5 to offer advice based on her experience. For example:

"I think if you start to teach him like I did, and you didn't have all these kinds of stuff then you are used to being more creative".

Then V5 went further to give academic experiences meaningful to her. The interview evolved into a conversation with stories and affirmations about the diversity of issues Teachers face using ICT in teaching. The interviewer demonstrated emotional involvement by saying 'hmmm', 'waooh', assuring non-verbal behaviours such as maintaining eye contact, facial expressions and nodding positively, For example:

"I really don't want you to stop. These are the bitter truths and it opens up things overlooked or ignored..."

At this point V5 crossed the barrier of the official story. V5 seemed to trust the interviewer enough to step out of her position and talk about her family and other confidential experiences.

After the interviewer recognised that V5 was discussing her own feelings on security by giving practical examples which included conversations about her family. For example, V5 mentioned her fears about underage children playing uncensored games designed for adults and the uncontrolled security online. She elaborated further that with her son aged 10, going on 11, she has blocked all access to the internet at home, but she knows his friends would be playing online with people that are a lot older. For example:

"It's frightening, the amount of them that can only operate technology at the age of three, and we've got children who are playing games like call of duty, 'Black Ops' for 18 year olds at the age of 3. So, they can operate a PlayStation remote but they can't hold a pencil. And again, it's back to that non-engagement because they are sat there and they are playing the game, they don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that my son is 10 - 11 and everything in my house is blocked (internet wise) but I know his friends are playing with people that are a lot older online."

V5 continued to expound on the hindrances ICT brings and how it affects children and Teachers with little prompting.

A summary of the paragraphs described by V5 are given below:

A problem with ICT is being too reliant on using it. Using technology makes some people over-reliant and lazy. Also, it can be unreliable and when technical or internet issues occur, one always has to have a backup plan.

“It takes away the creative side. It also affects children negatively because many children become passive, no interaction and engagement with others and delays in speech and language. Sometimes technology hampers the ability of children to engage, interact and take risks because the element of playing outdoors, with other children etc. is missing. Sometimes technology removes the experience element from users. Everything is online and sometimes you don't experience the real thing. Technology removes the element of interaction between people. People use their phones or gadgets for everything and people lose lots of skills as they use technology more and more”.

“Technology also reduces children's ability for things like handwriting and using pencils and paper. It causes disengagement. ICT has to be used in collaboration with traditional methods to get the pros of both methods. Over-reliance on technology is a big issue. People feel like the world has ended when they don't have access to their gadgets or internet connection”.

“Technology has the risk of lack or reduction in parental content control. Technology is restricted and doesn't help motor skills of children. Technology reduces the ability or desire of people to take risks in life, especially young children. They are unable to take risks. ICT is good for learning but it has to be used with other form of learning”.

The interviewer moved the interview to a close by returning to the final question on the interview guide, ‘Do you have any additional thing to say?’ At this point V5 gave the interviewer an open access invitation: *‘Honestly, if you ever want to come in to see, I can show you our baseline assessment and all that kind of thing.’*

After the recording ended, the interviewer thanked V5 for the interview. V5 mentioned again her willingness for a further interview and gave her email address. The interviewer mentioned that V5 has really opened up issues beyond what was expected. For example: *“Honestly, without asking much, you have covered everything I would have.... you have gone broader, and I didn't want you to stop.”*

Although the interviewer rarely followed the interview guide because there was already a conversational flow, she inserted her own probe and follow-up questions. The interviewer sounded relaxed and V5 was very involved. V5's responses became longer and more conversational incorporating examples and stories.

The next section describes the lessons learnt based on V5's interview.

4.7.4.2 Interview Lessons on V5

This section discusses lessons learnt from V5's interview. There is need to note that V5 was intentionally picked because it was the only interview that had a different style compared to the other nineteen interviews. The lessons are enumerated below:

1. Existing research recognises the need for a degree of humility by the Researcher, the ability to be a recipient of the participant's wisdom without the Researcher competing to demonstrate her own (Thompson, 2000). In support of this V5 assumed the position of expert while the interviewer took the role of a learner.
2. Previous studies have suggested that the interview should be interactive in nature by creating the appropriate rapport which involves demonstrating interest and respect, showing understanding and empathy and to be able to respond flexibly whilst assuring them of confidentiality. In light of this, both V5 and the interviewer viewed the interview as a collaborative process in which both the interviewer and interviewee co-construct meaning (Thompson, 2000; Ryen, 2001; Merriam et al., 2015).
3. The in-depth interview proved its depth of focus on V5 as an individual. This gave an opportunity for detailed investigation of V5's personal perspective and an opportunity for an in-depth understanding of the personal context of the research study and very detailed subject coverage. Also it was an avenue to collect data where it is important to relate different issues to individual personal circumstances.
4. The interviewer expressed an opinion in relation to a comment made by V5. Viewed from conversational analysis perspective, this can be described as positive affirmation to an opinion stated (Fairclough, 1995). The interviewer felt this opened up shared interest which further opened up deeper discussions. The personal relationship developed through sharing increased trust. The interviewer aimed to put V5 at ease and to create a climate of trust. To achieve this it involved demonstrating a real desire to understand from the perspective of V5 (Thompson, 2000).

5. This interview with V5, which is different from the others, gave the Researcher an opportunity to perceive and judge by using practical wisdom in order to be ethically proficient, which is a great skill to be developed by qualitative Researchers rather than mechanically following universal rules (Brinkman & Kvale, 2015).
6. The interviewer and interviewee's (V5) connection as women supports feminist interviewing which attempts to be more reflexive and interactive. The feminist interviewing emphasised reciprocity, as perceived in this interview with V5, and showed collaboration as the Researcher felt free to step outside the formal role of the neutral asker of questions, expressing their own feelings and giving information about themselves. This specific interview has emphasised the value of women interviewing women (Finch, 1984; Oakley, 1981). There is no intimacy without reciprocity.
7. The in-depth interview also permitted the Researcher to explore fully all other factors that construct V5's answers such as reasons, feelings, opinions and beliefs. This has helped greatly with the explanatory evidence which is an important factor in qualitative research.

4.7.4.3 Effect of Researcher's Role during the Interview Process

The Researcher is aware and explores the influence of shared experiences with participants during the interview process. This section discusses briefly the Researcher's experience in relation to the participants and how it was addressed.

In light of the various benefits and challenges of the Researcher's experience in relation to those being researched (Dwyer & Buckle, 2009) the Researcher found some similarities with those earlier discussed. The Researcher was open and portrayed a deep interest in the participant's experience mainly because of shared experience, as a Researcher on ICT and as a mother of two toddlers. As a qualitative Researcher, Dwyer & Buckle (2009) advised an honest discussion of Researcher's interaction with participants. In line with this the Researcher shared experiences and perspectives with V5 and at other times the Researcher did not. A full description of the Researcher's relation with V5 participant's experience is discussed in section 4.7.4.1. The Researcher is fully committed to accurately and adequately represent the participant's experiences.

This section has discussed the interview process and the various stages involved. It has shown the richness acquired by using V5 as an example and has reflected on the Researcher's role during the interview process.

The next section explains the approach used to analyse the data derived from the richness of the interview process as earlier discussed in section 4.7.

4.8 Approach to Analysis

This section aims to justify the approach used in analysing the data collated via the in-depth interviews conducted with the twenty Primary School Teachers. It is necessary that the right data analysis method is used, one that focuses on ‘everyday’ activities of the system users to help collate the data into meaningful understandings without losing the meanings of the participants. The use of Dooyeweerd aspectual analysis was employed as it best suits this study to understand and make meaning out of the lives and experiences of each participants.

4.8.1 Background Overview

The substantial amount of data derived from interviews is undeniable and mostly a challenge to reduce into meaningful conclusions (Easterby-Smith et al., 2012). Krauss (2005) emphasised that the most fundamental aspect of the human social setting is the weight of meanings. Therefore, there is a need of an appropriate method to help analyse the data collated into meaningful precise terms without losing the meaning of these issues as discussed by the participants.

NVivo software was considered by the Researcher to help with analysis but was not suitable due to weaknesses identified by Bryman (2015) such as the lack of opportunity to breakdown systematically the data directly. The Researcher needed to get close to the data collated, that is, ‘get her hands dirty’ but the use of NVivo might hinder this and not give the Researcher the opportunity to get familiar with the data. On this note, the Researcher carefully transcribed the audio recorded interview sessions in order to meet the needs of reliable analysis and not handing this task over to an audio-typist was the same motive applied to manually working on the data analysis to prove its reliability. Considering the problems that could occur with technology it was also a hidden factor in the Researcher’s choice. Also, most importantly to the Researcher, the use of NVivo might hide the motive of these down-to-earth issues.

This study satisfies the need for low-inference descriptor as identified (Silverman, 2000) by recording all the face-face interviews, by carefully transcribing the recorded files and by presenting long extracts of data including the question that provoked any answer in this study.

Insight into the analysis methods is discussed further. Dooyeweerd aspectual analysis was considered the best method because it provides philosophical grounds for understanding

diversity and its help to avoid overlooking important factors (Basden, 2008), this will further be discussed. Other forms of analysis, apart from aspectual analysis, that also uses the notion of aspects such as Multi-Aspectual Knowledge Elicitation and Multi-Aspectual Interview Technique are considered. Other forms of analysis such as thematic and content analysis and Critical Incident Technique (CIT) were considered but they were not the most suitable. This will be discussed further in section 4.8.2.

In view of the research needs, listed below are what needs to be achieved in this analysis section:

- To find out what aspects are highly focused on and those overlooked or ignored.
- To see what the down-to-earth issues are rather than how many there are.
- To find out the variety of issues focused on.

A background overview into the analysis method has been discussed. The following subsections discuss in detail the various relevant analysis methods/tools that can be used on the data gathered in this study.

4.8.2 Analysis Methods

There are various analysis methods that can be used to fulfil the research needs. Below are brief discussions on the suitability of Critical Incident Technique (CIT), thematic analysis, content analysis method, Multi-Aspectual Knowledge Elicitation (MAKE) and Multi-Aspectual Interview Technique (MAIT) and Dooyeweerd aspectual analysis method.

4.8.2.1 Analysis Tools

This section briefly describes CIT, its relation, limitation and usefulness to the research needs. It further discusses other possible analysis methods such as thematic analysis and content analysis.

CIT is a practical investigative tool rather than a theoretically based method. It involves 5-steps; establish general aim, establish plans and specifications, collect data, analyse the data and interpret and report the data.

Flanagan (1954) described CIT as a set of procedures for collecting direct observations of human behaviour, but a retrospective account of CIT such as administering CIT questionnaires or by interviews was added as a means of collecting information (Norman et al., 1992, cited in Sharoff, 2008).

Although the Researcher did not have CIT in mind during the interview process, there are similarities with the Researcher's guide questions. This is not surprising as CIT is 'grounded... in common sense procedures' (Christie & Young, 1995, cited in Hughes et al., 2007).

Critiques of CIT are based on its analysis, especially the categorisation aspect which is an important area of this research study. CIT limits the human experience into binary descriptions such as effective/not effective, successful/not successful (Hughes et al., 2007), however, these are not adequate in dealing with everyday life issues.

A limitation of CIT is the difficulty in separating the story of one incident when there is a choice of multiple stories or experiences within the same event (Urquhart et al., 2003, cited in Sharoff, 2008), hence CIT cannot, by itself, handle diversity which is one of the needs of this research. However, in this study the issues were separated by finding out the aspects that made each issue meaningful. This produced an aspectual profile that showed a wide diversity of meaningful issues. This will be elaborated upon further in chapter 6.2

Also in CIT there is a restriction in that any form of subtle changes in the wording of the critical incident question itself might produce differences in the participants' responses. CIT gives the impression that it has been applied to high-level issues directed to a large amount of people (50 and above). However, this study is focused on DTE issues among twenty staff, hence CIT was not suitable for this study.

This also shows its limitation in handling depth, which is another key need in this research. Dooyeweerd's aspect is able to reveal deep issues because everything is treated as meaningful from what people say.

However, there might be possibilities for CIT to handle values, in that it can lead participants from the 'specific to the general in understanding their beliefs' (Cranton, 1994 pp.189, cited in Sharoff, 2008 pp. 306). The way it handles values is the support CIT provides, by letting people talk about their actions in their own lives, and these are an undeniable source of data representing the participants' realities, thereby providing insight into the participants' assumptive worlds in expressions that are distinct for each individual (Brookfield, 1990a, cited in Sharoff, 2008).

In general usage critical incident often implies a major crisis or turning point such as the 9/11 terrorist attacks or the Boxing Day tsunami. According to Flanagan (1954, pp. 338) 'an

incident is critical if it makes a “significant” contribution, either positively or negatively, to the general aim of the activity and it should be capable of being critiqued or analysed’.

However, this research study did not specify any critical incident, neither did it restrict participants only to factual reports, but gave participants the opportunity to give interpretations, that is, how an issue is meaningful to them. For example, a Teacher complained about the font size and small screen of her desktop and iPad. The issue was meaningful to her because the Teacher mentioned that it was making her blind.

The data collection strategy used in this study varied from standard CIT in two ways. Firstly, the interviews were more comprehensive than many CIT studies. Rather than focus purely on the behavioural aspect this study was based on a holistic understanding of Dooyeweerd aspects, which integrate feelings, achievements, communication, social interactions, frugality, ethics and beliefs, to mention a few. The use of aspect helped to give an enriching picture of the issues Teachers have with ICT use.

Therefore, CIT is not suitable to help reveal the diversity of issues or show aspects that are highly focused and/or overlooked, neither is it suitable to reveal DTE issues.

Another relevant analysis method is thematic analysis. According to Guest et. al., (2012) thematic analysis can be described as a method used for identifying, analysing and reporting patterns or themes within data. Thematic analysis minimally organises and describes the data set in rich detail. It moves beyond counting explicit words or phrases and focuses more on identifying and describing both implicit and explicit ideas within the data. For this research study thematic analysis will not be used, because of its limited interpretative power beyond mere descriptions if it is not used within an existing theoretical framework that anchors the analytic claims made (Braun et al., 2008).

In addition, a relevant analysis method to this study is the content analysis method. This can be used to identify patterns across qualitative data and tends to focus at a more micro level and often provides frequency counts (Wilkinson, 2000, cited in Braun et al., 2008), by allowing a systematic quantitative description of an initial qualitative data (Ryan et al., 2000; Kvale et al., 2009). The content analysis will not be used because it is not as detailed in handling complexities, which is a limitation on fulfilling the research needs set out in this study.

This sub-section has described some analysis tools that can be used in this study, however, due to their limitations they are not viewed as appropriate in helping achieving the research

needs. The following sub-section will focus on some other useful analysis methods and their applicability.

4.8.2.2 Other Analysis Methods

This section focuses on other forms of Dooyeweerd's analysis methods. It examines how they are relevant in fulfilling the research needs set out in this study and their limitations, if any.

There are other kinds of analysis methods derived through Dooyeweerd's philosophy which were considered. The Researcher's interpretation differs after reviewing MAKE (Winfield, 2000) from the meaning contained in Dooyeweerd's aspects. A focus on the MAKE interview process, the interviewees are introduced to the aspects and are asked to comment on their expertise in relation to the aspectual framework (Winfield, 2000). However, the Researcher finds MAKE as a relevant alternative, although it is slightly different from the analysis steps used in this research. The Researcher preferred not to make use of aspectual preconceived questions to guide the interview process which might alter the understanding of DTE issues meaningful to the Teachers. Other forms of Dooyeweerd's analysis method include MAIT by Kane (2006). The use of MAIT during the interview process is when the Researcher gives examples of an aspect in the form of keywords or kernel meanings which are associated with the question. For example, "The social aspect includes the keywords, social interaction, role in society and relationships. Therefore, when I ask you about your 'role in society' the answer will link to this aspect" (Kane, 2006. pp 112-113). A focus on MAIT, "provides an option between fully structured questioning and unstructured discourse where there are no reference points" (Kane, 2006. pp 112-113). The difference between MAKE and MAIT is that MAKE investigates the knowledge that people already have developed, while MAIT investigates people's aspirations, hopes and opinions. In a precise form Basden (2012) differentiates these two analysis approaches as MAKE applies aspect to the past; MAIT applies aspect to the future.

This section has discussed five analysis methods/tools. Each has shown some possibilities to be used in this study, but such ways of understanding everyday issues focus on a narrow range of aspects and other restrictions that hinder the understanding of Teachers' everyday issues. In the following section, the Researcher will argue the possibility of Dooyeweerd's aspectual analysis to fulfil the research needs of this study.

4.8.3 Explanation and Justification on Dooyeweerd Analysis

The earlier sub-sections have discussed various analysis methods/tools but they were considered not suitable to help understand the everyday issues desired in this study. This section proposes the use of Dooyeweerd aspectual analysis as one that focuses on everyday life of IS use and is able to help achieve the research needs.

Krauss (2005) emphasised that the most fundamental aspect of the human social setting is the weight of meanings. Social analysts refer to meanings as culture, social reality, norms, understanding, beliefs, perspectives and worldviews which do more than describe behaviour; they define and justify (Lofland & Lofland, 1996, cited in Krauss, 2005). Attribution of meaning is important for humans as we make meaning out of our lives and experiences. Hence, as expressed by Krauss (2005), meaning is the intrinsic motivation behind thoughts, interpretations and actions.

Dooyeweerd claimed that things are only meaningful in terms of aspects which provide philosophical grounds for understanding diversity and also helps to avoid overlooking important factors (Basden, 2008). Therefore, in everyday experience, every aspect is important; none can be dismissed as less meaningful, less interesting or deserving less of our attention (Basden, 2008). It is all too easy to overlook aspects that we take for granted, so we need an analytical technique that will bring them to light. Dooyeweerd's suite of aspects is a proven way to interpret participants' issues on ICT use in the classroom.

Dooyeweerd's suite of aspects is a good conceptual tool for analysts because they offer a way to identify and separate out meaningful issues, which is philosophically grounded and does not undermine their coherence in everyday experience (Basden, 2008). Using aspects we can reveal tacit knowledge. For example, Eriksson (2001) used Dooyeweerd's aspects to disclose reasons for unexpected failure of a new ICT system, while Winfield (2000) used aspects to probe deep expertise.

As required in this study, there is need for coding of the text's meaning into categories in order to quantify how specific categories are addressed in the interview transcripts, and their frequencies can be compared and measured. In this study the analysis concepts used by the Researcher is described as follows:

1st order terms - captures the precise words of the participants (Gioia et al., 2012)

2nd order themes- themes that represent the meaning of the issues in relation to the words used by the participants (Gioia et al., 2012)

Sub-issues- issues not verbalised by participants but created by the Researcher to give meaning to the wide range of data collated under a theme (Krauss, 2005).

A detailed description is given in chapter five. In analysis some aspects will turn out to be more important than others in ways revealed in the analysis of the transcribed interview data conducted for this study, and those of lesser importance might then be given more attention. It is usually advisable to consider each and every aspect of a system. Therefore, understanding them offers us a framework by which to understand and tackle diversity and complexity (Basden, 2008).

Another reason for choosing this form of analysis is the framework it offers which helps to understand and tackle complexity. Aspectual analysis in general relies on aspects being the ways things may be meaningful. Aspectual analysis' focus on the general is related to theoretical thought and tries to answer the question 'How does something function?' (Basden, 2008; Ahmad and Basden, 2013). As interpreted by Basden (2008), aspectual meaning is grasped by intuition. As a result categories based on aspects tend to be easily understood and they inform rather than mislead in aspectual analysis. One type of aspectual analysis is to interpret an extant text (Ahmad & Basden, 2013; Basden, 2008). The main aspectual meaning of each phrase is identified and then tabulated.

Chapter 5 will provide a detailed description of the actual analysis method because the DTE methodology is one of the findings of this research.

The next section discusses the Researcher's role during the analysis process.

4.8.4 Effect of the Researcher's Role during the Analysis Process

As discussed earlier in chapter one, the Researcher occupies the position of both an insider and outsider in relation to the participants' experience. This section briefly discusses the Researcher's experience in relation to the participants during the analysis process. It establishes how the Researcher's bias and preconceptions might influence the understanding being developed.

Dwyer & Buckle (2009) discuss the various problems during data analysis of the Researcher having experience of those being researched, and the Researcher not having such experience

as discussed in section 4.5. In this study the Researcher being more an outsider, that is has no experience as a Primary School Teacher, learnt from the participants' experience and is able to represent these data adequately to help others understand and gain insight into the various issues Primary Teachers face in ICT use.

In light of the problem of the Researcher overemphasising shared factors, as explained in section 4.5 during the analysis process, the Researcher identified similarities across participants which was used as criteria for handling and selecting meaningful shared issues by the participants. This was used in addressing the conflict of interest that may arise in placing emphasis on meaningful information from the participants.

In addition a particular aspect of the conceptual framework which is, Dooyeweerd's notion of irreducible aspects, used in this study provides philosophical grounds for understanding diversity and its help to avoid overlooking important factors. It is also very useful in the analysis of data where aspects are ways in which activity is meaningful (Basden, 2008).

However, a benefit of being an insider during the analysis process is that the Researcher is familiar with the terminologies and abbreviations used. Other kinds of benefits the Researcher sees as similar during the analysis process is the conscious representation of the participants' experiences which is grouped as 2nd order themes whilst ensuring individual issues are not lost, but are portrayed in a meaningful way based on the aspectual analysis profile. This is exemplified in section 7.3.

This section has justified the use of Dooyeweerd's aspectual analysis as the appropriate analysis method that best suits the fulfilment of the research needs. It further discusses the Researcher's experience in relation to the participants during the analysis process. The following sections discuss the Researcher's justification for reaching the data saturation point and the research standards adhered to in this study.

4.9 Data Saturation

This section discusses the Researcher's justification for reaching the data saturation point of this research. It shows clearly how the Researcher achieved saturation with clear evidence.

The effect of the Researcher's role is important in determining the challenge of data saturation. The Researcher cannot make a claim of having no bias in the data collection process, due to this, there are chances of the Researcher not recognising when the data is

indeed saturated. This study sees the Researcher not as a detached observer, but as the observer. That is, the Researcher is involved in the same world as the ICT users.

As mentioned earlier (section 4.7.4.3), the Researcher is aware and explores the influence of shared experiences with participants during the interview process. It is important to remember the presence of both the participant and the Researcher's bias in social research (Fields & Kafai, 2009). Therefore, the Researcher operates between multiple worlds. These include the cultural world of the participants and the Researcher's world perspective during the research process (Denzin, 2009). However, as it relates to this study the effect of the Researcher's role during the interview and analysis process has been largely discussed in chapter four.

During the interview process the Researcher noticed the issues Teachers were discussing were becoming repetitive. Also for each participant during the interviews the Researcher made it a point of duty to ask repeatedly if they wanted to say more or if they had any other things to say. This process produced further rich data and once all these were captured, the Researcher would ask further if they had other things to say. The participants mostly replied 'no' because they had divulged the issues meaningful to them. When this process has been adequately repeated with all twenty volunteered participants a full and rich data had been captured. Hence, sampling more data will not lead to more information related to the research question.

In addition, at the beginning of the qualitative analysis process the Researcher continuously made new themes (2nd order themes) from the raw data (1st order terms) collated during the interviews (see; section 5.3). At some point the Researcher found that almost all the 1st order terms, that is, the direct phrases of meaningful issues participants gave, could be fitted into the 2nd order themes and no additional data could be found to develop new themes. This gave the Researcher confidence that the themes developed were saturated.

4.10 Research Standards (validity and reliability)

In establishing research standards in qualitative study the Researcher enhanced credibility by discussing the research, its methodology and analysis process with senior colleagues and supervisor within the university (Bickerstaff et al., 2015).

In establishing dependability which illustrates that the research process is systematic, rigorous and consistent (Riege, 2003), the Researcher ensured that all necessary agreements were made with the Ethics Committee of the University of Salford and the participating Primary School

Teachers. The Researcher also recorded all interviews sessions. The interpretation of the aspectual analysis done was verified by the Researcher's supervisor and senior colleagues.

In establishing conformability, which is to check if the interpretation of data is done in a logical and conformed manner (Riege, 2003), the Researcher gave the participants opportunities to discuss and also informed the respondents about their rights and responsibilities. The Researcher also sent introductory emails to respondents outlining the aims and objectives of the study.

In addition the Researcher showed the application of the 7 principles used as criteria for judging interpretive research in IS in this study. An elaboration of this is reviewed in the critique of the research in section 9.4.

4.10.1 Ethical Consideration

The Researcher needs to make sure the research study is ethical in nature, since every study with humans requires prior approval from an Institutional Review Board (IRB) (Yin, 2015).

In consideration of The University of Salford rules and regulations, this research falls under the scope of the Research Governance and Ethics Committee (RGEC). Hence the Researcher applied for ethical approval (see Ethical Approval Appendix I) prior to conducting the field study.

The Researcher collated the various Primary Schools in Salford, postal addresses and email of Head Teachers. The head of each school was contacted by email and letter asking for permission to interview their staff. The Researcher developed a consent form, participant information sheet and consent withdrawal form. All participants were required to sign the consent form (see Consent form Appendix II).

This form acted as proof that the participant has given his/her consent to the research and to the information he/she provides through his/her participation in the research project. In particular, the Researcher provided the participant the following information; what the project is about, how the data will be used and where to terminate their participation. All this information and some further issues were explained in the Participant Information Sheet (see Participant Information Sheet Appendix II).

The participants were informed that they would be completely anonymous in the write-up and as a result their personal responses were guaranteed complete confidentiality. In order to protect data provided by respondents, participants responses were confidential. No individuals

would be identified from any collated data, written report of the research or any publications arising from it. Data held on computers, phones and 'hard' copy files were securely guarded. Access would be only available to the Researcher and supervisor. Any information including sensitive data provided remains confidential.

4.11 Chapter Summary

This chapter has effectively discussed the research design of this study. The philosophy underlying this study is the interpretivist paradigm. The research approach, research strategy and methods were formulated with the focus on achieving the research aim, objectives and needs of the study. Hence the research approach was inductive, the research strategy was qualitative research and the data collection technique was face-to-face in-depth interviews. The total number of interviewees was twenty Teachers from three selected primary schools based in Salford, Manchester. It also examined the various stages of the interview process and discussed some interview lessons as described in the literature. It justifies how Dooyeweerd's aspectual analysis is considered the most suitable method of data analysis. A justification of how the Researcher's experience has influenced the study during the interview and analysis process was discussed. Ethical standards were adhered to in this study.

CHAPTER FIVE: ANALYSIS PROCESS

5.1 Description of Analysis

This chapter gives a detailed description of the aspectual analysis methodology. A background description has been explained in section 4.8. The aim of this chapter is to develop a rich understanding of Teachers' perception of DTE issues of ICT use in the classroom from the data collated in chapter four. This chapter gives an explicit description of the steps taken in the analysis process. The interview transcripts collated were analysed with the use of Dooyeweerd's aspects. This analysis process aims to find aspects that are highly focused on and those overlooked or ignored. Its aim is to obtain a rich and detailed data that will help achieve the research needs of diversity, depth and values.

5.2 Data Analysis Methodology by Dooyeweerdian Framework

This section discusses the analysis process of the selected data from the users. It gives a detailed descriptive sequence of the data analysis process. The rationale for data analysis is to fulfil the research needs by revealing the diversity of DTE issues, uncovering the deep issues and to reveal the values of DTE issues, hence showing the usefulness of Dooyeweerd's philosophy.

The usefulness of qualitative analysis for this study, as earlier explained in section 4.3.1, helps the Researcher to obtain the meaning in the ICT issues participants discussed. As stated in section 4.2.1, Klein and Myers (1999) gave the Researcher an understanding that Primary Teachers' relationship with technology in the various primary schools is constantly changing and should be treated as a unique historical occurrence. In view of this, the Researcher's approach to data analysis is different from positivistic, survey studies but one that is aimed to obtain a rich and detailed participants' experience (Rakic and Chambers, 2011) as this will help to achieve a rich understanding of Teachers' perceptions of DTE issues of ICT use in the classroom.

This section gives an explicit description of the steps taken in the analysis process. The interview transcripts were analysed with the use of Dooyeweerd's aspects. The analysis process made use of qualitative analysis and counting/ numerical analysis. A simple counting technique can provide a way to survey the whole collection of data to give the reader a sense of the data as a whole (Silverman, 2000). A broader perspective has been adopted by Hannah and Lautsch, (2011), who discussed counting in qualitative research by exploring the various

types of counting, such as autonomous, supplementary, corroborative and credentialing counting.

The corroborative and credentialing counting fits in expressing the quantitative analysis in this study. The corroborative counting involves a combination of the qualitative and quantitative method in that counting is used to verify the findings in the qualitative analysis (Hannah and Lautsch, 2011). Another way this study finds counting helpful is the credentialing counting. The purpose of the credentialing counting is the demonstration it portrays to the reader to have confidence in the qualitative analysis findings (Hannah and Lautsch, 2011). Further justification for counting will be explained in a subsequent section.

The following sub-section discusses in details the use of aspectual analysis in this study.

5.2.1 Aspectual Analysis

Basden (2008) explained aspectual analysis as one that relies on aspects where the situation of use may be meaningful and involves noting the ways in which each aspect expresses itself in the situation being analysed. A good example is the use of computers that involves us doing things that results in impacts, and the use of aspectual analysis helps recognise the aspects that enable both functioning and the repercussions of that functioning. This mode of analysis helps to reveal the most and least emphasised aspects that is aspects that are overlooked and emphasised, often seeking balance. The patterns of the aspectual profiles, rather than the numbers, are mostly focused on during analysis.

The aspectual analysis spread can indicate to what extent issues in cohort, via the set of patterns, are sensitive to the diversity of issues found in the literature. This study focuses on patterns as opposed to focusing on certain aspects which is the usual approach. It reveals the ICT issues that are mostly stressed.

The use of aspectual analysis shows the aspects Primary Teachers found meaningful and this can be used in practice, for example, in staff training. It helps reveal the profile of meaningfulness that is the aspects on which issues are more meaningful than other issues. More on the issues Primary Teachers find meaningful is discussed in section 7.4.

Aspectual profile can provide us with useful indications, especially whether any aspects are either over-emphasised or under-emphasised. Aspectual profile can be drawn in bar charts for easy visual readings of patterns. This way one can easily see the aspects that are taken for granted, overlooked or belittled. The Researcher found it helpful to draw up the aspectual

profile for each respondent. The usual first step to this is to develop a table that has the number of times each aspect revealed itself. Thereafter, developing a bar chart from this table reveals the degree to which each respondent finds each aspect important.

However, the ability of qualitative data analysis to produce meaning makes it powerful in helping to understand seemingly mundane experiences (Krauss, 2005). The qualitative analysis will focus on various cohorts using the demographic profile. According to Krauss (2005), qualitative data analysis specifically aims at assisting the progress of the meaning-making process which is a highly intuitive activity. The qualitative analysis part of this study will use only the data from the Extra Information Volunteered (EIV) to show the kinds of DTE issues Teachers find important. The focus on EIV is to reduce research bias (between what the Teachers wanted to talk about from what the interviewer wanted to talk about) and be able to lay emphasis on the DTE issues meaningful to participants. Other EIV justifications will be discussed further in section 5.2.1.3.1.

The mechanics involved to produce the following aspectual profiles (bar charts) is that the Extra Information Volunteered (EIV) data were analysed into aspects. This was done by understanding not only the participants' words but the meaning of those words as used and identifying the aspects that make each excerpt meaningful. This sort of aspectual data analysis provides a method for categorising the everyday life issues in a meaningful way.

In line with this study, the first analysis process aims to give an interpretation of meaning by assignment of aspects; this demonstrates 'diversity' of the DTE issues of what Teachers hold as meaningful. It also highlights 'values' by revealing the kinds of aspectual issues Teachers' value.

The second analysis process is using numerical data to help with the discussion, but not to actually use the data to change the phenomenon. In this study the Researcher calls the use of the numerical data as the quantitative analysis which involves counting. For this study another term such as numerical analysis can also represent the quantitative analysis process. This counting method gives the overview of the 'diversity', that is the 'shape' or spread of the diversity. It also allows the opportunity to begin pattern comparisons between cohorts, such as users versus literature (this is used as a pilot study and discussed in Appendix XII) and between schools, years and genders. It also gives the opportunity to begin to dig deeper by posing questions of why schools or years differ on 'X' aspect. This shows how it deals with 'depth'.

The usefulness of numerical analysis for this research will help reveal the most and least emphasised aspects as it relates to the research study. The pattern used is to count up the number of times each aspect appeared in the various columns (questions, answers and EIV) that is to provide the frequency of Teachers' issues on each aspect. Further discussions are given in Section 8.1.3.2.

The third part of the analysis process is in two parts and this helps with the needs of diversity, depth and values. The first part is a comparison of issues Teachers find meaningful with what the literature discusses, as similar bars of aspects do not always connote the same set of issues. The second part will focus on the qualitative analysis of various cohorts using the demographic profile. This will involve discussions about genders, years and schools. It will open up the diversity of issues in each aspect and make a comparison with discussions in the literature. Brief insights into each analysis process are further discussed in chapter seven.

Direct answers to the questions asked were separated from EIV. In some of the subsequent analyses only the EIV was used. This helps to reduce bias introduced by the interviewer's questioning. Dooyeweerd's emphasis on 'meaning' motivated the Researcher to separate out what is meaningful to the Researcher and to the participants. The mode of analysis is worked out in the context of Dooyeweerd and fully described in section 5.2.

This analysis process will provide a demonstration of how aspects can help reveal the DTE issues (diversity, depth and values), and thus how aspects can generate the findings on the research needs that Teachers find meaningful in ICT use in the classroom. This research finding about DTE issues are for three primary schools in Salford to understand how Dooyeweerd's aspects have helped and show how the method can be extended to other studies.

The following sections give a detailed breakdown description of the different stages of the analysis process. However, Table 5.1 is an overview description of the analysis stages.

Table 5:1 Overview of Analysis Stages

Stages	Actions
Stage One	Transcribing the information from the interview, separating out the direct answers from useful EIV
Stage Two	Reviewing stage one and identifying issues occurring within each major separation (direct answers and EIV), colour code/italic font style of issues
Stage Three	Reviewing stage two and separate them out into table
Stage Four	Assigning of aspects on issues
Stage Five	Update the tabular results in stage 3 to include the functioning aspect and the reason for the chosen aspect
Stage Six	Produce the aspectual result by collating the phrases of issues on each aspect in order to count up frequency
Stage Seven	Quantitative/numeric analysis: Counting up frequency of occurrence of issues in each aspect in both direct answers and EIV, create the aspectual profiles in order to show aspects that are downplayed or emphasised
Stage Eight	Qualitative analysis: Opening up cohort aspectual profile produced in Stage 7

5.2.1.1 Stage One

During the data analysis stage the recordings from the interviews were transcribed using MS Word. The Researcher first analysed one selected interview. Each transcript was read line by line and initial chunks of data were colour-coded to identify the direct answers to the questions asked and EIV. The Extra Information Volunteered (EIV) emphasises the separation from direct answers and is based on intuitive ideas that may be helpful to other Researchers. This will be discussed further in the next stage, section 5.2.1.3.1.

The rationale behind separating out direct answers from EIV is to reduce research bias and be able to lay emphasis on issues participants think are meaningful. Dooyeweerd's emphasis on 'meaning' motivated the Researcher to separate out what is meaningful to the Researcher and to the participants.

In this study rigor was maintained which is a necessary element, along with the strategies outlined by Lincoln and Guba (1985) which are credibility, transferability, dependability and confirmability. Field notes and reflective journals were read repeatedly to look for credibility.

Transcripts were provided to the supervisor for an independent review to show credibility and dependability. Agreement is then reached between the Researcher and the supervisor regarding the accuracy and relevance of the aspectual analysis.

Audit trails were created through detailed field notes and audio recordings, emails and memo/calendar notes and analysis coding to show confirmability.

5.2.1.2 Stage Two

In this analysis stage the first step is to explore how the Researcher can analyse the complexity of issues derived from the data without diminishing it or overlooking issues that are meaningful to the Teachers.

Stage one and stage two cannot really be separated from each other as it is a continuation and reviewing of stage one's aim, which is to separate out direct answers from EIV. The EIV are sometimes the point where they are reflecting on their life experiences. The criteria used to separate out EIV from answers will be discussed in section 5.2.1.3.1.

Once this distinction of separating direct answers from EIV was identified the transcripts were read line by line several times more to identify issues occurring within each major separation. These categories of data were triangulated by review of the initial field notes and comparisons with the reflective journals. This process produced a thick, rich description of what was happening with respect to the issues Teachers face when using ICT in the classroom. I found it helpful to colour code and add italic font style to these issues as this made it distinctive in the midst of the conversation.

For example:

The Researcher focused on analysing the second question on the interview with V6 as an example by extracting the questions, answers and EIV and highlighting the issues in red.

Question 2: Do you have problems using these resources?

Answers to the main question: Erm ('Erm is used to fill awkward space in conversation'), personally I don't, I wouldn't say I am an expert with computers but I know what I am doing. I

did train as a technician; I have computer qualifications so I know what I'm doing when I use a computer.

Meaningful Issues from the Extras: "...there are always problems with computers as they don't always do what you want; they decide to turn off at the wrong point. Generally, it's a good asset in the classroom. For myself with the teaching and getting the children interested- because we do more colourful presentations than just doing it on the white board with just a pen. It is just a tool, that extra thing to use in the classroom along with the other stuff to help the children get them interested..."

5.2.1.3 Stage Three

The next step is to interpret both first and second steps into a tabular form. The use of tables where appropriate, for example, in separating the questions, answers and EIV also in counting statements was employed. That is, answers to the main question and the EIV. One reason for this tabular form is that it helped to separate out clearly phrases of issues in answers from those in EIV. The second reason for this arrangement is for structure and to identify easily what is missing or overlooked. The third reason it is separated this way is for easy extraction into the table in order to produce a detailed and appropriate analysis. The fourth reason for a table arrangement is to help clarify thoughts and give easy access for the next stage which is the aspectual analysis. All collated reasons for tabulations and counting justifies the reason that Researchers are able to test and revise their generalisations by eliminating any doubts about the accuracy of their data (Silverman, 2000).

The issues identified in both columns are highlighted in red and in italic font style for easy access in analysis. An example of this tabular arrangement is illustrated below. See Table 5.2.

Table 5:2 Stage three- Tabular Arrangement I

Question	Answers	Extra Information Volunteered:
What kind of ICT equipment do you use?	I use a smart board all the time, <i>a lot of my resources I do</i> on the smart board and ask the children to see straight away on the computer and I use videos to show sounds/clips.	so <i>a lot of my teaching in getting the children that initial grab of their attention, is always done on the computer ...</i> it makes it easier, its quick, ...
Do you have problems using these resources	Erm ('Erm is used to fill awkward space in conversation'), personally I don't, I wouldn't say I am an expert with computers but I know what I am doing. I did train as a technician, I have computer qualifications so I know what I'm doing when I use a computer.	<i>there's always problems with computers as they don't always do what you want</i> , they decide to <i>turn off at the wrong point...</i> it's just a tool, that extra thing to use in the classroom along with the other stuff to help the children get them interested.

5.2.1.3.1 Criteria for Extra Information Volunteered

This sub-section discusses the criteria used to separate out Extra Information Volunteered (EIV) from the answers. This is developed in order to reduce the Researcher's bias by focusing on the DTE issues that are meaningful to the participants. The criteria were developed in order to identify the similarities that exist across the transcript, this is further discussed in section 5.4. The criteria helped the Researcher's thinking in identifying the meaningful issues coded as EIV. The justification of these criteria has been revised by similarities revealed in the transcript.

Criteria of EIV:

1. The point when respondents are reflecting on their life experiences.
2. When the respondents say what is on their mind (meaningful to them) before they remember to answer the question.
3. Even after they have answered a question and they go on further by saying 'personally' as an example.
4. When respondents go further with explanations (these explanation are unique to them, hence meaningful).

5. When it has an example, that is, when the respondent gives an example willingly (without being prompted).
6. When it is not a direct answer to the interview question, but within the research scope.
7. When the respondent feels what he or she is about to say is irrelevant or of minor importance to the interviewer but still has to say it (issues within scope of research).
8. When the Researcher asked a question, “Are there other things I have not mentioned that you want to talk about?” The response reveals what is meaningful to the respondent.

There was a need for criteria to help separate out EIV in the transcripts and none from the Researcher’s perspective was found from the literature. These criteria were developed by reviewing the transcripts and will be reflected upon in chapter 8.

How I came about the summarised points above can be described by using one of the criteria as an example.

When the respondents say what is on their mind (meaningful to them) before they remember to answer the question.

The point above can be illustrated by the discussion with one of the participants coded as V16, as an example.

For example (V16)

Question: Apart from the log on problems what are the other challenges you face?

Rather, the respondent discussed getting an understanding of the basics. Then she suddenly remembers she might not have answered the question asked by asking: “Did you ask what the problem was sorry?”

Each of these criteria on identifying EIV can be justified with patterns recognised in the data.

This section continues with the discussion on the next stage of data analysis.

5.2.1.4 Stage Four

The first three stages are usually a continuous process into the fourth stage. The Researcher went through the transcripts line by line to identify issues discussed. These issues were initially colour coded and worded in italic font style for ease of retrieval and were later

categorised into aspects. Some of these categories were submitted to the supervisor in order to prompt discussions and establish some aspectual findings.

For example:

Question 1: *What kind of ICT equipment do you use?*

Aspects from the answers:

1. *I use a smart board all the time, **a lot of my resources I do** on the smart board and ask the children to see straight away on the computer and I use videos to show sounds/clips.*

(a) *A lot of my resources I do = (formative): shaping, planning and designing.*

(*) *It is a formative aspect because the answer is emphasising what she does with her resources.*

Aspects from Extra Information Volunteered (EIV):

2. *so **a lot of my teaching in getting the children that initial grab of their attention is always done on the computer ...** it makes it easier, its quick, ..*

(a) *A lot of my teaching in getting the children that initial grab of their attention is always done on the computer = (analytic): clarity and logicity*

(*) *The EIV answer is to get the attention of the children which is the analytic aspect. This is an issue because it is always done on the computer*

Question 2: *Do you have problems using these resources?*

Aspects from the answers:

Erm personally I don't, I wouldn't say I am an expert with computers but I know what I am doing. I did train as a technician; I have computer qualifications so I know what I'm doing when I use a computer.

(a) *= analytic: clarity and logicity of instructions, of goals, of vision*

(*) *The EIV answer is the clarity of vision, i.e. "... but I know what I am doing..."*

Aspects from Extra Information Volunteered (EIV):

There's always problems with computers as they don't always do what you want, they decide to turn off at the wrong point...

(a)... *they don't always do what you want = juridical: what is due, responsibilities*

() not giving what's due*

In the examples above, numbers 1, 2, 3 and so forth in the extant text of the highlighted issues were identified purposefully. There are two reasons for having this, one is to help avoid overlooking important factors and two, is to understand the meaningfulness of these issues within the context of appropriate aspectual analysis. Another reason why the answers are broken down into numbers is because, in everyday experience, every aspect is important, that is, none are less meaningful or deserving less of our attention (Basden, 2008).

Alphabet (a), (b), (c) and so forth show the aspectual analysis on the italics and bold font styles which are the issues (see Table 5.2). It shows and records what type of aspect the italicised text belong that makes them meaningful while the asterisk in bracket (*) shows the reason for choosing such aspect.

The reason for (a), (b), (c) etc., is because aspects should be taken into account separately from each other and not reduced to each other and also some of the answers are of multiple aspects.

5.2.1.5 Stage Five

Stage Five: Tabular Arrangement II

This section brings out the analysis of stage three into a tabular form. There are several reasons it is done this way.

Firstly, it is to reveal the aspects these issues belong and reasons to justify these aspects. Secondly, having this table can help to consider each aspect in turn; as Basden (2008) emphasised, this process is very useful for surfacing things overlooked in the first method and also its ability to help reveal several multi-aspectual functioning.

Thirdly, this table is to categorise the aspects of issues identified. The reason it is done this way is to reveal the extent the texts are focusing on certain aspects at the expense of others. This is in line with what Basden (2008) explained that categories based on aspects are likely to be easily understood and they inform rather than mislead in aspectual analysis.

It also provides a summary report of the key characteristics, that is the kind of issue and its functioning aspect. This generates a layout evidence for analysis.

In this context the table has five columns; Aspects, Phrases from answer, reason (for choosing such aspect), phrases from EIV, reason (for choosing such aspect). A more detailed example

can be found in Appendix IV. In summary the aspectual analysis of these texts offer a framework by which to understand and tackle the diversity of issues Teachers face using ICT in primary classrooms.

A tabular example (Table 5.3) that shows the five columns earlier discussed is shown on the subsequent page. The second and third columns (phrases from answer and reason) does not relate to the third and fourth columns (phrases from EIV and reason).

Table 5:3 Stage four- Tabular Arrangement II

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Analytic	I wouldn't say I am an expert with computers but I know what I am doing	Clarity and logicity of instructions, of goals, of vision ... "but I know what I am doing..."	<p>A lot of my teaching in getting the children that initial grab of their attention, is always done on the computer</p> <p>.... if you don't learn all the skills</p> <p>learn how to use a pen properly</p> <p>...if you are using a computer all the time, you are not going to bother learning how to do simple mathematics, arithmetic because the computer would do it for you all the time. the same with everything else,</p> <p>...I think there are more important things to teach them than teaching them how to program a computer. Picking up programming-</p> <p>... I think it's more important to teach children to read properly</p> <p>...but I think young children need to be able to use the computer in their head first</p>	<p>Clarity and logicity, getting the attention.</p> <p>Clarity</p> <p>To learn needs clarity and conceptualisation</p> <p>Hinders learning (proper learning)</p> <p>Clarity on what children should learn</p> <p>Knowing what's most important</p> <p>Conceptualising</p>

5.2.1.6 Stage Six

This section collates the aspectual phrases on each aspect. It is helpful to do this stage as it provides an easy way to count up the frequency of occurrence in each aspect. The benefit of counting in this stage helps the Researcher to produce a more persuasive argument. This stage gives an overview of the DTE issues that fall under each aspect and reveals any issue that does not belong to an aspect and needs rethinking.

Below are the phrases from the Analytic Aspect on V6

...a lot of my teaching in getting the children that initial grab of their attention, is always done on the computer

... If you don't learn all the skills learn how to use a pen properly

...if you are using a computer all the time, you are not going to bother learning how to do simple mathematics arithmetic because the computer would do it for you all the time.

...I think there are more important things to teach them than teaching them how to programme a computer, picking up programming

... I think it's more important to teach children to read properly

...but I think young children need to be able to use the computer in their head first

5.2.1.7 Stage Seven: Quantitative Analysis and Comparisons

In this section the Researcher counted the number of occurrences of issues on each aspect as it relates to the answers and EIV excerpts from the interview data. In other words, the Researcher counted up the number of times each aspect came up both on the answer column and the EIV column. The next step was to produce a summation of all the frequency distribution on the aspects in order to get the percentage value on each of these aspects. This produced numerical data that was used to create the results-of-analysis in form of a bar chart to show surprises in terms of aspects that are downplayed and emphasised amongst various cohorts. The usual case with quantitative analysis is the comparison of individual quantities with an assessment of statistical significance. However, the purpose of the quantitative analysis in this study is to show patterns of aspectual meaningfulness. Based on this reason the individual numbers are less important than patterns, and no assessment of statistical significance is needed. This analysis method provides the opportunity to begin pattern comparisons amongst cohorts, such as users versus literature (as discussed in Appendix XII), and between schools, years and genders. The purpose of patterns in this analysis is to show major differences of meaningfulness and also to stimulate questions about why one aspect is

more meaningful to users than another aspect. This gives the opportunity to dig deeper on the difference between aspects. In this research the quantitative analysis indicates which aspects are most meaningful and these are then analysed qualitatively.

5.2.1.8 Stage Eight: Qualitative Analysis and Comparisons

The qualitative analysis process is in two parts and this helps with the needs of diversity, depth and values. The first part is a comparison of issues Teachers find meaningful with what the literature is discussing, as similar bars of aspects do not always connote the same set of issues. The second part will focus on the qualitative analysis of various cohorts using the demographic profile. This will involve discussion about genders, years and schools. It will open up the diversity of issues in each aspect and make a comparison with discussions in literature. This stage of analysis is section 7.4.

This section develops by making use of Dooyeweerd's aspectual analysis to categorise issues as ways they can be meaningful. It is imperative to demonstrate qualitative rigour by creating the data structure to show the process flow employed which can be used as a framework.

5.3 Data Organising

This section opens up Stage eight on the qualitative analysis process discussed in section 5.2.

The qualitative analysis involved consciously making notes on what the interviewees were saying, precisely trying to use their terms to help understand their lived experiences and the issues they encounter using ICT in the classroom.

Data organising is one of the features that strengthens qualitative rigour as described by Gioia et al., (2012). The data organising approach of 1st and 2nd order categories were implemented. However, this research took Gioia et al.'s, (2012) approach further by separating out issues into aspects where they are meaningful.

The data organising process begins with separating the issues into their meaningful aspects respectively so no issue is taken for granted. The process is to organise these issues per aspects into their categories respectively. This involves putting the issues within the name of aspect where they function.

The participants are the active agent in their everyday life; they have the first-hand experience of issues with ICT use in the classroom, hence the need to understand reality in their terms.

The first category is the 1st order term which captures the precise words of the participants, that is, to describe these issues naturally.

The second category is the point where the Researcher gives a voice to her feelings by placing herself in the lived world of the participants in order to derive themes that represent the meaning of the issues in relation to the words used by the participants as much as possible. In this category, the Researcher gives summaries and interpretations to the participant's point-of-view known as the 2nd order theme. This process of choosing the themes is subject to careful and systematic scrutiny in themselves.

The qualitative aspectual data analysis helps to produce different types and levels of meaning known as the 2nd order sub-issues. This helps to view these sub-categories of issues as problematic in their own right. A cue was taken from Krauss (2005) illustration of typifications to form the sub-issues. Typifications are described as those that were not verbalised by participants but created by the Researcher to give meaning to the wide range of data collated under a theme (Krauss, 2005). In light of this study the sub-issues are derived based on the diversity and similarity of data within the general 2nd order theme.

The concept used by the Researcher is stated thus:

1st order terms - captures the precise words of the participants (Gioia et al., 2012)

2nd order themes - themes that represent the meaning of the issues in relation to the words used by the participants (Gioia et al., 2012)

Sub-issues - issues not verbalised by participants but created by the Researcher to give meaning to the wide range of data collated under a theme (Krauss, 2005)

The approaches to data organising are discussed in the following sub-sections.

5.3.1 Phase One: Collate the Issues

The first step is to separate out issues from data. This involves colour coding and collating the issues from the EIV of all data according to each participant (V₁-V₂₀). The issues collated are all the exact terms used by the participant.

5.3.2 Phase Two: Aspectual Analysis on Issues

From the issues collated in phase one; aspectual analysis was done on these issues. This is identified as the 1st order analysis. For example, one Teachers voiced out that the computer affects her health; this is meaningful in the biotic aspect. It is important that issues in everyday life should be acknowledged.

5.3.3 Phase Three: Grouping by Aspects

In this phase similar aspects were grouped together in an individual aspect to form diversity of issues. For instance, all issues in the economic aspects are collated together and this was done across all aspects.

5.3.4 Phase Four: Create Themes

In this phase themes were created from the grouped issues of each aspect. For example, issues on time, issues on resources, which are both economic issues, were worked on. The categories of issues formed were given themes, taking account of what is said about these issues and preferably retaining meanings of the respondent's terms. This categorisation is what is called the 2nd order analysis in this study. In the 2nd order analysis, the theme used suggests concepts that might help describe and explain the phenomena being observed.

5.3.5 Phase Five: Tabular Arrangement

For ease of reference these issues were tabulated by aspects, 1st order terms and 2nd order themes. The plus of using Dooyeweerd's aspect is its proven capability to handle diversity since all issues in everyday life activities are important, no issues identified were ignored. In the 1st order analysis strict adherence to the respondents' terms was observed. This was done by focusing on one aspect at a time. This process helped the frequent challenge of being overwhelmed by large data usually faced by Researchers.

5.3.6 Phase Six: Analysis of Values

This section draws out the actual terms used by Teachers (V1-V20) and aims to conduct aspectual analysis on them. Although there are two distinctions on value(s), value are the benefits Primary Teachers derive from using ICT while values refers to how Teachers behave and how they want children to behave and live. For example, honesty, integrity, courtesy and so on. However, for this study values will be focused on, the reason is because some of the

issues Teachers have with ICT use are based on values. Also Teachers voluntarily mentioned issues related to values, this shows its meaningfulness to ICT use in the classroom.

This analysis was done in order to fulfil the third research need. The third research need is to provide a way to reveal the value-laden issues of Teacher ICT use in the classroom. Data structure was performed on the values collated. The actual terms used by Teachers (V1-V20) were aspectually analysed. The steps earlier discussed up till stage five were used in the value analysis.

Although the difference with this analysis style is that the whole of the data is considered, that is both normative terms in both answers and EIV. The reason is that the focus of the research study is on the issues faced and not on values with ICTE but Teachers intuitively discussed value-laden issues. However, participants discussed the value they hold towards the use of ICT in the classroom out of their own will. Hence, this shows that values discussed are meaningful to them as users of ICT in education. `

There is need to analyse the values that are held and how Primary Teachers hold them that is as a law, attitude or belief.

The detailed breakdown of data analysis on values by Primary Teachers is shown in Appendix V.

5.3.6.1 Value Qualitative Analysis

The value analysis process is slightly different from the qualitative analysis. One reason is that the whole of the data is considered, that is normative terms in both answers and EIV. The reason is that the focus of the research study is on the issues faced and not on values with ICTE. However, participants discussed the value they hold towards the use of ICT in the classroom out of their own will. Hence, this shows that values discussed are meaningful to them as users of ICT in education.

The first step is to aspectually analyse the collated normative issues in terms of the aspects while the second step is to group these normative issues based on their aspects. Each of these issues was given a 2nd order theme that portrays the original meanings of data from participants, which is the 1st order term. For example:

Table 5:4 Stage six- Value Aspectual Analysis

Code	Excerpts	Aspect	Reason
V1	It's much more instant, maybe they are <u>losing patience</u> . They expect everything to be instant.'we live in the instant mash society' where everything has to be done immediately. ...nobody wants to wait for anything. And you know obviously, I have gone to 'come on, load up...'go faster'...	Ethical	i.e. selfish, centred on 'Me'.
V3	If you get iPads out, they are all just in their own world focusing on these things and there's no <u>social interaction</u> , there's no like..., talk to your friend about this or get other people's perspective on some things, it's just you in your own world. So I think it does hinder that social interaction a little bit, definitely.	Social	Social interaction
V3	I think it hinders you <u>accepting people's opinions</u> because you are used to it's just been me. But you are not prepared to listen to people,	Ethical	The opposite of selfish, in one's opinions

From Table 5.4 that shows the Stage six value aspectual analysis, column one contains the Teacher's code (interviewee). Column two has the excerpts of issues. Column three shows the aspects focused on; these aspects were not chosen for any particular reason, and column four gives the reason the issue fits into those aspects. Detailed value analysis in Appendix V.

From the example above (Table 5.4; Stage six- Value Aspectual Analysis), V1 was concerned about the children losing their patience, because they expect everything to be instant, so when Teacher's use ICT in the classroom, the children are impatient, saying 'come on, load up... go faster'... (V1). This example functions in the ethical aspect. When one loses patience it portrays selfishness, centred on 'Me'.

The analysis process involved the following steps; normative issues were identified from the whole data and colour coded in red, italic font style and underlined for easy identification (this is the 1st order terms). Aspectual analysis was performed on each easy identified code. The 2nd order themes were developed from the colour-coded 1st order terms and were later

grouped per aspects and counted for quantitative purposes and opened up for qualitative purposes. (See section 7.4.5.1 and Appendix V).

Despite the focus of the research study which is on the issues Teachers face using ICT in the classroom, participants willingly discussed their concerns of the effect of ICT on the children and how it affects the Teachers' use of ICT in the classroom. This cannot be ignored as it is meaningful to their everyday practice. Further elaboration is discussed in the findings chapter, section 7.4.5.

This section has discussed the analysis process that guided this research. However, the Researcher discovered the analysis process involved more textual analysis than revealing the meaning behind the participants' issues. This twist in aspectual interpretation can jeopardise the understanding of Teachers' ICT issues. Therefore, the Researcher had to completely re-do the analysis process. This decision helped the Researcher develop the criteria for EIV which are set out in section 5.2.1.3.1.

The next section will describe how preconception in the analysis process was confronted.

5.4 Re-doing Analysis

This section shows how the Researcher addressed methodological concerns in particular around objectivity and coding. The first step the Researcher employed was to challenge all preconceptions that guided the analysis process of this study. The Researcher took a cue from the fifth principle of dialogical reasoning in interpretive field research that requires the Researcher to confront all prejudices that have guided the original research design and become as transparent as possible to the reader and to herself (Myers and Klein, 1999). This is further discussed in section 9.4 (critique of the research). Prejudice plays an important role in our understanding, as a necessary starting point. The Researcher questioned the data analysis process and discovered some inconsistency and had to re-do the data analysis but this time with more clearly identified guidelines. This is discussed further in the subsections below.

5.4.1 First Phase Analysis

During the initial phase analysis I followed the series of stages identified in Section 5.3. At some point I got entangled in the textual analysis by going through phrase by phrase or even word by word and attaching an aspect to each. At this point I discovered I was no longer focusing on analysing only the main issue identified.

During my analysis I encountered various sets of issues. Some aspects were obvious within issues, some required some interpretations, some required knowledge of the Teacher's situation and some were of multiple aspects. Examples of each type of issues are illustrated below.

Obvious Aspect, for example:

"...and at the end I thought I am wasting time."

Analysing the above, I decided this was an economic aspect issue because the problem is about the waste of time.

Aspects that required some interpretations, for example:

Question 2: "Do you have problems using these resources?"

Aspects from extra information volunteered:

"...there's always a problem with computers as they don't always do what you want, they decide to turn off at the wrong point..."

"... they don't always do what you want... turn off at the wrong point..."

The juridical aspect connotes: what is due, responsibilities, etc.

I decided this was juridical because the problem is about not giving what's due.

Aspect that required knowledge of the Teacher's situation, for example:

You've got 3-4 children round a laptop..."

(Quantitative aspect (amount 3-4), spatial aspect- round the laptop)

However, 'round the laptop' connotes sharing, which is the social aspect. Therefore, analysing by meaning it ought to be the social aspect, rather than analysing by phrase, which is the spatial aspect.

Also, during my first phase analysis at some point I noticed that some meaningful comments were not issues even though they had aspects attached, but had been analysed with other issues.

For Example:

"...It's just a tool, that extra thing ..."

I decided this was formative because of the word ‘tool’.

These non-issues had to be omitted because it might cause discrepancy in my final result.

5.4.2 Second Phase Analysis

Reviewing the first phase analysis, I had to redo from scratch (phase two) my data analysis by putting some more guidelines in mind. Some are stated earlier while others are identified below:

- Phrases outside the use of ICT in the classroom were not included (e.g. banking, online)
- Phrases that were not issues were not analysed
- Only issues relevant to ICT in the classrooms were analysed and given aspects

During the analysis the Researcher noticed many phrases are of multiple aspects.

Issues that had multiple aspects, for example:

*“...think- oh no, I don’t want to do that, it might delete and I might not get it ...”
(Pistic- believe, Psychic-emotions).*

I decided this was pistic because the respondent reflects some beliefs towards his/her action.

I decided the issue above is also psychic because of the mixed emotions it portrayed that is, fear of deleting or not getting it right.

Another example:

“...then every child has to remember their log in and password and they can’t always remember it.” (Psychic-Memory, Analytic- clarity).

The example above shows multiple aspects in terms of psychic and analytic. The Researcher chose psychic in terms of memory and analytic because of the clarity needed to remember the log in and password.

This section has discussed the phases of the analysis process and challenged the preconceptions that guided the initial data analysis, which led to a more refined data analysis process.

5.4.3 Qualitative Analysis Overview

A great collection of respondents terms, codes and categories were used which is similar to the process of open coding by Strauss and Corbin (1998). To this effect the Researcher adopted an outsider perspective, whose goal was to critique interpretations that might look a bit blurry. As discussed earlier, some of the descriptions of the research approach to uncover DTE issues are particularly distinctive.

As the research analysis progresses, to discover how each phrase of issues can be categorised correctly the phrase is analysed to find what is most meaningful in what it is trying to disclose about the issue that is behind the construct. Dooyeweerd's aspects are used as a reference point in this process as a categorisation of ways in which things can be meaningful with each relevant phrase being subjected to the question "Which aspect(s) best expresses what this phrase is trying to say?" In this state, aspectual interpretation happened based on the Researcher's intuition.

For example, an excerpt of the phrase examined was one of the responses a male primary teacher gave:

"I spent a long-time planning what we are going to do"

Planning - which is the kernel meaning of this phrase falls on the formative aspect.

This reveals the hidden meaning within the phrase and can be classified into their groups.

Based on the example above, the phrase is then grouped with the theme 'Hindrance to achievement/goal'.

The next stage occurs subsequently when we have built the full set of 1st order terms and 2nd order themes then there is a basis for building a data structure. The data structure will help arrange the data into a visual aid and provide a graphic representation of how progress was made from raw data into aspects, into the 1st order terms and then the 2nd order themes in conducting the analyses, which is a key component of demonstrating rigour in qualitative research (Pratt, 2008; Tracy, 2010).

Table 5.5 is an aspectual data structure that shows the 1st order terms and the 2nd order themes of issues in the economic and formative aspects. These aspects were not chosen for any particular reasons. The aim is to exemplify how the analyses were done.

Table 5:5 Aspectual Data Structure 1st and 2nd order Labelling

Aspects	1 st Order Terms	2 nd Order Themes
Economic Aspect	<ul style="list-style-type: none"> • so you don't get value for money that way • obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because... • and again, the school has spent a lot of money 	Money
Formative Aspect	<ul style="list-style-type: none"> • obviously the age of technology makes a difference to them as well, • we have to use older laptops which don't work as well and that can be a bit frustrating 	Detached versions of technology

This section has described in detail what was done on excerpt phrases and how they were analysed to find the meaningfulness of issues behind the construct.

The next section discusses how the Researcher's experience influences the data collated.

5.5 Researcher's Experience

5.5.1 To Rectify the Problem of Researcher's Experience

This section discusses the effect of Researcher's experience, and lack of it, on the research data and findings. It looks at some of the problems discussed by (Dwyer & Buckle, 2009) and how it affects the Researcher in light of experience, as discussed in section 4.5.

5.5.2 Problems during the Interview Process

As earlier discussed, there is a problem of the Researcher having similar experience to those being researched as this can influence the Researcher's understanding and increase bias. Analysis of the Researcher's interview questions using aspect has helped to show the kinds of biases that happen during the interview process, because the Researcher is liable to make assumptions on similarity of experience and place a heavy focus on one aspect and depriving other aspects. At a point during the interview the Researcher found it useful, with the use of

aspect at the back of her mind, to guide the interview conversation based on aspect over emphasised to the one least discussed, this also helped to reduce bias and avoid focusing on an issue of interest to the Researcher. This is discussed earlier on the section of the interview process in section 4.7.

The third principle of Myers & Klein (1999) which is the principle of interaction between the Researchers and the subject was used to critique this study. This principle requires a critical reflection on how the research materials (or data) were socially constructed through the interaction between the Researcher and participants. The process of separating EIV from answers revealed a bias through the analysis process that there is a difference between what the Teachers wanted to talk about from what the interviewer wanted to talk about. This study strengthens the idea that Dooyeweerd can show the kind of biases that happen during the interview process. Also Dooyeweerd aspects can help with knowledge uncovering and representation.

5.5.3 Problems during the Analysis Process

The Researcher used aspects to gain a richer picture of the kinds of DTE issues and the strings of issues faced by Teachers. The suites of aspect were used in the analysis section. These aspects were considered individually as they relate to the issues revealed by Primary Teachers. Aspects help to ensure that meaningful issues shared by the participants are recognised and that each of these aspects is appropriately understood in terms of its kernel meaning, this helped the Researcher mitigate bias and preconception during the analysis process. This is reflected in the section on re-do of analysis discussed in section 5.4.

Comparing aspectual profiles enabled the analyst not only to show that bias exists but to explore the nature of that bias by revealing the aspects the Researcher focused more on. To minimise bias the Researcher, during the analysis focused more on the issues participants voluntarily gave, as discussed in section 5.2.

5.5.4 Validity of the Data and Findings as an Outsider Researcher

As an outsider Researcher who had no experience of primary school teaching in the UK, the interviewer did not know that each Teacher teaches all subjects. This is justified in the interview transcripts as the Researcher kept asking each participant the subjects they teach. There is need to mention that at one point during the interview process, the Researcher spent more time discussing ICT and children in general more than the amount of time on a

discussion of the Teacher's problems in the use of ICT in the classroom. This portrayed one of the problems mentioned in section 4.5, as the Researcher emphasised shared factors between the Researcher and the participants. This is reflected in the discussion with V5, as detailed in section 4.7.4.

Due to the Researcher's lack of experience there are possibilities of some important DTE issues being overlooked or misunderstood because the Researcher could not understand their significance or implications. This critique is necessary because the Researcher aims to understand the meaningful issues Teachers face in the use of ICT in the classroom.

However to justify the validity of the data and findings of this study, despite the lack of experience, the Researcher made use of aspects. Each of these aspects is appropriately understood in terms of its kernel meaning by focusing on the aspectual meaning the issues revealed rather than the textual meaning. For example, as earlier discussed in section 5.4.1

"...you've got 3-4 children round a laptop..."

(Quantitative aspect (amount- 3-4), spatial aspect-round the laptop)

The phrase excerpt 'round the laptop' connotes sharing which is of the social aspect. Therefore, analysing by meaning ought to be the social aspect, rather than analysing by phrase which is the spatial aspect. The use of aspects helped to clarify the issues meaningful to the Teachers.

Another justification of validity of data and findings is that Dooyeweerd's aspect helped solve some of the problems of not having experience. For example, the Researcher could not properly feel the pain of the Primary Teachers because the Researcher has not been a Primary Teacher before. However, the Researcher functions in many aspects and could understand pain as of the psychic aspect because the Researcher also feels pain. Hence the Researcher could understand the issues Primary Teachers raised in the aspects which these issues functions.

In addition, the problem of the participants' openness to the Researcher being an outsider during the interview process was solved during the analysis process. The way this problem was mitigated was by separating the EIV from answers and this gave greater depth to the data gathered.

5.6 Chapter Summary

This chapter began by discussing the description of the analysis process on the interview transcripts. It showed how Dooyeweerd's suite of aspects was used to formulate an analysis approach for understanding the everyday issues meaningful to Teachers in their use of ICT in the classroom.

The data analysis process showed that this research has been designed to enable sensitivity to changes occurring during the study, hence the redo of analysis as explained in 5.4. Dooyeweerd's suite of aspects played an important role in informing the interpretation of data. It made explicit the different stages in the analysis process to interpret the varieties of issues from the data. Attention was also given to the diverse contexts and meanings that this study aims to explore that is, diversity, depth and value. This section has shown the validity of the data and findings in relation to Researcher's experience.

The next chapter discusses the preparation of data in order to generate rich results.

CHAPTER SIX: RESULTS OF DATA ANALYSIS

6.1 Introduction

This chapter is about preparing the organised data. It produces the organised data that the quantitative and qualitative analyses use as their source. It presents the actual analysis of the data according to the description discussed in section 5.2 and also reflects on the guidelines stated in section 5.4. The data was analysed using aspectual analysis; justification for this is discussed in section 5.2.1.

The quantitative analysis is aimed to present the actual results. It illustrates the analysis process with an example (V7) and shows the various stages of the aspectual quantitative analysis process, as this shows the stages on how aspectual analysis was carried out on the twenty interview transcripts (V1-V20). V7 is a Year 6 male Teacher from school A and teaches all subject areas. V7 was not chosen for any particular reason. The aim is to use V7 as an example of the process involved in producing an organised data, that is, the quantitative and qualitative analyses.

Findings derived from analysis on the whole data (V1-V20) were both quantitatively and qualitatively analysed in chapter 7, the reason for this is discussed in (See Aspectual Profile in Section 6.2- and as explained in Section 5.2.1). The qualitative analysis style is described in section 5.3. Further on aspectual analysis on Teachers is discussed in section 7.3 and 7.4 respectively.

6.2 Preparing Data for Analysis

This section will give examples based on some excerpts from the complete data analysis on V7, which is shown below. This analysis shows the various stages as described in section 5.2.1

6.2.1 Stage One: Data Separation

By way of illustration V7 shows how the data analysis process discussed in Chapter 5 was carried out. In this stage, after transcribing the information derived from the interview of V7, the Researcher has separated out from the transcripts of V7 the answers and EIV from four questions as an example. To avoid repetition this example is shown in Stage two.

6.2.2 Stage Two: Identify the Issues

Activities of this stage and the earlier stage are intertwined with an additional activity of identifying issues within the direct answers and the EIV. A detailed illustration is described below. The issues discussed are identified in bold and italics fonts and red colour. This will make it easier to extract these issues in order to find out what aspects they fall into.

Question 1: So far, what are the issues you encounter using these in teaching?

Answers to the main question: A: uhmm, the problem is things going wrong. Sometimes things don't work, so you plan to use something, obviously you get things as such. Sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money again getting Wifi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and they won't connect to the internet.

Meaningful Issues from the Extras: The issues with them obviously the age of technology makes a difference to them as well, so we have got like a pretty brand new set of laptops which we only got last year. Obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace, sometimes you waste time a lot around something to work or you also have times where children have to share if there's not quite enough to go round. Sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, so you have to work together which not everyone can do successfully. So those are the main problems, technology can fail from time to time or it doesn't work as you want it to do. So these are the main things that can sort of hold you back.

Question 2: Please can you give me an example or scenario of it happening, having a challenge and making it work while teaching, a story about it.

Meaningful Issues from the Extras: Uhmm, I think the one I can probably relate to is the one I tried to use for the new curriculum where uhmm, we also have a filtering system. We have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, sometimes you find that some sites are blocked when you want to go on them, and we have tried to use a particular website in a lesson, the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. I spent a long time planning what we are going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, it got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. So you get to a stage where you have to think on your feet, just go with an alternative. It's just frustrating then, you have spent a lot of time

getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. That's sort of a primary example; it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really.

Question 3: *That day, how did you solve it?*

Answers to the main question:

I used an alternative, I just did something else. It was during our ICT lesson, so I did a lesson I had done before which I knew would work

Meaningful Issues from the Extras: *but it wasn't the same learning objective and didn't meet the expectations, but the children did enjoy it and still learnt something from it, but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that.*

Question 4: *So what happened next?*

Answers to the main question: *At that that time you start to deal with it there and then, in terms of it working in the future. There are certain things you've discern happening which you have to sort out, we have a relationship with our RM they can change the filters so they can change the settings, so we contact them*

Meaningful Issues from the Extras: *Given hindsight, I would have done that before, but there wasn't a reason why it would be blocked because it wasn't an inappropriate site, it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't. It's about getting them to change the settings, so they can use it in future.*

From the above examples the EIV provided a lot of extra information about the Teachers' experience of teaching with ICT and these are very useful in this research.

6.2.3 Stage Three: Tabular Arrangement I

The next step is to separate them out into tables. It is just for ease of use and accessibility.

The Table below will clearly show the answers to the questions and the EIV. It is helpful to separate out the contents from each other. The next step is to conduct aspectual analysis on the data especially those highlighted in red.

This will be exemplified in Table 6.1. See Appendix IV for the complete analysis. It is useful to mention the reason for absence of data in the main answer on Question 2, this is because the participant is reflecting on life experiences, see section 5.2.1.3.1 on criteria for EIV. This

shows that both stories of the interviewee and comments give useful information with this method. It brings together the benefits of both abstract and stories.

Table 6:1 Stage Three- Tabular Arrangement I

Questions	Answers	Extra Information Volunteered
So far what are the issues you encounter using these technologies in teaching?	Uhhh, <i>the problem is things going wrong. Sometimes things don't work</i> , so you plan to use something, obviously you get things as such. <i>Sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money, again getting Wifi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and they won't connect to the internet.</i>	<i>The issues with them obviously the age of technology makes a difference to them as well</i> , so we have got like a pretty brand new set of laptops which we only got last year. <i>Obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace</i> , sometimes you waste time a lot around something to work or you also have times where children have to share if there's not quite enough to go round. Sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, <i>so you have to work together which not everyone can do successfully</i> . So those are the main problems, <i>technology can fail from time to time or it doesn't work as you want it to do</i> . So there are the main things <i>that can sort of hold you back</i> .
Please can you give me an example or scenario of it happening- having a challenge making it work while teaching, a story about it.		Uhhh, I think the one I can probably relate to is the one I tried to use for the new curriculum where ummm, we also have a filtering system, we have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, <i>sometimes you find that some sites are blocked when you want to go on them</i> . And we have tried to use a particular website in a lesson, the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. <i>I spent a long time planning what we are going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, it got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work</i> . So you get to a stage where you have to think on your feet, just go with an alternative. <i>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative</i> . That's sort of a primary example; <i>it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really</i> .
That day, how did you	I used an alternative, <i>I just did something else</i> . it	<i>But it wasn't the same learning objective and didn't meet the expectations</i> , but the

solve it?	was during our ICT lessons, so I did a lesson I had done before which I knew would work	children did enjoy it and still learnt something from it, <i>but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that.</i>
So what happened next?	<i>There are certain things you've discern happening</i> which you have to sort out, we have a relationship with our RM they can change the filters so they can change the settings, so we contact them	Given hindsight, I would have done that before, <i>but there wasn't a reason why it would be blocked because it wasn't an inappropriate site</i> , it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't.

From the Table 6.1 above, Column 1 contains the questions the Researcher asked V7, Column 2 contains excerpt phrases of answers to the question and Column 3 contains phrases that indicate the kinds of issues V7 finds meaningful as a Primary Teacher when using ICT in the classroom.

6.2.4 Stage Four: Aspectual Analysis of Data

This section specifically addresses the content in each column. For instance, aspectual analysis can easily be done on the highlighted colour code of the answers column, that is, the issues.

Question: So far, what are the issues you encounter using these technologies in teaching?

Aspects from the answers: uhmm, *the problem is things going wrong. Sometimes things don't work*, so you plan to use something, obviously you get things as such. *Sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money, again getting Wifi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and they won't connect to the internet.*

- I. ... Sometimes things don't work,
(a)= formative: shaping, achievement
- II. ... it's a lot of issues connecting to the internet
(b)= formative: technology
(*)= connecting to the internet is one trying to achieve, technology
- III. ... we have spent quite a lot of money
(a)= economic: frugality, budget
- IV. ... it won't connect to the internet.
(a)= formative (*) = technology

Aspects from EIV: *The issues with them obviously the age of technology makes a difference to them as well*, so we have got like a pretty brand new set of laptops which we only got last year. *Obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace, sometimes you waste time a lot around something to work or you also have times where children have to share if there's not quite enough to go round.* Sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, *so you have to work together which not everyone can do successfully.* So those are the main problems, *technology can fail from time to time, or it doesn't work as you want it to do.* So these are the main things.

- I. ...obviously the age of technology makes a difference to them as well,
(a)=sensitive= feelings, emotions (*) = It affects their mentality and feelings
(b)= formative= technology (*) = technology is what makes the difference
- II. ... we have to use older laptops which don't work as well and that can be a bit frustrating
(a)= sensitive= emotions (*) = negative emotions
(b)= formative= shaping, technology (*) = making use (shaping). Laptops (technology)

- III. ... and slow as well and if you want the speed of a lesson to go at a certain pace,
 - (a)= kinematic: flow in movement
 - (b)= analytic: logicity of goals, clarity
 - (c)= Aesthetic: harmony of organisation
- IV. ... sometimes you waste time a lot around something to work
 - (a)= economic: frugality
 - (b)= formative: shaping, achievement, technology
- V. ... children have to share if there's not quite enough to go round.
 - (a)= ethical: self-giving, care, generosity
 - (b)= social: social interaction, relationship, team building
- VI. ... so you have to work together which not everyone can do successfully
 - (a)= social: team building
 - (b)= Aesthetic: harmony, fun
- VII. ... technology can fail from time to time
 - (a) formative: technology, achievement
- VIII. ... it doesn't work as you want it to do.
 - (a)= formative: shaping, achievement, planning
- IX. ... that can sort of hold you back
 - (a)= ethical: self-giving

Question: please can you give me an example or scenario of it happening- having a challenge making it work while teaching, a story about it.

Aspects from EIV: Uhhh, I think the one I can probably relate to is the one I tried to use for the new curriculum where uhmm, we also have a filtering system, we have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, *sometimes you find that some sites are blocked when you want to go on them.* And we have tried to use a particular website in a lesson, the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. *I spent a long time planning what we were going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.*

So you get to a stage where you have to think on your feet, just go with an alternative. *It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.* That's sort of a primary example; *it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really.*

- I. ... sometimes you find that some sites are blocked when you want to go on them.
 - (a)= Economic
- II. ... I spent a long time planning what we are going to do,
 - (a)= economic
 - (b)= formative

- III. got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
 (a)= economic
 (b)= analytic
 (c)= formative
- IV. ...had a clear idea of what I was going to do with the children.
- V. (a)= analytic
- VI. ...Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
 (a)= formative
 (b)=psychic (*) = disappointment
- VII. ...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
 (a)= psychic (*) = frustration, negative emotions
 (b)= economic (*) = frugality of resources
 (c)= formative (*) = shaping- to make it work or not
 (d)= analytic (*) = distinction, clarity- thinking up another option
- VIII. ...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.
 (a)= analytic
 (b)= psychic
- IX. ...It doesn't work when you want it to work, that's the biggest issue really.
 (a)= formative (*) shaping

Question: That day, how did you solve it?

Aspects from the answers: I used an alternative, *I just did something else*. It was during our ICT lessons, so I did a lesson I had done before which I knew would work

- I. I used an alternative, *I just did something else*.
 (a) formative
 (b) analytic

Aspects from EIV: *but it wasn't the same learning objective and didn't meet the expectations*, but the children did enjoy it and still learnt something from it, *but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that*.

- I. ... *but it wasn't the same learning objective and didn't meet the expectations*,
 (a)= analytic (*) = learning
 (b)= juridical (*) = not giving what is due
- II. ... *but it wasn't what I wanted to do, it was an alternative really*
 (a)= analytic (*) distinction, clarity on what to do
- III. ...*so that's the biggest stress when things go wrong like that*
 (a)= psychic= feeling

Question So what happened next?

Aspects from the answers: *There are certain things you've discerned happening* which you have to sort out, we have a relationship with our RM they can change the filters so they can change the settings, so we contact them

- I. There are certain things you've discerned happening
 (a)= psychic (*) = instinct, recognition of a pattern

Aspects from EIV: Given hindsight, I would have done that before, *but there wasn't a reason why it would be blocked because it wasn't an inappropriate site*, it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't.

- II. ... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site,
 (a)= ethical (*) = appropriate
 (b)= lingual (*) = web site

6.2.5 Stage Five: Aspectual Tabular Arrangement II

This stage becomes the data repository from which the analysis will emerge. Table 6.2 illustrates two aspects (Psychic and Analytic) from V7. These two aspects were not chosen for any particular reason. The aim is to exemplify how the analyses were done. The second and third columns (phrases from answer and reason) does not relate to the third and fourth columns (phrases from EIV and reason). This table provides the base data for the quantitative and qualitative analysis.

See Appendix IV for the complete analysis.

This section has discussed the preparation of the organised data that the quantitative and qualitative analyses can use as their source by using V7 as an example. The data was analysed using aspectual analysis and the analysis process has followed the description discussed in section 5.2 and also reflected on the guidelines stated in section 5.4. The reasons for the aspectual functioning of Teachers' issues are stated along with its aspects.

Further on the analysis process continues with stage five, by presenting the data in a simplified form, showing the aspects of each phrase in answers and EIV along with the reasons for their aspectual functioning in Table II Arrangement as shown below.

Table 6:2 Stage Five: Tabular Arrangement II

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Psychic	...There are certain things you've discern happening	Instinct, recognition of a pattern	<p>...obviously the age of technology makes a difference to them as well,</p> <p>...we have to use older laptops which don't work as well and that can be a bit frustrating</p> <p>Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>It's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.</p> <p>...so that's the biggest stress when things go wrong like that</p> <p>...you've always got to be aware that things might go wrong,</p> <p>...obviously you get annoyed and frustrated but that doesn't help,</p>	<p>Feelings, emotions: It affects their mentality and feelings emotions: negative emotions</p> <p>Disappointment</p> <p>Frustration,</p> <p>Negative emotions</p> <p>Feeling</p> <p>Emotions</p>

			<p>...and I think it is quite frustrating more than anything</p> <p>...where you see things very good</p>	<p>Negative emotions</p> <p>Negative emotions</p>
Analytic	<p>I used an alternative, I just did something else</p> <p>... When you've planned round the iPads it sort of influences how you are going to think or the decisions that you make</p> <p>... They obviously give us quite a lot of excuses</p>	clear thinking	<p>...and slow as well and if you want the speed of a lesson to go at a certain pace,</p> <p>...Got resources ready for it, had sets of instructions, spent my own time researching how it will be used</p> <p>...Had a clear idea of what I was going to do with the children</p> <p>...It is just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.</p> <p>...but it wasn't the same learning objective and didn't meet the expectations,</p> <p>...but it wasn't what I wanted to do, it was an alternative really</p> <p>...a book that's suitable and one that you know you can find answers,</p> <p>...It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the</p>	<p>Logicality of goals, clarity</p> <p>Distinction, clarity- thinking up another option</p> <p>Distinction, clarity on what to do</p> <p>Suitability and answers requires clarity and distinction Clarity to prioritize</p>

			<p>priority of the school.</p> <p>...so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to</p> <p>...we have told them all the so many things we want to do,</p>	<p>Conceptualisation</p> <p>Clarity</p>
--	--	--	---	---

Table 6.2 illustrates two aspects (Psychic and Analytic) from V7. These two aspects were not chosen for any particular reason. The aim is to exemplify how the analyses were done. The second and third columns (phrases from answer and reason) does not relate to the third and fourth columns (phrases from EIV and reason). This table provides the base data for the quantitative and qualitative analysis.

See Appendix IV for the complete analysis.

The next section continues with the aspectual analysis process as it unfolds the Stage six.

6.2.6 Stage Six: Aspectual Results

This section gives an example on the content of each aspect, in this case only the psychic and analytic aspects are used as an example. Bringing out the content this way gives an easy way to count up the frequency of occurrence in each aspect and to show clarity as well. Collating these phrases by aspect is very useful for the quantitative and qualitative analysis (see sections 7.3-7.4).

Below is an example on aspects from EIV, the three dots (...) at the beginning represents a continuation of a conversation. Assigning the serial numbers (S/N) made the count up easy.

Table 6:3 Psychic aspects from EIV V7

Psychic Aspect	
S/N	Excerpt Phrases
1	...obviously the age of technology makes a difference to them as well,
2	...we have to use older laptops which don't work as well and that can be a bit frustrating
3	...Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
4	It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
5	...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything
6	...so that's the biggest stress when things go wrong like that
7	... you've always got to be aware that things might go wrong,
8	... obviously you get annoyed and frustrated but that doesn't help,
9	...and I think it is quite frustrating more than anything
10	...where you see things very good

Table 6:4 Analytic aspects from EIV V7

Analytic Aspect	
S/N	Excerpt Phrases
1	... and slow as well and if you want the speed of a lesson to go at a certain pace
2	...got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
3	...had a clear idea of what I was going to do with the children.
4	...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
5	...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything
6	... but it wasn't the same learning objective and didn't meet the expectations,
7	... but it wasn't what I wanted to do, it was an alternative really
8	...a book that's suitable and one that you know you can find answers,
9	...It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school
10	...so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to
11	...we have told them all the so many things we want to do,

This section has used V7 to exemplify how the data are organised for the quantitative and qualitative analyses discussed in chapter 7. The next section gives the overall aspectual result of V7.

6.2.7 Overview of Aspectual Results

This section presents the whole EIV results as phrases by aspect on V7. The aim of this is to produce an organised data. This stage becomes the EIV data repository from which the analysis will emerge. The collation of EIV was done by cohorts to provide a base for qualitative analysis in section 7.4. See Appendix IV.

Aspects from EIV:

Kinematic Aspect

1. ...and slow as well and if you want the speed of a lesson to go at a certain pace,
-

Physical Aspect

1. ...there's often issues with them just being charged properly.
 2. ...so they haven't been charged or something has gone wrong with them.
 3. ...whereas with a book, you can control it a bit more.
 4. ...a book that's suitable and one that you know you can find answers.
-

Psychic Aspect

1. ...obviously the age of technology makes a difference to them as well.
 2. ...we have to use older laptops which don't work as well and that can be a bit frustrating.
 3. ...obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
 4. ...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
 5. ...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.
 6. ...so that's the biggest stress when things go wrong like that.
 7. ...you've always got to be aware that things might go wrong.
 8. ...obviously you get annoyed and frustrated but that doesn't help.
 9. ...and I think it is quite frustrating more than anything.
 10. ...where you see things very good.
-

Analytic Aspect

1. ... and slow as well and if you want the speed of a lesson to go at a certain pace.
2. ...got resources ready for it, had sets of instructions, spent my own time researching how it will be used.

3. ...had a clear idea of what I was going to do with the children.
4. ...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
5. ...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.
6. ... but it wasn't the same learning objective and didn't meet the expectations.
7. ... but it wasn't what I wanted to do, it was an alternative really.
8. ...a book that's suitable and one that you know you can find answers.
9. ...It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.
10. ...so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to.
11. ...we have told them all the so many things we want to do.

Formative Aspect

1. ...obviously the age of technology makes a difference to them as well.
2. ...we have to use older laptops which don't work as well and that can be a bit frustrating sometimes you waste time a lot around something to work.
3. ... technology can fail from time to time.
4. ... it doesn't work as you want it to do.
5. ... I spent a long time planning what we are going to do.
6. ...got resources ready for it, had sets of instructions, spent my own time researching how it will be used.
7. ...Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.

8. ...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
9. ...It doesn't work when you want it to work, that's the biggest issue really.
10. ... I think that's just the way the technology is.
11. ... either children or members of staff haven't put them back correctly.
12. ... where you have got to adapt your lesson and people just share things.
13. ... having an awareness that something could go wrong.
14. ...you probably leave yourself more open with using the internet it might not necessarily take you the right path to finding the right information.
15. ...the problem of connecting to the Wifi connection because sometimes you can't access it.
16. ...we have had a few technical issues on the ware.
17. ...where certain things have been lost so for that reason it obviously affects our ability to use them as well as we would like.
18. ...we have all been trained but because of tech issues it hasn't worked as it should.
19. ...so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to.
20. ... But it isn't just down to not wanting to use it, but so many issues have gotten into the way
21. ...so again if you planned using them in your class.
22. ...the rope to the back has been disconnected.
23. ...and nobody has been given the chance to go to the back of it and reconnect it.
24. ...too often the machines are updating and a couple of hours still on updates, you can't get on.
25. ...quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.
26. ...It's an issue with the wireless connection not working as it should.

27. ...but it just doesn't work.
28. ...some of the children start saying 'Ms. I have lost connection' and that's because someone else has logged on.
29. ...we have told them all the so many things we want to do.
30. ...it just hasn't quite worked as it should.
31. ...so in an ideal world different technology, go out and try different things you could use.
32. ...I am an ICT coordinator, so I have been on trainings.

Lingual Aspect

1. ...but there wasn't a reason why it would be blocked because it wasn't an inappropriate site.
2. ...but children have to be aware of what's appropriate, what's the best information.
3. ...because sometimes you can end up on the wrong website or wrong information.
4. ...whereas with a book you can control it a bit more.
5. ...a book that's suitable and one that you know you can find answers.
6. ...Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.

Social Aspect

1. ...children have to share if there's not quite enough to go around.
2. ...so you have to work together which not everyone can do successfully.
3. ...where you have got to adapt your lesson and people just share things.

Economic Aspect

1. ...sometimes you waste time a lot around something to work.
2. ...sometimes you find that some sites are blocked when you want to go on them.
3. ...I spent a long time planning what we are going to do.
4. ...got resources ready for it, had sets of instructions, spent my own time researching how it will be used.

5. ...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
6. ...when you might not have enough of what you need.
7. ...where you have got to adapt your lesson and people just share things.
8. ...It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.
9. ...sometimes problems where some of the apps sometimes get wiped off.
10. ...you get the iPads out and children can't access what you want them to access on it.
11. ...Too often the machines are updating and a couple of hours still on updates, you can't get on.
12. ...and again, the school has spent a lot of money.
13. ...it's very limited to the amount of computers you can put on at one time.
14. ...obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because.
15. ...and when you come back to school we really can't afford to do that as much as we'd love to.
16. ...so you don't get value for money that way.
17. ...sometimes they can be good but not get used.

Aesthetic Aspect

1. ...and slow as well and if you want the speed of a lesson to go at a certain pace.
2. ...so you have to work together which not everyone can do successfully.

Juridical Aspect

1. ...but it wasn't the same learning objective and didn't meet the expectations.
2. ...you've got to accept that it's not always going to work perfectly or things are going to go wrong.
3. ...you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information.

4. ...and nobody has been given the chance to go to the back of it and reconnect it.
5. ...It's an issue with the wireless connection not working as it should.
6. ...sometimes they can be good but not get used.

Ethical Aspect

1. ...children have to share if there's not quite enough to go around.
2. ...that can sort of hold you back.
3. ...but there wasn't a reason why it would be blocked because it wasn't an inappropriate site.

Pistic Aspect

1. ...you've got to accept that it's not always going to work perfectly or things are going to go wrong.
2. ...you've always got to be aware that things might go wrong.
3. ...having an awareness that something could go wrong.
4. ...so they promised we will be able to do them.

6.3 Chapter Summary

This section has discussed the preparation of the organised data that both the quantitative and qualitative analyses can use as their source by using V7 as an example. The data was analysed using aspectual analysis and the analysis process has followed the description discussed in section 5.2 and also reflected on the guidelines stated in section 5.4. It has shown how the organised data are prepared in order to be used in chapter 7.

CHAPTER SEVEN: ANALYSES OF ORGANISED DATA

7.1 Introduction

This chapter takes the Extra Information Volunteered (EIV) as its organised data. It focuses on using the organised data in relation to the research objectives and needs. It shows how meeting the research needs identified in the literature review and how the use of Dooyeweerd's aspectual analysis helped in revealing surprising results from the quantitative and qualitative analysis on the issues Teachers find meaningful. It takes the process of the organised data and generates findings about Teachers' use of ICT in the classroom, as well as revealing a process which uncovers the down to earth issues.

This chapter first shows the aspectual analysis of Teachers' interest, that is a focus on EIV. It then shows both the quantitative and qualitative analyses of the EIV of all participants segmented into various cohorts. The simple categories this study divides the cohorts into are: gender, year groups and schools. The gender cohorts include: only the male and female participants and the year group cohorts including the Early Years, Year 1 up to Year 6 participants, and schools which includes the three schools A, B and C.

This chapter also describes the value data analysis and further compares what Teachers find as values with the discourse in value literature. It also reviews ten papers (as a pilot study) and aspectually analyses the issues therein and compares what literature emphasise as issues with the kind of issues actually meaningful to Primary School Teachers. The literature used was intended as a data but, due to its low sample size, it is used as a pilot study and reflected on. See Appendix XII for details.

The Researcher employs intuition and experience of the world along with the assistance of Dooyeweerd's aspectual tool which is used as a lens. It explains the approach of Dooyeweerd's aspects in gaining insight into the meaningful issues of ICT use faced by Primary School Teachers. It discusses the qualitative analysis from these various cohorts.

7.2 Aspectual Analysis of Teachers' Interest as a Whole

This section shows a quantitative analysis of the EIV of all participants which is now referred to overall because it is based on the interest of the Teachers. This becomes the data-repository from where diverse analysis will emerge.

This analysis helps to validate the Researcher's findings about DTE issues of what Primary School Teachers are concerned about on ICT use in the classroom, in terms of their diversity, depth and values. The Researcher's deliberate focus on the use of excerpts from the EIV without the use of answers shows the fulfilment of the principles of interpretive research as discussed in Section 9.4. Emphasis is placed on the analysis of the EIV as discussed earlier because it represents Teachers' interests as a whole and what they voluntarily found meaningful. Based on the EIV, further quantitative and qualitative analysis would be drawn from it. Another reason for focusing on the EIV is because of the occurrence of research bias during the interview and, as such, should not be ignored. How this bias was revealed and managed is discussed in section 5.2. The sections below show the results of analysis.

7.2.1 Results of Analysis on Overall

The results of analysis show the aspectual analysis in percentage on the overall view. The numbers are derived from Appendix VI and are aimed to find out the deep knowledge. In-depth analyses are given below.

Table 7:1 EIV of all Users as Percentage

Aspects	EIV (count)	EIV (%)
Quantitative	30	1.82
Spatial	6	0.36
Kinematic	22	1.34
Physical	40	2.43
Biotic	17	1.03
Psychic	166	10.10
Analytic	162	10.0
Formative	208	13.0
Lingual	194	12.0
Social	97	6.0
Economic	223	14.0
Aesthetic	135	8.2
Juridical	150	9.11
Ethical	81	5.0
Pistic	116	7.04

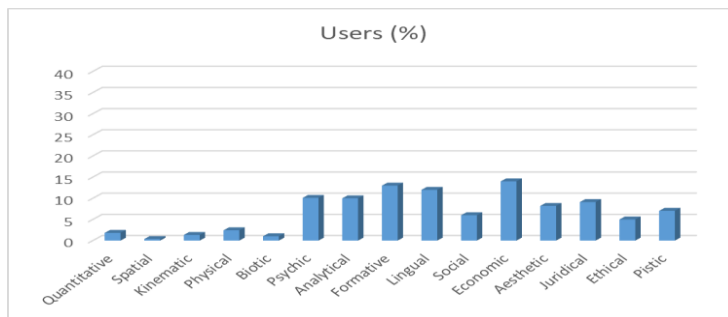


Figure 7:1 EIV Aspectual Profile in percentage

7.2.2 Analysis Comment on Teachers' Overall View

The results of analysis Figure 7.1 above shows the economic aspect to be the highest of all aspects. Next to this height range is the formative and lingual aspect. The psychic and analytic aspects are roughly equal in height range. Next is the juridical aspect which is slightly higher than the aesthetic aspect. The social aspect is slightly lower than the pistic aspect and the ethical aspect averagely the lowest amongst them. The physical aspect is slightly higher than the quantitative aspect, while the kinematic aspect is slightly higher than the biotic aspect. The spatial aspect is the least height range in the overall chart.

The interviewees are still interested in the economic aspect, but they are almost as interested in the formative, lingual, psychic, analytic, juridical, aesthetic, pistic, social and ethical aspects. It is necessary to state that there is a close gap range amongst these aspects until the wide gap range between the ethical and the physical aspect. It seems an important finding that these ten aspects, which were voluntarily mentioned, are what Teachers find meaningful about ICT in education.

This section has shown that it is valid for the analyses in Chapter 7 to focus only on the extra information voluntarily given by Teachers.

7.3 Quantitative Analysis of DTE Issues

This section uses the prepared data as exemplified in Chapter 6 of the EIV of all participants segmented into various cohorts (See Appendix VI). The demographic profile (section 4.6.3; Table 4.1) was very helpful in creating the various cohorts. This demographic profile helped to provide a good, clear picture of the qualities and attributes of participants before an attempt to understand and explain these cohorts with respect to the issues they encounter. The simple categories this study divides the cohorts into are gender, year groups and schools. As earlier mentioned, the gender cohorts includes only the male and female participants, the year group

cohorts includes the Early Years, Year 1 up to Year 6 participants and schools which includes the three school A, B and C.

Full details about the mechanics involved with developing the aspectual profiles were earlier explained in Section 5.2.1. The next step is a count up of the frequency distribution on the amount of statement that was meaningful in each aspect. Explanation about this is shown in the ‘Overview of Results’ Section 6.2.7.

7.3.1 Quantitative Analysis of DTE Issues by Teachers’ Gender

Due to the limited number of male Teachers used in this study; findings about the male cohort might not be a full representative discussion. An indication on the kind of issues the male and female genders found meaningful will be discussed in this sub-section. This comparison will allow the Researcher to understand the kind of DTE issues that are peculiar to each gender, and valuable insights can be gained into new topics emerging in the rapidly changing field, such as ICT in education.

This study accommodates the views of both male and female Primary School Teachers on the research aim and the breakdown is shown in Appendix 7. However, the next sub-section will merge the analysis of each gender (male and female) and discuss any surprising findings.

7.3.1.1 Quantitative Analysis

This section discusses the issues both the primary male Teachers identified as: V7, V8, V6, and V13 and the female Teachers identified as: V1, V2, V3, V4, V5, V9, V10, V11, V12, V14, V15, V16, V17, V18, V19, V20 (where V represents Interviewee’s code). The Table 7.2 below shows the number of issues mentioned by Primary Teachers in each aspect, as percentages: male Teachers and female Teachers from all users.

Table 7:2 Number of issues mentioned by Primary School Teachers in each aspect, as percentages: An overview of the aspectual analysis of gender

Aspects	Primary Teachers (male)%	Primary Teachers (female)%
Quantitative	1	2.1
Spatial	0.3	0.4
Kinematic	2	1.3
Physical	3	2.4
Biotic	1	1.1
Psychic	8.4	11.1
Analytic	12	9.6
Formative	21	10
Lingual	14	12
Social	4.2	6.3
Economic	13	13.3
Aesthetic	5.2	9
Juridical	9.1	9.1
Ethical	3.5	5.3
Pistic	4.5	8.1

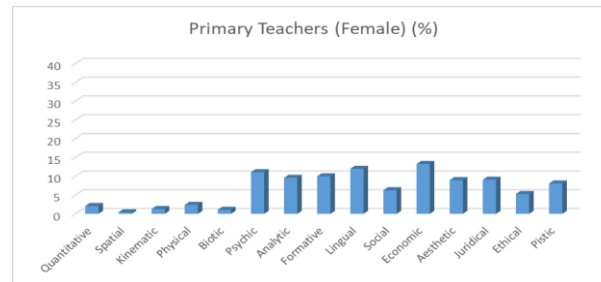


Figure 7:2 EIV Female Aspectual Profile in percentage

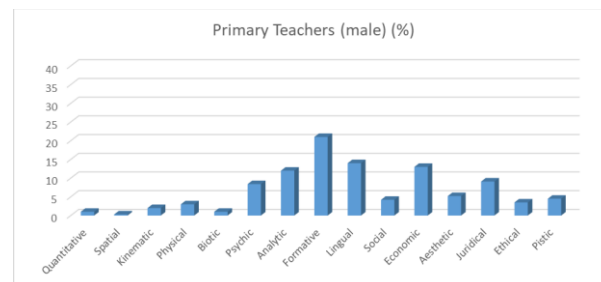


Figure 7:3 EIV Male Aspectual Profile in percentage

The most striking finding between the comparisons of both genders is the formative aspect issues that male Teachers found meaningful while the female Teachers found the economic aspect issues most meaningful to them. The next section opens up the formative and economic aspects in the qualitative analysis.

7.4 Qualitative Analysis of DTE Issues

This section discusses the qualitative analysis and aims to demonstrate the diversity of issues Teachers view as being meaningful. It focuses its analysis specifically on the extra information voluntarily given, without the use of answers, shows the fulfilment of the principles of interpretive research as discussed in section 9.5. Also EIV helps us to understand the kind of DTE issues (diversity, depth and values) Teachers find meaningful in ICT use in the classroom.

7.4.1 Qualitative Analysis of DTE Issues by Teacher Gender

This section carries out an aspectual discussion of the male and female gender. The primary male Teachers are identified as: V7, V8, V6, V13 while the female Teachers are identified as: V1, V2, V3, V4, V5, V9, V10, V11, V12, V14, V15, V16, V17, V18, V19, and V20. This study could only get access to four male Primary School Teachers; hence findings about the male cohort might not be a full representative discussion. However, it shows how the findings might be obtained if sample sizes are larger. The qualitative gender data analysis is discussed in order to open up the quantitative aspectual profiles and understand participants' experience, issues and behaviour arising from the perspective of the direct system users. This discussion will focus on two aspects. First, the formative aspect the male Teachers found most meaningful, followed by the economic aspect the female Teachers found most meaningful. Therefore, the need to reveal the DTE issues on both the formative and economic aspects.

The kinds of issues the male and female Teachers find meaningful are opened up in the subsequent sections.

7.4.1.1 Male (Formative Aspect)

This section describes the method of analysis used and shows how the conclusions were drawn from the data. The data categorisation are 1st order terms and 2nd order theme and 2nd order sub-issues (See Appendix VII). As discussed earlier, the 1st order terms captures the exact words of the participants while the 2nd order theme was derived from the words used by

participants, so as to represent the meaning of the data in relation to the participants as much as possible. This section will focus on the 2nd order themes.

Table 7:3 Male DTE Issues on the formative aspect

2nd Order Themes
Difficulty in usage
Technology dependency
Detached versions of technology
Hindrance to Achievement or Goal
Limitations of technology
Time mismanagement of technology
Inaccessibility of technology
Assumptions about Technology
Technical malfunctions
Bad experiences on usage
Restraint on technological power
Impedance of technology
Technological Enforcement

The male primary Teachers found more issues in the formative aspect meaningful in their ICT use in the classroom. See Table 7.3. An excerpt of the terms used in the formative aspect are compiled and categorised as 1st order terms. Similar issues are grouped together and given a theme name from the words of the participants. The discussion on the data organising in Chapter 5 has helped the Researcher with the theme name, that is, the best phrase that captures the issues in the 1st order category. The theme name is placed in the 2nd order theme column for ease of data structuring. Full table is shown in Appendix VII.

7.4.1.2 Male (Economic Aspect)

The breakdown analysis of the economic aspect on the male gender can be referred to in Appendix VII. The data structure of this breakdown is found below.

An excerpt of the terms used by the male Primary Teachers in the economic aspect are compiled and categorised as the 1st order terms. Similar issues are grouped together and given a theme name. This theme name is based on the intuition of the Researcher on the best phrase that captures the issues in the 1st order category as a whole. The theme name is placed in the

2nd order theme column for ease of data structuring. The sub-issue refers to the variety of details derived under the main 2nd order theme and are described in form of italics. The S/N refers to the serial number of the 2nd order theme. This section will focus on the 2nd order themes. An example of this illustration is given below; full table is shown in Appendix VII.

Table 7:4 Male DTE Issues on the economic aspect

S/N	2nd Order Themes
1	Ineffectiveness of technology
2a	Inefficient use of time
2b	<i>Waste of time</i>
2c	<i>Time investment: consciously investing time</i>
2d	<i>Time consuming: hindrance to management of time</i>
2e	<i>Lack of time</i>
3	Limited resources
4a	Money
4b	<i>Budget: resources planned for an allocated purpose</i>
5	Technical resource limitation
6	Inadequate use of technology

The data structure of the economic aspect above has helped to configure our data into an organised visual aid. There are six major issues as a whole with some sub-issues. For example, a major issue on inefficient use of time is further broken down into four sub-issues, they are: waste of time, time investment, time consuming and lack of time. Therefore, the issue of time conveyed a much broader meaning when used by participants. Another major issue which is money was also broken down into a sub-issue of budget. It is important to note that creating a major issue is based on the 1st order terms, which are the respondents' original terms. Hence finding similarities among the many terms in the major issue leads to a sub-issue.

7.4.1.3 Female (Formative Aspect)

The breakdown analysis of the formative aspect on the female gender can be referred to in Appendix VII. The data structure of this breakdown is found below.

An excerpt of the terms used by the female Primary School Teachers in the formative aspect are compiled and categorised as the 1st order terms. Similar issues are grouped together and given a theme name. This theme name is based on the choice of the Researcher on the best phrase that captures the issues in the 1st order term category as a whole. The theme name is placed in the 2nd order theme column for ease of data structuring. This section will focus on the 2nd order themes. The S/N refers to the serial number of the 2nd order theme. The same process as exemplified above was used across the board. Full table is shown in Appendix VII.

Table 7:5 Female DTE Issues on the formative aspect

S/N	2 nd Order Themes
1	Deprived Facilities
2a	Technical Malfunction
2b	<i>Hardware Problems</i>
2c	<i>Internet Issues</i>
2d	<i>Program/Software Errors</i>
3a	Difficulty in Usage
3b	<i>Incompetency</i>
4a	Hindrance to Skill Formation
4b	<i>Effect on Research Skills</i>
4c	<i>Effect on Writing Skills</i>
4d	<i>Effect on Values</i>
5a	Limitation of Technology
5b	<i>System Failure</i>
6	Fallible Design of Technology
7a	Technology Dependency
7b	<i>Undue Attachment</i>
7c	<i>Effect on Creativity</i>
7d	<i>Laziness</i>
8	Unusual Attachment to Technology
9	Assumptions of Technology
10	Limited Technical Resource
11	Inaccessibility of Technology
12	Bad Experience on Usage
13	Inconsiderate One-Way Quick Fix
14	Technical Overload
15	Strenuous Technical Requirement
16	Destruction

The data structure above has helped to arrange the raw data into an organised visual aid. There are sixteen major issues as a whole with some sub-issues. For example, a major issue on technical malfunction is further broken down into three sub-issues, they are: hardware problems, internet issues and program/software errors. Another major issue which is difficulty in usage was also broken down into a sub-issue of incompetency. Three other major issues were also broken down into sub-issues. This is elaborated upon in the table above. It is important to note that highlighting a major issue is based on the 1st order terms, which are the respondents' original terms. Hence finding similarities among the 1st order terms in the major issue (2nd order theme) led to a sub-issue.

7.4.1.4 Female (Economic Aspect)

Female Primary School Teachers found the issues in the economic aspect meaningful in their ICT use in the classroom. An excerpt of the issues discussed in the economic aspect are compiled and categorised as the 1st order terms. Similar issues are grouped together and given a theme name. This theme name is based on the choice of the Researcher as to the best phrase that captures the issues in the 1st order category as a whole. The theme name is placed in the 2nd order theme column for ease of data structuring. The same process as exemplified above was used. This section will focus on the 2nd order themes. Full table is shown in Appendix VII.

Table 7:6 Female DTE Issues on the Economic Aspect

S/N	2 nd Order Theme
1a	Inefficient use of time
1b	<i>Waste of time</i>
1c	<i>Time investment</i>
1d	<i>Time consuming</i>
1e	<i>Lack of time</i>
1f	<i>Restrain on time: stop someone from doing something or put under control</i>
2	Limitation of knowledge
3	Too long technical instructions
4	Inadequate use of limited resources
5	Technical resources limitations
6	Limited usage
7	Money
8	Inefficiency of technology
9	Limited Resources
10	Access to resources
11	Waste

7.4.1.5 Similarities and Differences Analysis Findings

7.4.1.5.1 Economic Aspect of Gender (Male and Female)

This section discusses the similarities and differences of the DTE issues Primary School Teachers of both genders (female and male) raised as a concern in the economic aspect. There

are eleven major issues and two of these major issues have sub-issues. The data structure below will reveal what both genders find meaningful and which of these issues is relevant to either one of the genders. Although this study could only get access to four male Primary School Teachers; hence findings about the male cohort might not be a full representative discussion. However, it shows how the findings might be obtained if sample sizes are larger.

Evaluating Table 7.7, S/N represents the serial number of the issues while the alphabets are used for the sub-issues. The issues are the 2nd order theme as discussed in the qualitative analysis section. The sub-issues are further categorisation of issues under a major issue (2nd order theme). This section examines the genders of the male and female Primary Teachers.

A brief discussion of Table 7.7 shows the kind of DTE issues Primary Teachers face with ICT use in the classroom. These issues focus specifically on the economic aspects which are meaningful in terms of resources, waste, management efficiency and so on.

Table 7:7 Teachers' Economic DTE Issues (Both Genders)

S/N	Issues	Sub-Issues	Male	Female
1a	Inefficient use of time		✓	✓
1b		Waste of time	✓	✓
1c		Time investment	✓	✓
1d		Time consuming	✓	✓
1e		Lack of time	✓	✓
1f		Restrain on time		✓
2	Limitation of knowledge			✓
3	Too long technical instructions			✓
4	Inadequate use of limited resources (technology)			✓
5	Technical resources limitation		✓	✓
6	Limited usage		✓	✓
7a	Money		✓	✓
7b		Budget	✓	
8	Inefficiency of technology		✓	✓
9	Limited general resources		✓	✓
10	Access to resources			✓
11	Waste			✓

The first thing to be noted is that the male Teachers did not raise concerns on six issues (a mixture of both major and sub-issues). Issues such as restraints on time, limitations of knowledge, too many technical instructions, an inadequate use of limited resources, inadequate access to resources and waste. It is surprising that the female Teachers did not view budgets as an issue when the male Teachers did.

7.4.1.6 Formative Aspect of Gender (Male and Female)

This section structurally provides the formative issues the female and male Teachers raised as a concern in the use of ICT.

There are some concerns relevant to both genders while others are relevant to only one of each. The Table 7.8 below shows, with a tick symbol, formative issues relevant to female and male Teachers respectively. In the S/N column, the figures represent the number of main issue(s) and the alphabets represent the sub-issue (s) of the main issue. The tick sign shows if they are common to both the male and female gender.

An overview of Table 7.8 shows that there are twenty-two formative issues as a whole raised by Primary Teachers (male and female). However, there are some sub-issues which cannot be overlooked. For example, the major issue of technical malfunctions was broken down into three sub-issues. These are hardware problems, internet issues and program/software errors. Although these sub-issues are more pertinent to the female gender. It is noticeable that five out of twenty-two major issues had sub-issues. This shows that there is a likelihood of occurrence of some deeper issues in a major issue. The serial number (S/N) is the number that identifies the major issues while the alphabets represents the sub-issues.

Table 7:8 Teachers' Formative DTE Issues

S/N	Issues	Sub-Issues	Male	Female
1a	Difficulty in usage		✓	✓
1b		Incompetency		✓
2a	Technology dependency		✓	✓
2b		Undue Attachment		✓
2c		Effect on creativity		✓
2d		Laziness		✓
3a	Limitations of technology		✓	✓
3b		System failure		✓
4	Inaccessibility of technology		✓	✓
5a	Technical malfunctions		✓	✓
5b		Hardware problems		✓
5c		Internet Issues		✓
5d		Program/Software errors		✓
6	Bad experience on usage		✓	✓
7	Detached versions of technology		✓	
8	Hindrance to achievement/goal		✓	
9	Time mismanagement of technology		✓	
10	Assumption about technology		✓	✓
11	Restraint on technological power		✓	
12	Impedance of technology		✓	
13	Technological enforcement		✓	
14a	Hindrance to skill formation			✓
14b		Effect on research skills		✓
14c		Effect on writing skills		✓
14d		Effect on values		✓
15	Fallible design of technology			✓
16	Unusual attachment of technology			✓
17	Limited technical resources			✓
18	Inconsiderate one-way quick fix			✓
19	Technical overload			✓
20	Strenuous technical requirement			✓
21	Destruction of technology			✓
22	Deprived facilities			✓

7.4.2 Qualitative Analysis of DTE Issues by Teachers' Years

The numbers of Teachers in each year group are too low to allow any real trust in the quantitative analysis. Therefore, this section focuses on the qualitative analysis of issues on aspects in the following years: the social issues in the Early Years, the lingual issues in the Early Years and Year 4 respectively, the juridical issues in Year 1 and the formative issues in Year 6. These issues were found to be the remarkably meaningful by the Primary School Teachers in these years.

As discussed in section 5.2.1.7 the quantitative analysis looks at patterns and not individual aspect-length (see section 8.1.3.7).

The breakdown of the participants into each year group is shown below:

Early Years: V5, V11

Year 1: V6, V15

Year 2: V16, V5

Year 3: V20, V12

Year 4: V10, V11, V1, V8

Year 5: V11

Year 6: V18, V13, V7

7.4.2.1 Early Years (Social Aspect)

This section collates the social issues raised in the Early Years. The social aspect has the highest issues in the Early Years as compared to other years (see: Table 7.9). Hence, it is appropriate to assume that all issues to be revealed are already raised in this Early Year.

These issues are categorised into the 1st order terms and the 2nd order themes. This section will focus on the 2nd order themes. Illustration of this can be found in Appendix VIII.

Table 7:9 Early Years Teachers' Social DTE Issues

S/N	2 nd Order Theme (Early Years)
1	Limited social interaction
2	Non-engagement
3	Relationships
4	Cultural Assumptions
5	Independence

The list of issues above has revealed what Primary School Teachers in this Early Year find meaningful.

Striking issues such as limited social interaction and non-engagement were raised as major concerns. Analysis of this is shown in Appendix VIII. Other issues like relationships, cultural assumptions and independence, were also raised by Early Year Teachers.

7.4.2.2 Early Years and Year 4 (Lingual Aspect)

Early Years and Year 4 both found the lingual aspect most meaningful across other aspects. It is then necessary to open this up and find out the issues that are meaningful to these cohorts. The first part focuses on analysing the lingual aspects in the Early Years. These issues were separated out into the 1st order and 2nd order. The 1st order terms specifically shows the Primary Teachers focus while the 2nd order themes are derived based on the interpretations of the collated issues in the 1st order category, as discussed earlier. This section will focus on the 2nd order themes. The same process, as exemplified above, was used for Year 4. The full detail of analysis is shown in Appendix VIII.

Table 7:10 Early Years Teachers' Lingual DTE Issues

S/N	2nd Order Themes
1.	Speech defect
2.	Struggles to use books
3.	Virtual communication risks
4.	Website reliance
5.	Effect on spellings
6.	Effect of writing
7.	Effect on communication
8.	Inappropriate Advertisement
9.	Wobbly designed Programs
10.	Difficulty with Passwords
11.	Likelihood of Deceit

An analysis on the Lingual aspect on Year 4 was also derived. Full table is shown in Appendix VIII).

Table 7:11 Year 4 Teachers' Lingual DTE Issues

S/N	2 nd Order Themes (Year 4)
1	Log-in difficulties
2	Signage obstacles
3	Difficulties with Password
4	Writing difficulty
5	Website/ Internet reliance
6	Likelihood of Deceit
7	Effect on spelling
8	Wobbly designed Programs
9	Inappropriate Help system
10	Inaccurate information
11	Inappropriate Advertisement
12	Expression
13	Archives

7.4.2.3 Year 1 (Juridical Aspect)

This section focuses on the juridical aspects in Year 1 because it raised the most concerning issues pertaining to other years (see Figure 7.6). These issues were separated into the 1st order and 2nd order. The 1st order specifically shows the Primary School Teachers' terms while the 2nd order themes were derived based on the interpretations of the collated issues in the 1st order category. This section will focus on the 2nd order themes. Full table is shown in Appendix VIII.

Table 7:12 Year 1 Teachers' Juridical DTE Issues

S/N	2 nd Order Themes
1	Effect of inappropriateness
2	Fear of authority
3	Questioning quality
4	Low standards

7.4.2.4 Year 6 (Formative Aspect)

This section focuses on the issues in the formative aspects in Year 6 due to the peak of concerns across all years. Year 6 comprises of V18, V13 and V7. These issues were separated out into the 1st order and 2nd order. The 1st order specifically shows the Primary Teachers' terms while the 2nd order themes are derived based on the interpretations of the collated issues in the 1st order category. This section will focus on the 2nd order themes. Full table is shown in Appendix VIII.

Table 7:13 Year 6 Teachers' Formative DTE Issues

S/N	2 nd Order Themes
1	Technical resource limitation
2	Inefficiency of Technology
3	Difficulty in usage for novice
4	Untamed reliance on technology
5	Incompatibility of Technology
6	Inefficient use of time
7	Technology bias
8	Effect of past technical experiences
9	Connection issues
10	Restraint on technological power

7.4.2.5 Similarities and Differences in Early Year and Year 4 Lingual Issues

This section is based on the qualitative analysis earlier carried out on the years of schools. The lingual aspect is found to be most striking in the Early Year and Year 4. Therefore, a specific analysis is carried out on the lingual aspect of both the Early Year and Year 4. Its aim is to have a better view of comparison between the similarities of both years, the issues relevant in just the Early Years and the issues relevant to those in Year 4. Full table is shown in Appendix VIII

It is necessary to mention that from the list below, the diversity of issues are sometimes distinct to a key stage level. However, the issue on the effect of writing is largely an issue amongst Year 4 Teachers.

A qualitative list of these down-to-earth issues are summarised below.

Table 7:14 Early Years and Year 4 Teachers' Lingual DTE Issues

S/N	ISSUE	EARLY YEAR	YEAR 4
1	Website reliance	✓	✓
2	Effect on spelling	✓	✓
3	Effect on writing	✓	✓
4	Inappropriate advert	✓	✓
5	Faulty design programs	✓	✓
6	Difficulty with passwords	✓	✓
7	Likelihood of deceit	✓	✓
8	Speech defect	✓	
9	Struggle to use books	✓	
10	Virtual communication risk	✓	
11	Effect on communication	✓	
12	Login difficulties		✓
13	Signage obstacles		✓
14	Unreliable help system		✓
15	Inaccurate information		✓
16	Temperamental		✓
17	Archives		✓

There are seventeen overall lingual issues found in both the Early Year and Year 4. The top seven of these issues are common in both years. Only four out of the total of seventeen of these issues are relevant to Year 4. Only six issues are strictly relevant to the Early Year.

The varieties of DTE issues in everyday life practise derived using Dooyeweerd aspects cannot be over-emphasised. As previously mentioned, the 2nd order themes are derived from the 1st order terms which are the exact terms participants used in discussing their issues. This section will focus on the 2nd order themes. The lists of issues uncovered affecting both the Early Years and Year 4 are numerous. Table 7.15 below gives a brief explanation of the themes.

Table 7:15 Brief Themes Explanation

S/ N	2 nd Order Theme (Issue)	Explanation of Theme
1	Website reliance	Absolute dependence on web or internet usage. This issue is relevant to Primary Teachers in both Early Year and Year 4
2	Effect on spelling	Incorrect way of spelling. This issue is a concern to Primary Teachers in both years
3	Effect on writing	Concerns when students cannot write out proper words. This issue is more of a concern to Year 4 Teachers.
4	Inappropriate Advert	Unbefitting advertisement especially on YouTube and websites. This issue is relevant to Primary Teachers in both years
5	Faulty designed programs	Software not working to a satisfactory level. This issue is relevant in both years
6	Difficulty with password	This is the persistent troubles with password. This issue is relevant in both the Early Year and Year 4
7	Likelihood of deceit	The grey area when Primary Teachers are not sure if students are learning or being entertained. This issue is relevant to Teachers in both years
8	Speech defect	Low poor speech. This issue is only relevant to Teachers in the Early Year
9	Struggle to use books	Uninterested in book usage. This issue is only relevant in the Early Year
10	Virtual communication risks	Exposure to online risks. This issue is relevant in the Early Year
11	Effect on communication	Little or no face-to-face communication. This issue was raised by Teachers in the Early Year
12	Login difficulty	The challenges faced with logins. This issue is only relevant to Teachers in Year 4
13	Signage obstacles	Hindrances to display work done. The Year 4 Teachers raised this issue
14	Unreliable help system:	The help system is not spot-on. This issue is only relevant in Year 4
15	Inaccurate information	There is no guarantee to 100% information. Only Year 4 Teachers raised this issue
16	Temperamental technology	Unstable and fickleness of technology. Issue are only relevant to Year 4 Teachers
17	Archives	Inconvenient mode on building up storage. This issue is only relevant to Year 4 Teachers

Thus far, this section has discussed the similarities and differences of lingual issues in Early Years and Year 4. There are seventeen issues from the lingual aspect Teachers raised. Some similarities were observed on issues with the Early Year and Year 4, while some issues were peculiar to only Year 4 and Early Years respectively. Explanation of what each theme includes comprehensively is discussed. The next section discusses the analysis of schools.

7.4.3 Quantitative Analysis of DTE Issues by Schools

This section focuses on the EIV gained from participants in these cohorts. Overview descriptions of each school are earlier discussed in section 4.6.2.

A discourse on the issues faced by the three schools respectively and comparatively, and the issues they found meaningful is discussed. This comparison will reveal if the issues derived are peculiar to each school and if the OfSTED ranking which differentiates each of these schools exempts their Teachers from some of the ICT issues. The results will also reveal an indication of what might be the DTE issues in other primary schools in Salford.

7.4.3.1 Comparison of Schools

Three primary schools were involved in this research. The first school, coded as school A, had six staff interviewed. The Researcher successfully interviewed eight staff from the second school, which is coded as school B. The third school, which is coded as school C, has six staff interviewed for this study. A breakdown of schools with the code information of the participants and number are shown in the demographic profile (section 4.6.3; Table 4.1).

A comprehensive chart is shown below:

Table 7:16 Number of issues mentioned by Primary School Teachers in each aspect, as percentages: Schools EIV

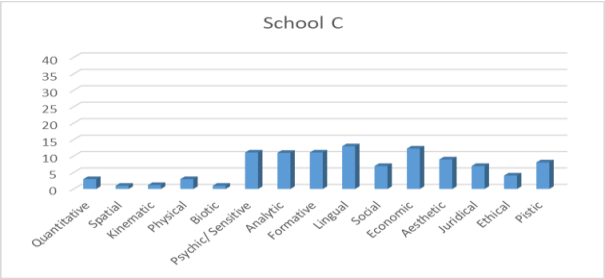
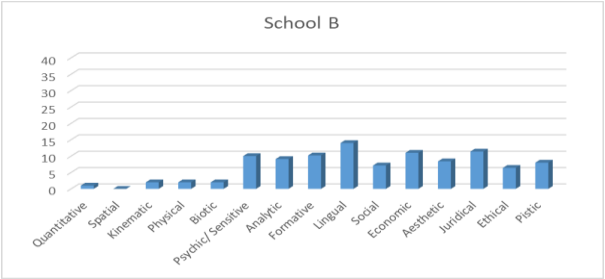
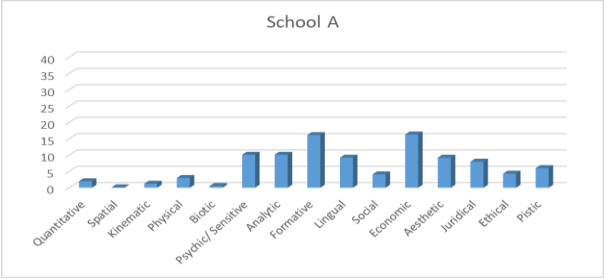
Aspects	School A	School B	School C
Quantitative	2	1	3
Spatial	0.12	-	1
Kinematic	1.24	2	1.2
Physical	3	2	3
Biotic	0.53	2	1
Psychic/ Sensitive	10.1	10	11.1
Analytic	10.1	9.1	11
Formative	16.13	10.2	11.1
Lingual	9.22	14	13
Social	4.1	7.14	7
Economic	16.31	11	12.3
Aesthetic	9.22	8.4	9
Juridical	8	11.4	7
Ethical	4.3	6.4	4.1
Pistic	6	8	8.1

The breakdown of the participants into each school is shown below:

School A (V14, V12, V7, V8, V17, V15)

School B (V1, V2, V4, V5, V9, V6, V13, V18)

School C (V16, V11, V10, V19, V20, V3)



7.4.4 Qualitative Analysis of DTE Issues by Schools

As discussed in section 4.6.2 on the background information on the schools interviewed, school A is a one star rating, a mixed gender community school whose age range is 3-11 with an open religion and had six staff interviewed. School B is a three-star rating, a voluntary aided mixed gender school whose age range is 3-11 and religion is Church of England and had eight staff interviewed. School C is a five-star rating, a voluntary aided mixed gender school whose age range is 3-11 and religion is based on the Church of England had six staff interviewed for this study. Also, EIV focuses on the kinds of down-to-earth issues meaningful to Teachers as discussed in section 5.2.1.

The schools' ratings do not exempt them from DTE issues. This section does not compare issues across the schools, but used the quantitative patterns in Table 7.16 to identify which aspect of which school to investigate DTE issues. This section shows the various aspectual issues. The breakdown of the participants into each school is shown below:

School A (V14, V12, V7, V8, V17, V15)

School B (V1, V2, V4, V5, V9, V6, V13, V18)

School C (V16, V11, V10, V19, V20, V3)

7.4.4.1 School A (Formative Aspect)

In School A the formative aspect is identified as one of the prominent issues raised by Primary Teachers. The similar issues of the formative aspect are collated and categorised into the 1st order terms column and a theme that best expresses these issues is categorised into the 2nd order theme. This section will focus on the 2nd order themes. Full table is shown in Appendix IX.

Table 7:17 School A - Teachers' Formative DTE Issues

Formative Aspect (Issues)	
S/N	2nd Order Themes
1	Technical malfunction
2	Difficulty in usage
3	Inaccessibility of technology
4	Strenuous technical requirements
5	Limitation of technology
6	Detached version of technology
7	Hindrane to achievement/goal
8	Deprived facilities
9	Limited technical resources
10	Restraint on technological power
11	Inconsiderate one-way quick fix
12	Technical overload
13	Hindrances in skills formation
14	Assumptions of technology
15	Bad experiences on usage
16	Fallible design of technology

7.4.4.2 School A (Social Aspect)

This section discusses the qualitative analysis of the social aspect in school A. The social aspect in school A is the lowest issue raised across the three schools. The social issues are categorised into both the 1st order terms and the 2nd order themes. This section will focus on the 2nd order themes. Full table is shown in Appendix IX.

Table 7:18 School A - Teachers' Social DTE Issues

Social Aspect (Issues)	
S/N	2nd Order Themes
1	Limited technical know-how
2	Technical avoidance
3	Obtaining support and critique
4	Reluctant to share
5	Irresponsibility
6	Hindrance on social interaction
7	Not taking ownership
8	Technology addiction
9	Misbehaviour

7.4.4.3 School A (Economic Aspect)

The economic aspect has the highest issues among other aspects comparatively in school A. Examined across the three schools comparatively; the economic aspect in school A has the highest issues.

It is thus necessary to reveal the kinds of issues discussed in this aspect. The specific terms of the Primary School Teachers on the economic aspect in school A are categorised into the 1st order terms. The 2nd order theme is an appropriate phrase that implies the meaning of the issues earlier categorised into 1st order terms. This section will focus on the 2nd order themes. Full table is shown in Appendix IX.

Table 7:19 School A - Teachers' Economic DTE Issues

Economic Aspect (Issues)	
S/N	2nd Order Themes
1	Cost
2	Limited resources
3	Inefficient use of time
4	Inefficiency of technology
5	Technical malfunction
6	Technical resources limitation
7	Difficulty in usage for novice
8	Limited technical access

7.4.4.4 School A (Lingual Aspect)

School A is a one star ranking school situated in a disadvantaged community. The Primary Teachers in this school found fewer issues in the lingual aspect when compared across School B and School C. To identify the kinds of lingual issues expressed, that made School A point of focus, it is necessary to collate these issues.

The lingual issues are categorised into the 1st order terms. The phrase that most appropriately expresses the collated issues in the 1st order category are categorised into the 2nd order themes. This section will focus on the 2nd order themes. This is illustrated in the table below. Full table is shown in Appendix IX.

Table 7:20 School A - Teachers' Lingual DTE Issues

Lingual Aspect (Issues)	
S/N	2nd Order Themes
1	Know-how
2	Inadequate staff training
3	Effect on communication
4	Log-in difficulties
5	Effect on writing
6	Difficulty with passwords
7	Poor documentation
8	Inappropriate advertisement
9	Avoidance of library
10	Struggle to use books
11	Virtual communication
12	Inappropriate website
13	Inaccurate information
14	Likelihood of deceit
15	Faulty design of programs

7.4.4.5 School B (Juridical Aspect)

School B is a three-star ranking school situated in a disadvantaged community. The juridical aspect in school B is cited as the highest measure of issues from the Primary School Teachers. It is necessary to examine the kinds of issues discussed. These issues are categorised into the 1st order terms, entailing specifically the words used by the Primary Teachers. A phrasal word that best explains the issues in the 1st order is developed and then categorised into the 2nd order theme. This section will focus on the 2nd order themes. This explanation is illustrated in the table below. Full table is shown in Appendix IX.

Table 7:21 School B - Teachers' Juridical DTE Issues

Juridical Aspect (Issues)	
S/N	2nd Order Themes
1	False judgement
2	Undue enforcement
3	Authority
4	Denial of what is due
5	Inappropriateness
6	Responsibility
7	Quality
8	Security
9	Balance
10	Maximum use
11	Truthfulness
12	Standards
13	Insincerity

7.4.4.6 Similarities and Differences Analysis Findings with Schools

7.4.4.6.1 Similarities with School B (Pistic and Aesthetic)

This section provides a qualitative analysis of the similar aspects between schools. In school B the pistic and aesthetic aspects were found to be similar with school C. However, this section focuses on the issues derived from these aspects in school B alone. Some of these issues were separated out into 2nd order themes for easy comparison. However, others are simply stated in a tabular form as shown in Table 7.22. Full table is shown in Appendix IX.

Table 7:22 School B - Teachers' Pistic DTE Issues

Pistic Aspect (Issues)	
S/N	2nd Order Themes
1	Against religious faith
2	Prejudice
3	Certainty
4	Loss of good morale
5	Idolatry
6	Way I see myself
7	User resistance
8	Commitment

7.4.4.7 Similarities with School C (Pistic & Aesthetic Aspect)

School C is a five-star ranking Primary school situated in a disadvantaged community. This section provides a qualitative analysis of the similar aspects between schools. In school C, the pistic and aesthetic aspects were found to be similar with school B. However, this section focuses on the issues derived from these aspects in school C alone. Full table is shown in Appendix IX.

7.4.4.8 Differences with School B (Ethical Aspect)

This section provides a qualitative analysis of the difference in aspects across the three schools. In school B the ethical aspect is found to be remarkably outstanding compared with school A and C. However, this section focuses on the issues derived from the ethical aspects in school B alone because it has the highest issues. The ethical issue is categorised into both the 1st order terms and the 2nd order themes. This section will focus on the 2nd order themes. Full table is shown in Appendix IX.

Table 7:23 School B Teachers' Ethical DTE Issues

Ethical Aspect (Issues)	
S/N	2ND Order Themes
1	Unethical content
2	Not self-giving
3	Improper
4	Burden
5	Exposure to unethical risks
6	Unhealthy competition
7	Known danger

This section discusses the school analysis by showing the similarities and differences of DTE issues among the three schools.

The next section discusses the qualitative analysis on values in literature.

7.4.5 Qualitative Analysis of DTE Issues by Value Literature

Quantitative analysis of values was not undertaken because the low sample size makes any number of little value; instead only a qualitative analysis is undertaken. This section compares the values Teachers hold as against those expressed in the extant literature. However, because of the low sample size it is not worth intensively studying values across cohorts. As such comparing aspectual values across cohorts would be a subject for future research.

This section discusses the qualitative analysis findings of the kind of values Primary Teachers place on ICT use in the classrooms. Values such as how Teachers behave and how they want children to behave and live as discussed in section 2.10.3.

Comparing Dooyeweerd's suits of aspect with the 2nd order themes will help to disclose meaningful and otherwise downplayed aspects by Primary School Teachers. This section also reveals the surprises raised by the comparative analysis of each literature on value discussed in section 3.9.4 and later compares them with the 2nd order theme of Teachers.

The value analysis also compare Teachers' aspectual values with value literatures, this helped reveal some missing aspects in value literature that Primary Teachers found meaningful. However, it is not to say that aspects that are in line with what Teachers' value in practice are under rated.

7.4.5.1 DTE Values Analysis by Users

This section briefly describes the two stages involved in the value data analysis. The rationale is to show the value-laden aspects Teachers find meaningful in ICT use in the classroom. This analysis process is done by aspectually grouping the various 1st order terms into themes as shown in Table 7.24.

7.4.5.2 Stage One: Value Qualitative Analysis

As discussed in section 5.3.6, the value analysis process showed two distinctive steps. The first step is to aspectually analyse the collated normative issues while the second step is to group these normative issues based on their functioning aspects. The subsequent analysis

process stage was to produce 2nd order themes that reflect the collated normative issues from participants. The following section shows the 2nd order themes of value analysis.

7.4.5.3 Stage Two: Analysis of Values from Data

The data structure below shows the aspectual analysis on the 2nd order theme values Primary School Teachers find meaningful in their use of ICT in the classroom.

Table 7:24 Aspectual Analysis Values of Teachers

Code	Excerpts Texts	Aspect	Reason	2 nd Order
V1	It's much more instant maybe they are <u>losing patience</u> . They expect everything instant.'we live in the instant mash society' where everything has to be done immediately.nobody wants to wait for anything. And you know obviously I have gone to 'come on, load up...'go faster'...	Ethical	i.e. selfish, centred on 'Me'	Losing patience
V3	If you get iPads out, they are all just in their own world focusing on these things and there's no <u>social interaction</u> , there's no like..., talk to your friend about this or get other people's perspective on some things, it's just you in your own world. So I think it does hinder that social interaction a little bit, definitely.	Social	Social interaction	Social
V3	I think it hinders you <u>accepting people's opinions</u> because you are used to it's just been me. but you are not prepared to listen to people,	Ethical	The opposite of selfish, in one's opinions	Accepting people's opinion
V3	It makes you <u>lazier</u> because you just go (type and found it) but when I used to do my homework, in the old days, you have to find a book or go to the library or ask mum and dad.	Formative	Not achieving	Laziness
V3	If they want some things they want it right now, they are <u>not prepared to wait</u> . A lot of things in the computer they don't have to, they can press the button and it's there, they can play a game and it's done, there's no waiting, but life is not like that. Loads of times in life you have to wait for things, nothing comes to you instantly like you finding a job, when you get into a supermarket and you have to wait in a queue, you have to wait in a lot of instances, nothing ...perhaps it's making people more <u>impatient</u> .	Ethical	Negative functioning because it is centred on Me Me!	Losing patience
V3	They won't have <u>to take turns</u> if they have got their own laptops or iPads and their own <u>imaginations</u> , because its hindering writing, if they come to write a story or have been asked to use their own imagination, a lot of these computer games and video games they don't have to think of anything at all, it's all done for you, you just play and stop. It's not like when they come to sit and write a story and think of their own characters, their own settings, their own problems. It's like waooh, it doesn't come that easily anymore because I'm used to it being put in front of me. This will eventually <u>hinder their imaginations</u> .	Social Aesthetic	Social- taking turns Aesthetic- imaginations (Aesthetic aspect of formative knowing- hinder their imaginations)	Taking turns Hindrance on imagination
V4	Also we know a lot - the boys, particularly, usually play on 18 games, you know, very violent games (Black Ops, all sorts of stuff). You hear them saying - I didn't sleep, I was up playing Black Ops, so that obviously doesn't help the next day in school and they are tired and sometimes they say they have had nightmares because they have watched horror things. So that's the down side, I think children are <u>losing their innocence</u> a lot younger/earlier.	Juridical/ Social	Juridical and negatively functioning in the social aspect - losing their innocence	Early loss of innocence
V4	I think a lot of children do spend a lot of time indoors than we did and we find the children around here tend to be one extreme or the other, they are like kept in all the time because the parents think it's <u>not safe</u> out which, to be honest, it's not very safe around here, or they just want them off out of the house, which neither is great. Ones that aren't free are on computers all the time but they are at risk in other ways, and the ones that stay inside they are, a lot of the time, watching telly or on a computer or that sort of thing.	Juridical, Psychic	It's not safe	Safety
V4	I think it affects their <u>attention</u> span as well; they want everything to be very (demonstrates). They are used to everything being fast and exciting and some of them find it quite hard to sort of concentrate for a while - they are not easy to handle in the class, they are certainly not as good as they could be.	Psychic	Attention is more likely to refer to mental attention span, which is psychic	Effect on attention span
V5	I think the biggest problem with ICT is sometimes some people get over-reliant on it, I think Teachers, who are recently qualified and are so used to ICT being there, become quite reliant on it and it's only when you've not had it that you find other <u>creative</u> ways to doing things.	Formative	Creative because it is to do with doing	Impedes creativity

V5	We find in Early Years the draw back has been a lot of our children coming at three with speech and language delay and it's because they spend a lot of time watching telly and they spend so much time focusing on the TV, so that speech isn't there because they are <u>not used to interacting</u> because they are so used to being put in front of the TV	Social	Negative functioning and not used to interacting	Social interaction
V5	So if they spend their whole life engaged in ICT and computers and they don't get to go outdoors, they don't get to do messy play and everything else, then at no point do they get that <u>sense of risk or that taking part</u> . A lot of them don't even like going outside because they are so used to being in.	Formative	Formative- sense of risk or that taking part. It is formative, at least partly. Taking part might??	Risk taking
V5	If you didn't have all this kind of stuff then you are used to <u>being more creative</u> .	Formative, Aesthetic	Formative, Aesthetic- being more creative.	Impedes creativity
V5	But this morning just 45 minutes of just playing the instruments, the children don't get the chance to do that nowadays, everything is there on the tablet, on the computer. That whole research purpose we had or I had when I was in school is gone because Google does it for you. GO INTO A BOOK, A BOOK, picking up a book and looking for something. <u>That research skill of skimming and scanning element it's got</u>	Lingual	Lingual - research skill of skimming and scanning element it's got. They are thinking of lingual when 'go into a book'?	Research skills
V5	It does make you think about what will happen in the next generation. <u>They won't be used to doing anything for themselves because everything would be done for them</u>	Formative, Juridical	Formative, Juridical - they won't be used to doing anything for themselves because	Laziness
V5	I do my shopping online it's easier and convenient, but then you don't have the interaction side of things I think, as well, with the shopping element. Unless children go out and have that experience shopping element, they do not have that <u>life experience</u> which is why when they get to now doing college work and things they are doing now (which sounds bazaar) life experience classes because they don't know how to do it anymore because everything is done for them.	Pistic	Pistic - life experience their vision of what life is about, which is pistic	Life experience
V5	Research shows that children that are read to on a regular basis are the children that do better with reading, with writing, with communication and everything else, because unless they've got that kind of vocabulary, they've got that kind of ...story, they've got that kind of listening skill, nothing else, it doesn't matter what you are teaching them, it doesn't matter if you are reading maths, IT or whatever, if they've not got the basics they can't do anything else, they can't take it in. They've not got that <u>life experience</u> , so when they do get older, they are going to be constantly on a catch up.	Social	Social - life experience Because they are talking about catching up and presumably that refers to compared with others.	Life experience
V5	Doing something through being <u>creative</u> , going back to basics and then you use your ICT as your backup. They still get more out of going on a trip to the farm, we went physically, all of us, 60 of us, on a freezing day it was, to the farm where we saw the animals, we fed the animals, that experience those kids now in year three will remember rather than lets watch a video about the farm.	Pistic	Pistic - creative The bit about the farm was about widening their horizons, and also maybe a little love for animals. Widening horizons might be pistic.	Impedes creativity
V5	Our kids nowadays their <u>life experience</u> is through computers. they don't go out and actually play, they don't go out on bike rides, <u>they don't take risks</u> and they don't do all the things we did as kids because they can do that by sitting down with a nice remote control that can do it for them.	Pistic/ Formative	Pistic/ formative - life experience Maybe life experience means their vision of what life is about, which is pistic. Formative- taking risks	Life experience Risk taking
V6	If you just use a computer, you are not going to use the library, you will just forget about books	Psychic, Aesthetic	Psychic, Aesthetic - didn't	Joy in using book

	and I think that would be terrible, if children <u>didn't have that joy of getting a book</u> , going and sitting.		have that joy of getting a book	
V6	I think it's more important to teach children to read properly, write with a pen and get their letters shaped properly, be able to add up in their head and take away, <u>use their brain properly</u> before they can start thinking of using a computer.	Juridical, Biotic	Juridical, Biotic - use their brain properly	Proper use of brain
V10	The children can be all over the place and they are arguing over who is <u>taking what turn</u> and who is having a go and things like that.	Social	Social - taking what turns	Taking turns
V10	Like socially - children's <u>social skills</u> and things like that, conversations. Yes, people become reliant on using tech, these days I will pick up a phone to try and work out some things instead of using my head to do it, so I guess children are the same. They rely on it rather than...	Social	Social - social skills	Social skills
V11	If you have got children of age 4/5, if I kind of move or turn my back or kind of, you can have the ones that could <u>lose their attention</u> and things like that. So yes, it can have a negative impact.	Psychic		Effect on attention span
V13	So the down side of technology for me is that I suppose all the <u>conversation skills</u> and things you would have naturally done 10/20 years ago - speak to people face to face, so the <u>interaction</u> - mobile phones, iPads, Xbox, everybody has got a telly and everything - it's just a negative impact for me, for all that is lack of social skills and lack of skills like reading, and being able to use a book.... <u>people just think convenience</u> - don't they....at the snap of your finger, you want to be able to find the answer.	Social Social Economic	Social - conversation skills, Social - interaction Economic - people just think convenience	Conversational skills Social interaction Convenience
V14	Because there are only 30, sometimes their batteries aren't charged so when we come to get them the batteries are dead so you might have out of 30 laptops, 6 don't work, so some children have got to <u>share</u> one which they are not happy about, they <u>don't want to share</u> , they want their own one.	Social Social	Social to share Social (negative functioning) - don't want to share	Not sharing
V15	A lot of their <u>experiences are limited</u> , so they don't often go out for the weekend with the family, so they might go to the park or shopping, but that..... their <u>experiences are quite limited</u>	Economic Economic	Economic - experiences are limited Economic - experiences are quite limited	Lack of experience Lack of experience
V16	Erm, in the future it's terrifying, especially as a Teacher and a parent, it really is <u>finding the right balance between invading their privacy and keeping them safe</u> , you know, I don't want to be checking her account all the time, I've got to have some trust but equally keeping her safe is more important than her privacy (laughs) so it's something I have thought about with the class.	Juridical, Aesthetic	Juridical, Aesthetic - finding the right balance between invading their privacy and keeping them safe	Balance Privacy Safety
V19	The <u>social aspects</u> definitely. Chasing the <u>patience</u> away, <u>taking turns</u> . <u>Aggressive</u> as well, if the tab is not coming on, they go on banging - you know, getting quite aggressive, on the game console at home as well	Social Ethical Social Aesthetic	Social - the social aspects Ethical - chasing the patience away Social - taking turns Aesthetic - Aggressive	Social skills Losing patience Not taking turns Aggressiveness
V20	Erm, some of it can take away from them their <u>imagination</u> - because they are not exploring in the same way - everything is kind of thrown at them, even when they are on computer games and things like that - it's just information being thrown at them at times, so they are <u>not really using their imagination to get those experiences</u> , so in the playground you find <u>a lot of the younger children specifically don't really know how to play unless you give them something</u> . We had a late play time today, so usually we have play zones where the activities are going on but because we had a late play time, they've been put away, so we were like you have got the slides, the climbing wall - <u>use your imagination</u> , and they were like, it's a bit boring isn't it when we've not	Formative/ Aesthetic Formative/ Aesthetic Formative/Social	Formative/ Aesthetic - imagination, Aesthetic - imaginations Aesthetic aspect of formative knowing - hinder their imaginations Formative/Aesthetic - not really using their imagination	Hindrance of imagination Hindrance of imagination Cannot play Hindrance of

	got those things - what do you usually do.	Formative/Aesthetic	to get those experiences Formative/Social - a lot of the younger children specifically don't really know how to play unless you give them something. Formative/Aesthetic - use your imagination	imagination
V20	Hum, I think their <u>enthusiasm to participate in sporty kind of things</u> . We get kids that love sport, but then you get some that just want to play on the games, on the computer games. That's their own interest, they haven't got outside activity interests. So I think that's probably affecting them quite a lot. They are so focused on these games that they don't have anything outside, even when we didn't have all of that, we had to find other stuff to do otherwise it could get quite boring, you had to think up games or had outside activities to do.	Psychic/Aesthetic	Psychic/Aesthetic - enthusiasm to participate in sporty kind of things.	Enthusiasm
V20	Yes, I think boys haven't got particularly any special <u>patience, they react very quickly and they shout back very quickly</u> . I think their reaction side of things are a lot quicker than possibly used to their patient level.	Ethical Psychic	Ethical- patience Psychic- they react very quickly and they shout back very quickly	Losing patience Aggressiveness
V20	Also they don't know how to play because if you didn't have all that, you learned to play together. All the <u>social skills</u> , you learn how to <u>cooperate with people, be patient even though you get into arguments</u> , you still learn those social skills, whereas on the games they don't have the same social interactions do they? So when somebody does annoy you it's like 'roar'!	Social Social Ethical	Social - social skills Social - cooperate with people Ethical - be patient even though you get into arguments	Social skills Selfishness Losing patience

Table 7:25 2nd Order Aspectual Values of Teachers

Code	2 nd -Order Themes	Aspects
V20	Enthusiasm	Psychic/Aesthetic
V3,V3,V20V20V20	Hindrance on imagination	Formative, Aesthetic
V20	Cannot play	Formative/Social
V5,V5,V5	Life experience	Formative/Pistic
V4	Early loss of innocence	Juridical/Social
V1, V3,V3,V19V20V20	Losing patience	Ethical
V3	Accepting people's opinion	Ethical
V20	Selfishness	Ethical
V3, V5,V13	Social interaction	Social
V3,V10V19	Taking turns	Social
V10V19V20	Social skills	Social
V13	Conversational skills	Social
V14	Not sharing	Social
V3, V5	Laziness	Formative
V5,V5V5	Impedes creativity	Formative, Aesthetic
V5,V5	Risk taking	Formative
V19V20	Aggressiveness	Aesthetic
V6	Joy in using book	Aesthetic, Psychic
V16	Balance	Aesthetic
V16	Privacy	Juridical
V4, V16	Safety	Juridical, Psychic
V4,V11	Effect on attention span	Psychic
V5	Research skills	Lingual
V6	Proper use of brain	Biotic, Juridical
V13	Convenience	Economic
V15	Lack of experience	Economic

7.4.5.3.1 Stage Three: Aspectual Analysis Comparison

The Table 7.26, shown below, compares Dooyeweerd's suits of aspects with aspects that Primary School Teachers found meaningful.

Table 7:26 Comparison on Aspectual Analysis Values of Teachers

Aspects	Values in 2 nd Order Theme (Data)
Quantitative	-
Spatial	-
Kinematic	-
Physical	-
Biotic	Biotic
Psychic	Psychic
Analytic	-
Formative	Formative
Lingual	Lingual
Social	Social
Economic	Economic
Aesthetic	Aesthetic
Juridical	Juridical
Ethical	Ethical
Pistic	Pistic

Table 7.26 summarises what is meaningful to these Primary School Teachers and the aspects they did not place value on. It is surprising that Primary Teachers did not find the analytical aspect meaningful on values in ICT use.

In summary, this section has shown the aspectual analysis of the 2nd order themes (values) Primary Teachers find meaningful in their use of ICT in the classroom. These analysed 2nd order themes are then compared with Dooyeweerd's suit of aspects in order to reveal overlooked and emphasised aspects.

The next section compares the various aspectual analysed views about values discussed in the literature with the analysed data from Primary Teachers (2nd order themes).

7.4.5.4 Comparison Analysis of Literature with Analysed Data on Values

This section systematically compares data from Primary School Teachers' values with various views about values discussed in literature. This systematic comparison reveals findings which are discussed below.

This comparison will reveal the missing aspects Primary School Teachers found valuable with literature on *theory of basic values*.

The process of comparing the 2nd order themes, which are the aspectually analysed data of the Primary School Teachers, with aspects from the theory of basic values reveals some surprises. Primary School Teachers found three of the aspects which are missing from the theory of basic values meaningful. The missing aspects are Lingual, Biotic and Economic. The themes that summarise what the Teachers find meaningful are shown below:

Table 7:27 Examples of missing aspectual repercussions in theory of basic values meaningful to Teachers

S/N	Themes	Aspects
1	Research skills	Lingual
2	Proper use of brain	Biotic
3	Convenience Lack of experience	Economic

However, Primary School Teachers found all the aspects listed on the theory of basic values meaningful. The three aspects shown above in Table 7.27 (lingual, biotic and economic) are other aspects overlooked by the theory of basic values. A detailed analysis of this is shown in Appendix V. Other comparisons are discussed fully in Appendix V.

7.4.5.5 Summary on Values

This study collated various views about values discussed in the literature. The literature that was examined focused on technology design (VSD Methodology), theory of basic values, values in education, technology education, teaching by Teachers, values in general and literature that engaged with Information Technology (IT).

The collation of the various views about values from these literatures were categorised into aspects which were later compared to Dooyeweerd's fifteen suits of aspects. The reason a comparison with Dooyeweerd's suite of aspect was because of the narrow view of values which these literatures focus on and the concern was that these might lead Researchers and practitioners to assume nothing else is meaningful and so other issues may be downplayed, suppressed, or ignored.

The Teachers' concern of the effect of ICT on the children (pupils) and how in return it affects the Teacher in the classroom. For example: V1 was concerned about the children losing their patience, because they expect everything to be instant, so when Teachers' use ICT

in the classroom, the children are in a haste, saying come on, load up.... Go faster... (V1). The example stated above functions in the ethical aspect. When you lose patience it portrays selfishness, centred on 'Me'.

Another example by V3: The Teacher showed deep concern each time the iPad is brought out to be used by the children in the classroom, as everyone appears to be in their own world focusing on the iPads hence no social interaction, no talking to friends or getting other perspectives on the classwork. Therefore V3 find that the use of the iPads in the classroom hinders social interaction amongst students. This is thus a meaningful issue to V3.

This example functions in the social aspect because the meaning on the issue discussed is how the use of the iPad hinders social interaction.

The reasons discussed above created a need for a philosophy that acknowledges the possibility of a genuine point of contact between technology and human beings. Dooyeweerd's Aspects fitted as a philosophy that affords dignity to everyday life and to what it means to be fully and socially human. Dooyeweerd's suites of aspects were compared with various categories of aspects from the literature and revealed lots of surprises and over-emphasised values.

7.4.6 Overview on Qualitative Analysis

By aspectual identification of issues and subsequent qualitative analysis, the diversity of DTE issues is revealed. Deeper issues are uncovered by two things. One is by seeking to identify why each utterance was made (which aspect made it meaningful), rather than just the semantic meanings of words used. Such reasons are often not voiced explicitly by interviewees but may be subsequently uncovered by cautious, sensitive aspectual analysis. The other is that qualitative analysis within aspects and comparison of types of issue helps to uncover issues that the literature has neglected.

Aspectual analysis of DTE approach is not about compiling a list of issues but also recognising the normativity that is the difference between good and bad in all situations. That each aspect contains its own distinct norm provides a means of studying the values of Teachers in terms of what kinds of thing they feel are good or bad, what should be aspired to or avoided. For example, the aesthetic norm of harmony as good and classroom chaos as bad was found to be a strong value among Teachers. This provides a nuanced way of researching values.

7.5 Chapter Summary

This chapter has discussed how the empirical study influenced the needs of the research by showing how the DTE approach or methodology helps with diversity by abstracting out issues meaningful in each aspect and how it enriches issues in literature, thus expanding the diversity of these issues. It has also shown how the process of assigning aspects brings out deeper issues that are not initially obvious. The DTE methodology has shown how aspects help with normativity by revealing the value-laden issues. The reliability of this study has shown how Dooyeweerd offers a wide range of ways in which issues can be meaningful. Finally, this chapter has discussed how the Researcher has provided a new way of using aspects to analyse the DTE issues of ICT use; thus extending the usefulness of Dooyeweerd's theories.

The next chapter will discuss comprehensively how the findings meet the research needs of the study.

CHAPTER EIGHT: FINDINGS AND DISCUSSION

8.1 Introduction

This chapter will reflect on two main sets of findings. The first reflection is on what is meaningful to Teachers which include DTE issues in ICT use in the classroom in terms of their depth, diversity and values. It places this research finding in the context of the wider world, especially the world of academic literature, but also the educational context. It will also discuss findings of gender in relation to literature. Furthermore, it will discuss issues ignored by literature as it pertains to years and schools.

The second reflection discusses a method used to investigate the first reflection; that is the decision to focus on diversity, depth and values. It also reflects on the method used to answer the main research question, the interview strategy, the use of aspectual analysis and the role of quantitative and qualitative analysis and cohort analysis.

Further on this chapter will discuss how Dooyeweerd provides a double framework for this study. It will reveal the kind of issues meaningful to Primary School Teachers in deprived communities (Salford) that extant literature has previously overlooked.

8.1.2 Reflection A

8.1.2.1 Gender

This section reflects on the findings on male and female genders respectively. These findings are compared with the literature for any surprises.

From the aspectual gender chart discussed in section 7.3.1, and comparing both the male and female gender quantitative and qualitative analysis, there is a difference between issues the male Teachers find meaningful from the kind of issues the female Teachers placed importance on. The amount of issues both the male and female Primary Teachers found meaningful is highlighted in the gender aspectual Table 7.2. Although this study could only get access to four male Primary School Teachers; hence findings about the male cohort might not be a full representative discussion. However, it shows how the findings might be obtained if sample sizes are larger. Data from Table 7.2 shows that the male Teachers placed more concern on the formative aspect while the female Teachers found more meaningful issues on the economic, psychic and aesthetic aspect.

It is relevant to note that the interest in the formative aspect deals with technology, achievements, planning and so on. Interest in the economic aspects points to skilled use of limited resources, budgets, resources, management, cost and so on. The use of Dooyeweerd has helped to uncover this. A more robust example is shown in section 7.3.1.

Although this study could only get access to four male Primary School Teachers; hence findings about the male cohort might not be a full representative discussion. However, some of the finding discussed agrees with some of the gender and technology literature examined for this study. It was expressed that technology is a fundamental way in which gender is expressed in any society (Wyer et al., 2013). Many Researchers have laid emphasis on the gender gap that exists with technology as female Teachers have a lower level of ICT use in the classroom (van Brank et al., 2004; Hermans et al., 2008). The male gender is viewed as having a natural fondness for technology and more confidence in their computer abilities than the female gender (Wyer et al., 2013; Zhang, 2014).

It is important to mention that some of the issues highlighted in the categorised theme on the formative aspect by the male Primary School Teachers are technology dependency, hindrance to achievement, technical malfunctions, and restraint on technological power, technological enforcement and bad experiences on usage and so on. The various issues expressed in these categories are expatiated in Table 7.3.

As stated in the literature review this study agrees with the effect gender has on ICT use. Taken together with the aspectual quantitative and qualitative gender analysis as discussed in Chapter 7, the results showed that the male gender was more interested in the formative aspect which deals with technology, creating and planning. On the other hand the female gender had more interests on the economic aspect which deals with carefulness, management of resources, money and cost. As mentioned in the literature review this study asserts the findings on the existence of gender discrepancy of Bradley and Russell (1997) and the European Commission (2003) are still relevant today. As stated earlier due to the low sample size of the male gender, findings therein might not be a full representative discussion.

Comparing the relationship of the economic aspect to the extant literature it was revealed that women have played a significant role in entrepreneurial growth across the globe (Brush & Brush, 2006; Mueller & Dato-on, 2010). Female entrepreneurs have been found to have an impact on the economy in various ways, such as creating jobs for themselves and others (Kumar et.al. 2013). As mentioned earlier, in some circles, it is recognised that women have better economic sense but this deduction is probably not in academic literature because it has

been difficult getting journals that shows how the female gender function more in the economic aspect compared to the male gender. Although the limited number of male Primary School Teachers used in this study might not be a full representation of the economic issues. Hence the finding on the male economic aspect challenges some of the gender literature.

On this note, there is a need to reveal some of the categorised themes on the economic aspect the female Primary Teachers raised as issues. They are inefficient use of time, lengthy technical instructions, inadequate use of limited resources, cost and so on. A more detailed qualitative analysis of all issues on the economic and formative aspects is shown in Tables 7.6 and 7.5 in section 7.4.1.3 to 7.4.1.4.

The higher interest in the psychic aspect by female Primary Teachers compared to male Teachers from the aspectual table was curious, as both male and female exhibits feelings, stress and emotions. To this effect literature on gender and stress was examined to compare their explanations with this research finding. These results are consistent with the data obtained in the psychic aspect. It was revealed that both male and female genders report similar average stress levels. However, women are more likely than men to report a rise in their stress level and also much more likely to report physical and emotional symptoms of stress (American Psychological Association 2016). Some evidence of psychic aspect issues can be seen in section 5.4.2. A few excerpt examples on the psychic aspect are highlighted below:

“...so that's the biggest stress when things go wrong like that” (Psychic Aspect- stress)
[V7-011]

“...and I think it is quite frustrating more than anything” (Psychic Aspect- frustrating)
[V7-014]

From the quantitative and qualitative analysis attention can be given to the aesthetic aspect of the female Primary Teachers, compared to their male counterparts, that showed a higher concern of issues such as harmony, boredom, misfit, imbalance, chaotic, interest and so on. The juridical aspects are equal on both genders respectively. However, the male Teachers found the lingual and analytical aspects slightly more meaningful than their female counterparts. Compared to the male Teachers the female Teachers have more social, ethical and pistic issues. The DTE approach has shown how diverse issues with ICT use are and how we can understand the meaningfulness of these issues.

In conclusion, on the reflection of gender, this study proposes that high-level issues with ICT use needs to be thoroughly examined for better understanding. These ICT issues are still relevant and reoccurring today. Many DTE issues are hidden and they are yet to be discovered and given due attention, especially as they occur in the everyday experience of life. This study found that the DTE approach helps us to understand the various issues discussed in the literature as many of these DTE issues are often overlooked and they have hindered the use of ICT in the classroom.

The next section reflects on the DTE issues discovered with respect to the Teachers' issues discussed in the literature review chapter by enriching these issues in a wider perspective.

8.1.2.2 Teachers' Issues

This section reflects the various issues Teachers face using ICT in education as elaborated in Chapter 2 (see: section 2.7.2). A huge amount of money is invested in ICT in education and the potential of ICT is not maximised as discussed in section 1.2. This section will help reflect on some of the kind of issues Teachers find meaningful. Some of these findings are compared with the literature for any surprises.

As discussed earlier in Chapter 1, there is a need to understand the issues hindering the goal of successful ICT integration (Koehler et al., 2007; Angeli et al., 2009). Attention needs to be placed on the DTE issues meaningful to users, that is Teachers on the ground as they engage with ICT from an everyday perspective rather than, for example, the Researchers, ICT suppliers or senior managers' perspectives. These DTE issues from Teachers are diverse, deep and valuable.

For instance, the DTE approach of this study enriched some of the highlighted twenty issues. The issue of pressure as discussed by Abuhmaid (2011) was further enriched. For example:

Authority (2nd order theme)

Quotations from 1st order terms:

"...where somebody is watching you and evaluating your lesson. There's nothing you can do about that" [V1-060]

...subconsciously, I might go "oh, I need to have this on my computer because someone is coming in to watch" [V6-060]

The examples given above have shown the various ways Primary Teachers feel pressured in ICT use. The approach used in this study has helped to uncover the DTE issues overlooked by literature.

Another example is the issue of training which is mostly discussed in literature. It is unfortunate that various efforts and investments made to address the issue of ICT training have not been found important for Teachers (Leask, 2002; OfSTED, 2002; Preston, 2005). Another issue with training discussed in the literature is the untimely and non-continuous provision of training (Hutchison et al., 2011). However, this study has revealed more issues that are important to Primary Teachers as it relates with trainings. For example:

Inadequate staff training (2nd order theme)
Quotations from 1st order terms:

“...we should have had more training” [V14-095, 119]

“...I kind of wish we had a bit more training on it” [V14-096]

The examples above are a few of the issues raised in this regard. A more detailed analysis is found in Appendix VII.

Furthermore, in support of the explanation on the issue of time by the literature (Kozma et al. 2004; Almekhlafi et al., 2010; Dang, 2011; Mama 2013), this study revealed more DTE issues Primary School Teachers raised as concerns with lack of time. For example:

“you are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic...” [V1-026]

“it takes a bit of a long time for it to load...” [V11-012,016,026]

“you need to watch every minute of everything before you then teach it which makes it quite time consuming...” [V12-069]

The examples given above are excerpts from the analysis of the female economic aspect and show the different ways inefficient use of time is a barrier to Primary School Teachers. One of the DTE issues identified was the time it takes to get a website unblocked and how this ends up changing the course of the lesson planned. Another impact is the long waiting period for a web page to load and also the time-consumption involved in ensuring the video clip is appropriate and suitable for the lesson.

The varieties of DTE issues which have been revealed are remarkably different from the ones discussed in the literature. However, some of the kinds of issues discussed in the literature with respect to 'time' are still relevant today. For example, the time it takes to learn new software and to understand the potentials of ICT in subject teaching (Almekhlafi et al., 2010), and the time it takes using ICT in lesson preparations (Dang, 2011; Mama 2013). The use of aspect has helped uncover these kinds of issues.

There are many DTE issues to reflect on. This sub-section has discussed its DTE findings and especially those hidden within the high-level issues. More examples are discussed in detail in Appendix VII.

8.1.2.3 Depth

This study added a new approach to depth that the Researcher was not aware of in Chapter 2 when I discussed the need for depth. This approach is to reveal the DTE issues hidden in the high level issues discussed in literature.

This section aims to show the kind of Down-to-Earth (DTE) issues uncovered from this study with the high-level issues discussed in Chapter 2 on literature review. These issues are what Primary School Teachers face with ICT use in the classroom. This section will show examples both from the 1st order terms and 2nd order themes to support some explanations.

Discussion of high level issues that affect ICT in education from the perspective of policy makers, management and ICT suppliers, as it relates to this study, was given in Chapter 2. It suggested that some issues faced, especially by Teachers with the use of ICT in classrooms, should be examined for better understanding.

It has been revealed that part of the UK policy for the development of ICT in education is shown through Teachers' effectiveness and sufficiency of professional preparation and presentation and also to support, promote and extend learning (Loveless, 2002, p.12). However, to date there is still some impedance to the fulfilment of this policy.

As discussed in section 2.6.1, the three major issues Pelgrum (2001) presented as the highly significant obstacles by educational practitioners for realising their ICT-related goals are; insufficient number of computers (ICT tools), a given Teachers' lack of knowledge/skills and the difficulty in integrating ICT into learning situations. These are still relevant today. However, some of the findings in this study revealed some issues beyond these high-level issues by uncovering the DTE issues hidden in them.

An important example of DTE issues hidden in high-level issues is one of the findings Dillion (2001) made. This engaged with user resistance and how technologies that had been perceived as highly usable and useful were never accepted by the targeted users. This study has been able to reveal the DTE cause of user resistance as many of the Primary School Teachers genuinely do not oppose the use of ICT. The use of the DTE approach has helped reveal some of the actual causes of user resistance as the case may be.

For example, these 1st order terms are gleaned from the male gender formative qualitative analysis;

“...where certain things have been lost, so for that reason it obviously affects our ability to use them as well as we would like” [V7-043]

“...so we have had a lot of problems with it so you will find as staff want to use it they actually think about doing it, but once you get to the stage where it's gone wrong a few times you don't tend to use it or use it in a way that you were meant to” [V7-045]

The DTE approach has helped to uncover hidden issues relating to user resistance in ICT use by Primary School Teachers.

It is unsurprising that many of the issues discussed in literature are still relevant today. One that specially stood out as relating to the enormous time consumption (Latchman et al., 1999), others such as recurring errors and expected faults during teaching periods (Bradley and Russell, 1997). The findings in this study also uncovered similar issues as stated by these authors despite the passage of time.

In conclusion, the DTE approach applied in this study helped to tease out the high-level issues discussed in the literature. The issues Teachers have with ICT usage, based on what DTE issues represents, should relate to the everyday lifeworld of ICT use in the classroom. Further reflection is made on some of these issues, which are discussed below and how the findings in this study relates with them.

8.1.2.4 Diversity

Reflecting on the issues meaningful to Teachers, it shows that the literature is less diverse. As discussed below, this study's method produces more diversity than what is in the literature by finding out missing issues.

8.1.2.4.1 Issues Ignored by Literature

Very little was found in the current literature on issues in the quantitative to the biotic aspects. This is explained by the fact that the first three are mathematical aspects and are seldom the most important aspects in any human construct. However, few issues were raised on these first three aspects. A few excerpt examples of issues respondents raised on the first three aspects are highlighted below.

“...I have got 90 books to mark and so many lessons” (Quantitative Aspect - number: 90) [V14-123,057,003]

“...it has to do with the signal interference in this room” (Spatial Aspect - continuous extension, layout) [V16- 007,046]

“...sometimes their batteries aren’t charged” (Kinematic Aspect - charged) [V14-010,013]

The above DTE issues meaningful to participants are of the first three aspects. These DTE issues are not discussed in the literature as the kind of issues Teachers face when using ICT in the classroom because they are probably viewed as not important.

The pre-human aspects include the physical, biotic and psychic aspects as earlier explained in section 3.6.1. The first two are of lower issues compared to the psychic aspect that reveals a wide range of issues Primary Teachers face using ICT in the classroom. A few excerpt examples of issues respondents raised on the physical and biotic aspects are highlighted below.

“...so they can operate a play station remote but they can’t hold a pencil” [V5-002,024] (Physical Aspect – pressure I exert, hold a pencil).

“...you hear them saying- I didn’t sleep” [V4-006,041] (Biotic Aspect- vitality, health, sleep).

The DTE issues mentioned above are meaningful to Primary School Teachers because they are deep and have a knock-on ripple effect on the effective use of ICT in the classrooms.

Another unanticipated finding was the lack of literature discussing the aesthetic and ethical aspects. This can be explained by the inadequate attention given to everyday experience of Teachers’ ICT issues. The finding from the aesthetic aspect revealed that a number of

Teachers discussed the chaos encountered with ICT use in the classroom and problems on integration of ICT with their work. For example, Teachers brought up the following aesthetic issues:

“...or are they just relying on playing computer games because everything again is so easy...” [V13-044,090]

“...it's just that it doesn't necessarily fit in with what our role is...” [V18-040]

The first example above shows the meaningfulness of the issues a Teachers has with using ICT in the classroom since most of the children return home and focus on the fun derived from playing computer games as opposed to getting a book. The second example shows that the Teachers have issues with the integration of ICT into the teaching curriculum and engagement within the classroom.

Another finding was that of the ethical aspect that goes beyond what is right or wrong and the ethicality of organisations (schools). Teachers mentioned issues that reflects the following, selflessness, self-centredness, generosity, taking advantage of others and competition. Excerpts discussed are quoted below:

“...one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem...” [V1-066]

The next sub-section discusses the various issues relevant to the three schools studied.

8.1.2.4.2 Schools

This section reflects on what Teachers in different schools find meaningful. It discusses the everyday issues faced by Teachers from the three schools respectively and the issues they found meaningful in relation to the literature.

Many scholars hold the view that schools are considered to be different based on some factors such as performance or ranking level, innovation capacity and contextual attributes (Visscher and Coe, 2003; Tondeur et al., 2008). However, the common attribute amongst these three schools under study is the deprived community in which they are situated. It is thought that schools within communities that have a high degree of social vulnerability are those termed as high needs: that is, they are schools with a high proportion of low-income earners and ethnic minority children (Hoglund et al., 2015).

The schools interviewed are based in Salford; they have children from low-income families studying in schools in a disadvantaged community. It is worth saying that School A has a 1* accreditation, while School B which has 3* and School C 5* accreditations respectively. These schools have some meaningful ICT use issues irrespective of their performance rankings.

It is apparent from Table 7.21 that there are more juridical issues in School B compared to both School A and School C. Here are a few 2nd order theme juridical issues School B Primary Teachers discussed as concerns. They are, undue enforcement, denial of what is due, inappropriateness, authority bodies and so on.

The similarity of issues across the three schools rests mostly on the psychic and analytical aspects. This is not surprising as the three schools are faced with psychic issues. There is some evidence to suggest that Teachers in deprived schools may be overwhelmed by job-related activities that cause stress and burnout (Pas et al., 2012 cited in Hoglund et al., 2015). Despite the variance in the three school performance rankings, it is possible to mention that no aspect from the psychic aspect down to the pistic aspect was completely ignored in the three schools examined. Across all schools most aspects seem to follow same pattern except for the formative and economic aspects which are much more prevalent than other aspects in School A, a 1* ranking.

One interesting finding is that the low interest in the social aspect is really surprising in schools that are deprived and situated in a community that is disadvantaged. Teachers across the three schools raised low issues relating to relationships, the structure of the school, team work and social interaction and so on. However, there is some evidence to suggest that children who display aggressive, disturbing or antisocial behaviour are more likely to be disregarded by their peers which has a ripple effect with lower classroom engagement (Crick et al., 2006; Buhs et al., 2006; Vitiello et al., 2012). A similar pattern emerges across the three schools on the Aesthetic, Juridical, Ethical, Pistic aspects respectively, excepting the high lists of issues raised on the juridical aspect in School B.

This section has shown that Teachers have various DTE issues which are meaningful, irrespective to the school they belong to. However, because most of the discourse in ICTE focuses on issues of interest to management, ICT suppliers or academics, this influences the ICT design and policies and thus they fail to meet the need of the direct user. Therefore, addressing these various DTE issues can have an effect on improving the school's education

standards, as Teachers will be able to integrate ICT use in their teaching, children can learn better and the community can be influenced positively.

The next sub-section will open up further DTE issues ignored by literature, but this will be done by discussing these ICT issues per school year.

8.1.2.4.3 Years

This section opens up the findings on the everyday ICT issues on the school years which comprises of the Early Year up till Year 6 in relation to the literature. The examples used in this section are the 2nd order themes, for detailed first order terms, see Appendix VIII.

From the aspectual graph on years, one finding is the long lists of issues against the lingual aspect in the Early Years and Year 4, indicating (Early Years) speech defects, struggles to use books and (Year 4) website reliance, negative effects on writing practices. There is a growing body of evidence on some of the findings in the lingual aspect. Some authors argue that the use of ICT leads to isolated lives and impaired language development (Cordes and Miller, 2000; Healy, 2003), but literatures discussion of these issues were as general terms and not as it concerns the year group Teachers are involved with.

It can be seen from the aspectual pattern in section 8.1.3.7 that too much emphasis, specifically in Year 6, is given to the formative aspect with a decline on this aspect in Year 2 when compared across board with all Years. The literature suggests that the year group a Teacher teaches can be a possible factor in ICT use (Kerckaert et al., 2015). Year 6 is usually the last year in Primary School when children sit their SATs test and move on to the next educational stage. Teachers tend to focus on preparing Year 6 children for their SATs, which are usually computer oriented, which may give rise to the high possibilities of various issues Year 6 Teachers finds meaningful regarding ICT use in the classroom.

The meaningful issues in the psychic and analytical aspects fall within same pattern all through the school years. There are some Teachers' expectations for ICT on preparing children to meet the challenges of the rapid changes in the world. For example, children need to learn how to research, that is seek for information, to be able to think critically and so on (Kearns & Grant, 2002; Hermans et al., 2008).

Awareness of the social effect is not recent as research revealed that the use of ICT will make preschool children passive learners, thus affecting the development of their motor and social skills (Cordes and Miller, 2000). The social aspect is generally low except in the Early Years,

which revealed more issues than other years. For example, children not used to interacting, and the non-engagement they exhibit in the classroom, is a concern to Teachers.

Another important finding was the observation on the high peak on the economic aspects in Year 2, Year 3 and Year 6. It is understandable that students in Year 2 (age 6-7) are in their final Key Stage 1 year and are tested nationally in England as part of the National Tests or SATs. Also in Year 6 children take their SATs test and are also passed onto their new Secondary School.

It can be suggested that Teachers are already under pressure to prepare students for their Year 2 and Year 6 exams. For example, the economic issue of time is very meaningful to Teachers at this point. Strong evidence of the kinds of meaningful economic issues was found when the aspectual graph was further opened up in section 7.4.1.5.1. This revealed that most economic issues focused on the skilled use of limited resources, wasting of time and deadlines. Also, in Year 3 the economic issues are also meaningful to Teachers.

Considering the aspectual data table, issues in the aesthetic aspect are emphasised more in Year 1, Year 3 and Year 5. In Year 6, however, it is low compared with all other Years. The results of the quantitative analysis are presented in section 8.1.3.7 which shows the juridical aspect trough in the Early Year. In Year 1 and Year 6 the juridical aspect shows up high compared to all other Years. Reflecting on this finding with respect to literature reveals that Teachers do not want to invest a great deal of effort and risk that yields little or no rewards in using ICT to teach children in Early Years (Mueller et al., 2008). As Primary School Teachers are not obliged to use or integrate ICT in the Early Year, but would rather invest their efforts on Year 1 and Year 6 due to government imposed ICT use in the classroom regulated by OfSTED. For example, some of the issues highlighted in the juridical aspect are low standards and fear of authority.

In Early Years and Year 1, the ethical aspect is at a peak which shows a lot of self-giving issues as compared to all other years (see section 8.1.3.7). Surprisingly, the pistic aspect is low in the Early Years however in Year 1 which is the subsequent Year, it comes up notably higher than others.

A summary of the qualitative analysis of the lingual aspect between the Early Years and Year 4 revealed some DTE issues that are peculiar to the year differences. However, the qualitative analysis showed lots of similar issues in both years engaged with. A detailed breakdown can be found in Table 7.14.

It is not surprising to expect speech defects, struggles to use books and virtual communication risks to be issues meaningful to Teachers in the Early Years. However, in Year 4 issues such as login difficulties, inappropriate help system and inaccurate information and so on were observed. In the discussion of the various year group discourses, this study's interest lies in what makes the issues discussed meaningful.

In conclusion, to understand ICT use in its diversity, there is a need to reveal the kind of issues that are meaningful to Teachers using ICT in the classroom per year group. Some of these issues are discussed to reveal the kind of DTE issues Teachers find important within various school years and the diverse challenges pertinent to the year groups that needs to be addressed.

The next section focuses on reflection B which focuses on the method used in this study.

8.1.3 Reflection B

How can Dooyeweerd discover the issues Teachers face with ICT use in the classroom? The discussions in Chapter IV to VIII have come up with not one answer to this question, but six, and there are chances of others that are yet to be explored:

- Interview strategy
- Separation of EIV
- Decision to focus on diversity, depth and values
- The use of aspects on analysis
- The role of quantitative and qualitative analysis
- Cohort analysis
- Discussion of DTE meaningful issues and literature

This research study has developed many methodologies during the course of answering how Dooyeweerd can discover the DTE issues Teachers face with the use of ICT in the classroom. The aim of this chapter is to reflect on these following methodologies as earlier listed.

8.1.3.1 Interview Strategy

In this study the Researcher did not involve participants in the use of aspect. Neither did the Researcher tell the participants about thinking of aspects as Winfield (2000) had done, but instead asked questions based on what the interviewees had said in order to encourage them to open up. The Researcher could have designed the questions around aspect, so as to ask at least

one question around each aspect, but did not do so because the Researcher needed as much openness in the participants' thought processes as possible without any restriction.

8.1.3.2 Separation of EIV

As discussed in section 5.2.1, the separation of EIV is to distinguish direct answers to the interviewer's questions from EIV. Reflecting on the use of aspects, it has helped reveal what made statements meaningful. This made EIV the data repository from where the analysis emerged. It generated findings about Teachers' DTE issues of ICT use in the classroom in terms of their diversity, depth and values.

EIV helped to indicate what the interviewees rather than the interviewer find meaningful. This helped to reduce bias introduced by the interviewer's questioning. The use of EIV enhances reliability of findings that emerged from this study. The Researcher's use of excerpts from the EIV showed the fulfilment on the principle of interaction between the Researchers and the subjects, which required critical reflection on how the research data were socially constructed (Klein and Myer, 1999). Separating EIV from direct answers showed that the data was actually meaningful and worth including and the use of aspects opened up the meaningfulness of the data. In each piece of data users expressed what is meaningful to them as it relates to the study. This method can benefit the Researcher to help bring out meaningful statements which are worth including as data and also to use aspects in EIV for social construction of data. Further discussions on the fulfilment of the principles of interpretive research are discussed in Section 9.4.

8.1.3.2.1 Aspectual Analysis of Questions, Answers and Extras

In this section if we construct aspectual profile of questions, direct answers and EIV, and compare them then we can see whether EIV is different and in what ways. The tabular breakdown of each data and interview code name V1...V20 are shown in Appendix 6. For this section only the total summation in percentage is presented.

8.1.3.2.2 Result of Analysis of Questions, Answers and Extras

In order to develop the aspectual profile, the percentage values for questions, direct answers and EIV can be derived through this formula. Where the Sum of Questions = 326, Sum of Direct Answers = 172 and Sum of EIV = 1,647

All Interviewees Total percentage = VT (%)

$$\text{Questions (\%)} = x/326*100$$

$$\text{Direct Answers (\%)} = x/172*100$$

$$\text{Extra Information Volunteered (\%)} = x/1647*100$$

The Table 8.1 below shows the frequency of occurrence in percentage for the analysed questions, answers and EIV on each aspect from all interviewees. It also compares both the answers and EIV derived from the interviewee on each aspect.

Table 8:1 All Users as percentages (%): Questions, Direct Answers and EIV from all interviewees

Aspects	Questions (count)	Questions (%)	Answers (count)	Answers (%)	EIV (count)	EIV (%)
Quantitative	2	0.61	-	0	30	1.82
Spatial	0	0	2	1.16	6	0.36
Kinematic	0	0	5	2.91	22	1.34
Physical	1	0.31	5	2.91	40	2.43
Biotic	3	0.92	1	0.60	17	1.03
Psychic	17	5.21	11	6.40	166	10.10
Analytic	37	11.35	21	12.21	162	10.0
Formative	112	34.36	40	23.30	208	13.0
Lingual	56	17.18	19	11.05	194	12.0
Social	12	3.68	9	5.23	97	6.0
Economic	18	5.52	30	17.44	223	14.0
Aesthetic	26	7.98	13	8.0	135	8.2
Juridical	20	6.13	9	5.23	150	9.11
Ethical	12	3.68	2	1.16	81	5.0
Pistic	10	3.07	5	2.91	116	7.04
Total	326		172		1647	

The results of analysis Table 8.1 above that shows the frequency count of all data that is, V1-V20 (questions, direct answers, EIV) will be presented below through the aspectual profile.

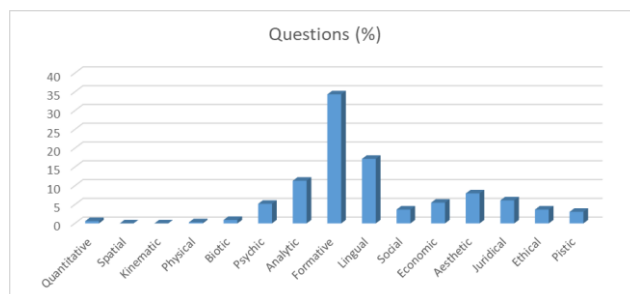


Figure 8:1 Aspectual Profile of Interview Questions, as percentage: Questions

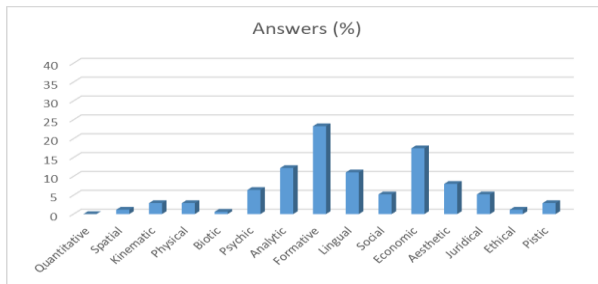


Figure 8:2 Aspectual Profile of Primary Teachers' Issues, as percentage: Answers

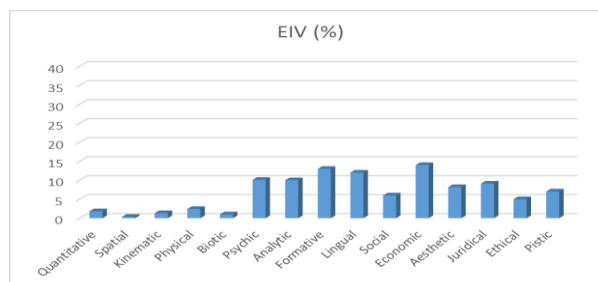


Figure 8:3 Aspectual Profile of Primary Teachers' Issues, as percentage: EIV

It is very clear that the aspectual profile of EIV is very different from questions and direct answers. EIV shows the kind of equality of interest amongst all aspects. It shows the particular interest the Researcher had in the formative and lingual aspects and a slight emphasis on the aesthetic from the social to pistic aspects. The Researcher's focus on the formative aspect can be because of the research study which is on technology (technical matters). The lingual and analytical aspects make a reasonable appearance which suggests that participants recognise the need to communicate and understand the use of ICT in the classroom. Participants stressed certain things beyond the Researcher's interest. Aspectual analysis has helped reveal these aspects.

The aspectual answers profile shows that even in answering the questions the interviewees felt the freedom to answer differently. They have answered a lot in the formative aspect which is emphasised, but they did answer so much in the lingual aspect. Although the Researcher asked more about the aesthetic aspect, participants answered more on the economic from the social to pistic aspect. As part of the freedom Teachers could talk about the kinematic and physical aspects even though the Researcher did not talk much about them. This showed that my method of interviewing allowed participants some freedom in answering the questions.

The following will discuss on each expectation and to what extents they were fulfilled:

- **EIV:** The EIV profile was developed in order to reduce the Researcher's bias and equally focus on the DTE issues that are meaningful to the participants as discussed in section 5.2.1.3.1. The profile of EIV is spread more evenly across all aspects from psychic to pistic than that of direct answers to question profiles. Aspects helped to reveal the nuggets of meaning behind statements. The EIV methodology can be useful for interview techniques.
- **Answers:** The aspectual profile of direct answers shows two high peaks in the formative and economic aspects. There is a difference with the aspectual profile of EIV from direct answers profile; this shows another reason why it is good to separate them out.
- **Questions:** Comparing the aspectual profiles of question and EIV there is a difference in profiles from what the Researcher has asked about, as the participants responded with statements meaningful to them. The aspectual question profile also shows the spread of the Researcher's bias compared to what is meaningful to the Teachers. The aspectual profile shows that despite the Researcher's bias, a lot of other meaningful issues can be uncovered by the use of aspects in analysis.

The aspectual profile reveals that the interviewer focused more on the formative, lingual, analytic aspects although with visible marginal gaps, as lingual aspect is half of the formative aspect. Other aspects such as aesthetic, juridical, economic and psychic were discussed, but these cannot be compared to the initial three aspects discussed or the emphasis placed on the formative aspect. The focus on these fore-mentioned aspects was not intentional as the interviewer did not formulate these questions using the fifteen aspects. Therefore, if the interviewees had answered according to the interviewer's questions other important aspects that were ignored would not have derived responses on them, for example, pistic, social and ethical aspects. Hence this reveals a bias on the interviewer.

From the point of view of discussing the results of analysis, the aspectual profile only tells us about the interviewer's interests and not the interviewee's. This is good evidence of the interviewer's bias. However, could this be the interviewer's bias or the flow of the interview because it was an open-interview and the questions were aimed at probing and opening up more on the interviewee's response, for example, "Tell me more about". This was further discussed in the limitations of research in chapter 9.

- **Conclusion on Separation of EIV**

The aspectual analysis of questions answered and EIV enabled the Researcher to investigate several things;

- see the shape of the Researcher bias or interest
- see to what extent the interviewee's freedom to answer differently
- produced data that is likely to be particularly meaningful to the interviewees regardless of the Researcher

Dooyeweerd has revealed that it can show the kind of biases that happen during the interview process.

8.1.3.3 Decision to focus on diversity, depth and values

As justified in section 2.10, diversity, depth and values are important to emerge with an enriched understanding of the issues Teachers face with ICT use in the classroom. Reflecting on the research we can see to what extent Dooyeweerd has helped us understand diversity, depth and value.

The Dooyeweerd's aspectual method can cope with diversity and in some ways better than the literature. It revealed a diversity of DTE issues and it showed the bias in the literature.

8.1.3.3.1 Depth

As discussed in section 2.10.2, tacit knowledge is difficult to communicate (Polanyi, 1966) and deep issues are generally intuitive and tacit because they are of the everyday life of the user (Ahmad and Basden, 2011). In Chapter 2, the Researcher expects to find that uncovering deep issues, rather than focusing on the surface issues, is likely to give a more robust understanding of the everyday issues faced by Teachers in ICT use. In this reflection chapter, I have found out that during the analysis process, sometimes what people say does not always express what they mean. The Researcher found out that some tacit meanings were hidden behind what participants mentioned. The exercise of assigning aspects during analysis helped to bring out these deeper issues. For example, because I had to assign an aspect to 'round a laptop', I was forced to think about it at a deeper level on why it is a social aspect issue and not a spatial aspect issue. A detailed discussion on assigning aspects is given in section 5.2.1. A high-level issue which is mostly narrowly focused or too abstract can manifest in lots of different ways. Reflecting on section 8.1.2.2, the numerous issues related to 'lack of time' were further enriched as deeper issues were uncovered from the abstract issue of 'lack of

time’ as it had been mostly discussed in the literature. Earlier discussions and examples are seen in section 8.1.2.2. The use of aspects has helped to reveal deep issues because everything is treated as meaningful in what participants mentioned and has given insights into the Teachers’ remarks.

Reflecting on how the principle of suspicion was applied which emphasises the need to understand the meaning of the data. During the interview the Researcher paid due attention to participants’ body language. Some participants gave some diplomatic answers especially those that had to do with the management (juridical aspects). The principle of multiple interpretations helped in reviewing the various issues collated. During the data analysis I found multiple interpretations in one person and not just between different people. For example, the issue of lack of time discussed by various participants helped reveal the different forms this issue connotes. This is further discussed in section 9.4.

During the analysis section the use of aspects helped open up the meaningfulness of these issues. The use of aspects has provided a basis for understanding what is meaningful to participants, underneath what they say, and to help them consider issues taken-for-granted. This research has shown that there is depth with Teachers’ ICT use issues.

8.1.3.3.2 Diversity

As discussed in section 2.10.1, it has been argued that there are close relationships between many Teachers’ issues (Ertmer, 1999) and the Researcher perceives that various classification of issues are viewed as being too narrowly restricted to do full justice to the diversity of issues found with ICTE. In this reflection chapter, in terms of diversity, the Researcher has found that the aspectual profile of Teachers’ interest (EIV) as discussed in section 7.2 showed a wide variance of issues found meaningful. Based on the interview conducted, over 500 excerpts of down-to-earth issues hinder Primary School Teachers from the use of ICT in the classrooms, these concerns cannot be waved aside. This research has shown that there is diversity with issues.

For example:

“...where certain things have been lost, so for that reason it obviously affects our ability to use them as well as we would like” [V7-043] (Formative)

“...subconsciously, I might go- oh, I need to have this on my computer because someone is coming in to watch” [V6-060] (Juridical)

“...and then you feel the whole lesson is wasted now because we can't get on to what we are supposed to be doing” ICT wouldn't work... [V3-079] (Economic)

These excerpts show a diversity of ways of issues being meaningful.

See Figure 8.4 below which shows the spread and diversity of users' meaningful issues. There are a lot of issues within the pistic down to the psychic aspect of the users' profile. If the issues were not diverse, then one would expect one or two long bars and everything else to be short bars.

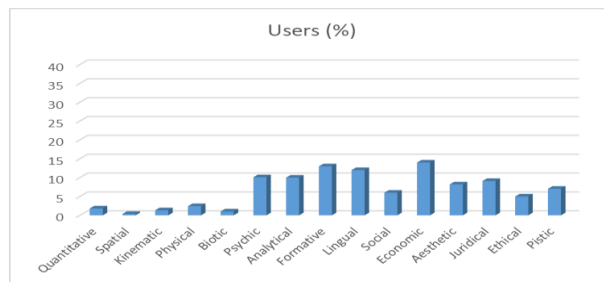


Figure 8:4 Aspectual Profile of Primary Teachers' Issues, as percentage: EIV

The use of aspects has helped to analyse the diversity of these issues without overlooking any one factor. It is important to state that DTE issues are diverse, however, Dooyeweerd's suite of aspects helps to cover the entire range of meaningfulness that these issues express. The use of the DTE approach opens up more issues, showing that sometimes with an issue there are multiple meanings or string of issues as identified in section 2.10.2. Each string can be analysed by secondary aspects, even though they share one primary aspect as discussed in section 3.6. A useful example is a phrase from one participant that states: “...waste of time” which is meaningful in the economic aspect, while another example, “... they haven't done anything in an hour...” From these examples, the primary aspect is the economic aspect because it gives meaning to frugality of resources (time). However, the secondary aspect is formative because it reveals non-achievement, that is, “...haven't done anything”. Other examples are discussed in section 5.4.2. As discussed in section 2.7, it may be that the closest examples of DTE issues discussed in literature are mostly governed by the author's perspective because these issues are less associated with the direct users of ICT. However, the use of the DTE approach in this study has helped to address the implication of focusing on the author's interest by understanding and focusing on these meaningful issues from the direct user's perspective. The use of aspects in this study helped to indicate the types of issues to make provision for. See Appendix X for details.

8.1.3.3.2.1 Interpretive Analysis

This sub-section aims to give an interpretation of meaning by assigning aspects to the issues collated, this demonstrates the diversity of the DTE issues that Teachers hold as meaningful. The following samples of interpretive aspectual analyses are discussed below. Each of these aspects further reveals the meaningful issues behind the utterances of the data. See Appendix X.

An Interpretative Study of User's ICT issues:

Quantitative aspect: Amount and number of children and the number of ICT resources available in the schools. Teachers struggled with issues in this aspect. At least seven teachers mentioned large numbers of children using ICT as a problem.

"...you can't monitor 30 children at the same time and they are often in tangent..."
[V8-001]

"...terrifies me if I get 30 children on the computer..." [V16-002]

"...but the thought of 30 of them at the desk, especially if they are pulling them off each other or bashing at them..." [V16-003]

Adding to the complications were the technical difficulties Teachers face when a number of children log in at once. This contributed to issues Teachers struggle with regarding the use of ICT in the classroom, as noted by two Teachers:

"...if too many children log in at once..." [V14-005, 008]

"...if you've tried to get 30 people on the internet at one time, they can't get on [V14-009]

"...Getting all 30 children all logged on to the computer with their unique username and password, it will take me the best part of my time." [V16- 001]

Also identified were issues about the number of children using a given number of resources, which is reflected in the following quotes:

"...If the sound or light goes, it can't be used at all, you can't get 30 children round this (shows an iPad). It's not good enough is it?" [V19-001]

"...you've got 3 to 4 children round a laptop and then they are not learning enough and not as focussed because it's too many of them round it" [V20-001]

The use of aspects has helped with diversity of issues to make provision for. See Appendix X for details.

8.3.3.3 Values

Due to the low sample size the Researcher could only do the qualitative analysis and this indicates the types of value-laden issues Teachers find meaningful. Reflecting on the value analysis process, the Researcher began by comparing the values of various authors as discussed in Chapter 2 with Dooyeweerdian aspects (See Details: Section 3.9.4.1). The Researcher further analysed Teachers' DTE values as discussed in section 5.3.6 (See detailed version: Table 7.26: Aspectual Analysis Values of Teachers). The next stage was to collate the aspectually analysed Teachers' 2nd order DTE values as discussed in section 7.4.5, this helped to reveal the aspects that Teachers overlooked (analytical) and reveal the kinds of DTE value-laden Teachers' issues.

The comparative analysis table of Dooyeweerd's aspects, which included all value literature and Teachers' DTE values, was able to give an aspectual spread of value-laden issues (See Table 8.2). Most importantly it showed that the 2nd order themes are different from the literature values. As these 2nd order themes are more down-to-earth than those in the literature. These DTE values are the value-laden issues Teachers have and how it affects their attitude to ICT and as such are not derived from the value literature.

The use of Dooyeweerd's aspectual value analysis process has helped to achieve the following:

Dooyeweerd helped the Researcher bring out the DTE values and their 2nd order themes to get Teacher-values. The aspectual spread of value-laden issues showed the presence of all other aspects except the analytic and the earlier aspects. The capability of this methodology (even with a few data size) could get an aspectual spread of issues, and show which values are emphasised by Teachers. The value-laden issues that teachers mentioned about ICT affect children and in return affect the teachers in the classroom. The DTE aspectual analysis of the values in Table 7.25 has revealed some interesting things about what Teachers' value. For example (as earlier discussed in section 7.3.4.3), V1 was concerned about children losing their patience because they expect everything to be instant, so when Teachers use ICT in the classroom, the children are in haste, saying 'come on, load up... go faster'... (V1). The example stated earlier functions in the ethical aspect. When you lose patience it portrays selfishness, centred on 'me', that is why impatience is a problem. Other examples are

discussed in section 7.4.5.3. This can be an indication of the types of issues Teachers see as value-laden; the use of aspectual analysis is a good grouping tool. For example, losing patience, accepting people's opinion, selfishness is viewed as ethical value-laden issues. The use of aspects can help stimulate thinking about the value of each type even though not all of them come out of this research, for example, generosity. From these the ICT can be designed or evaluated.

Dooyeweerd gave the Researcher a basis for comparing these Teacher-values with literature values. Otherwise it is difficult to place, for example, 'taking turns' among any of the literature terms. There are some value-laden issues concrete in a situation, for example, losing patience, life experience and so on.

Dooyeweerd also provides a basis for comparing and perhaps integrating the theories of values. For instance, see Table 3.11. This does not refer to Teachers but is a reflection on how Dooyeweerd's suites of aspects can contribute to the literature.

Dooyeweerd can help us identify which kinds of values are missing from each theory; this offers a basis for critique of the theories. This helped reveal some missing aspects in value literature that Primary Teachers found meaningful. This research into Teacher-values can give specific examples of those missing values. With this each of the theories might be able to be enriched. Without aspects it might not be possible to enrich theories in this way. See Appendix V for further examples. In this way Dooyeweerd's aspect can show where further study is required.

Reflecting on a drawback noticed (Table 8.2) with a combination of tables derived from section 3.9.4 (Table 3.11: Aspectual Analysis on Values) and from section 7.4.5.3 (Table 7.25: 2nd Order Aspectual Values of Teachers) which shows the value of literature insufficient interpretations that are not helpful with Teachers' understanding of ICT use. The Researcher's method can bring out value-laden issues in terms that are meaningful to Teachers and helpful in comparative terms used in value literature. The literature mostly engages with high-level values like juridical and social aspects (as discussed in section 2.6) rather than as DTE issues, for example, losing patience might not be fully represented by literature. By this value literature cannot give much help with the DTE value-laden issues Teachers come across daily in the classroom.

The use of aspects has helped to understand these normative issues and showed the possibility to fulfil The Shalom Principle by revealing poorly functioning aspects that brings

repercussions in many ways. It has helped the Researcher reflect further on how the use of ICT in education might improve effectiveness as discussed in literature (see section 2.3) and what Teachers actually say in order to avoid falsely judging the benefits of ICT. This study has shown that the Researcher's method is more useful to bring out DTE value-laden issues in the classroom.

Table 8:2 Aspectual Analysis on Values

Dooyeweerd Aspects	DTE Values from Teachers (Data)	Theory of Basic Values	Values in Information Technology	Value Sensitive Design (VSD) Methodology	Values in Education	Values in General	Values in Technology Education	Values in Teaching
Quantitative	-	-	-	-	-	-	-	-
Spatial	-	-	-	-	-	-	-	-
Kinematic	-	-	-	-	-	-	-	-
Physical	-	-	-	-	-	-	-	-
Biotic	Proper use of brain	-	-	Environmental Sustainability	-	-	Environmental	Environmental
Psychic	Safety, effect on attention span, joy in using a book, enthusiasm	Stimulation	-	Calmness	-	Emotional	Personal	
Analytical		-	Principles, qualities that guide actions	Freedom from bias	Ability to think, to make moral decisions	Intellectual, Thought	-	
Formative	Laziness, hindrance on imagination, impedes creativity, risk taking, life experience, cannot play	Self-direction, achievement	Technical culture, actions	-	Act morally	-	Technical	Technical
Lingual	Research skills	-	-	Informed consent	Teaching about values	Worthy of emulation by others	-	
Social	Social interaction, taking turns, early loss of innocence, social skills, conversational skills, not sharing, cannot play	Benevolence	Social values	Human welfare	Community influence, school ethos	Social, accepted as essentially good by society	Social, cultural	Social, cultural
Economic	Convenience, lack of experience	-	-	-	-	-	Economic	Economic
Aesthetic	Hindrance on imagination, impedes creativity, joy in using a book, balance, aggressiveness, enthusiasm	Hedonism	Aesthetic ethos	-	Extra-curricular activities	-	Aesthetic	Aesthetic
Juridical	Early loss of innocence, safety, proper use of brain, privacy	Power, conformity, security	Political agendas, order, system, control, standards	Ownership and Property, Accountability	Democratic education, rights and duties of Citizenship, school discipline	Accepted as essentially good by society, individual's sense of right and wrong or what "ought" to be	Political	Political
Ethical	Losing patience, accepting people's opinion, selfishness	Universalism	-	Privacy, universal usability	Charity work, act morally	Character, qualities of behaviour	Moral	Moral
Pistic	Life experience	Tradition	-	Trust, autonomy, identity	Religion, pastoral care	Spiritual	Spiritual	-

8.1.3.4 The Use of Aspects on Analysis

As discussed in section 5.2.1, Dooyeweerd's suite of aspects offered the opportunity to interpret participants' issues, identify and separate out meaningful issues on ICT use in the classroom. This section reflects on the extent to which the use of Dooyeweerd's aspects has been able to accomplish this.

The first analysis process gave an interpretation of meaning by assignment of aspects; this demonstrated 'diversity' of the DTE issues of what Teachers held as meaningful. It also highlighted 'values' by revealing the kinds of aspectual issues Teachers found value-laden (see section 7.4.5.3). The ability to draw general conclusions based on the findings of this study is subject to certain limitations. For instance, the actual bias is shown very much in favour of the formative aspect and very little on the ethical, pistic and social aspects. This actual bias could be a limitation because it can be interpreted as a bias towards the formative aspect and away from the social aspect.

However, on the EIV, the bias has lessened because the interviewees have talked about the economic aspect much more than the interviewer asked, and have also talked about the formative aspect with lesser emphasis than the Researcher asked. Also, reflecting on some of the aspects such as the psychic, social, pistic, ethical, juridical and economic aspect, participants have talked about it more than the Researcher asked, this shows more areas meaningful to Teachers. Nevertheless, the questions asked are similar to the voluntary information given on the aesthetic aspect. It is, for example, surprising that the kinematic and spatial aspects are meaningful to the interviewee as the interviewer did not talk on these aspects at all. This is shown in Table 8.1, Figure 8.3.

The Researcher's understanding of Dooyeweerd's aspects and its application was an initial limitation in this study. The Researcher was applying the aspectual analysis to texts but later understood that the analysis ought to be applied to meanings of the utterances (texts). This has been discussed in section 5.4 and within the principle of dialogical reasoning in section 9.4.

The second and third analysis process made use of the numerical and qualitative analysis respectively. This will be discussed in the following section.

8.1.3.5 Discussion of DTE Meaningful Issues and Literature

This section discusses my reflection of my activities compared with literature.

The use of DTE methodology in understanding the issues Teachers have with ICT use in the classroom in this study has yielded many revelations. Some of the findings in this study are interesting and are summarised into these categories:

Table 8:3 Emphasis on Findings

S/N	Findings	Examples
1	The DTE methodology can open up abstract issues in the academic literature	User resistance and time consumption and gender
2	The research results support those of the literature	Male Teachers' interest in formative issues
3	The research results goes deeper than those of the literature, that is expands the diversity of these issues	Issues on pressure and limited availability of resources, training
4	The research results show issues that are not found in the literature	Kinds of time issues
5	The literature has issues that this research did not find among the Teachers	Copyright infringement, lack of technical support, school culture
6	The DTE methodology helps to enrich issues which are most times overlooked or ignored	Inefficiency of technology, bad experiences on usage, fallible design are some of the DTE issues behind the acceptance of technology, attitudes

The DTE approach gives a way for the analysis of data to focus on issues meaningful to the users rather than the issues the Researcher, managements, ICT suppliers or policy makers view as important. An advantage amongst others of this DTE approach is that it is open to a wide range of relevant issues and does not place any restriction on what is considered meaningful in ICT use, rather than focusing just on the task, profit or system. Furthermore, this approach helps to uncover deep issues that are not mostly visible to the users themselves, in this case, the Primary School Teachers.

This study argues that the current discourse of the issues Teachers face with ICT use is not rich enough, especially in terms of engagement with everyday life experiences. The selected examples of DTE issues and, various authors, are used only to obtain an everyday perspective on what is important in each discourse as an illustrative example. Due to limited time and word count, this study might not be able to give further comprehensive coverage of the

various diverse issues and other important authors in ICTE as concerns this study. Further research can add more cohorts, or discuss the highlighted ones in greater depth as demonstrated in this study by affirming, critiquing and enriching the research aim using Dooyeweerd's philosophy.

8.1.3.6 The Role of Quantitative and Qualitative Analysis

8.1.3.6.1 Quantitative Aspectual Analysis

As discussed in 5.2.1, the quantitative aspectual analysis helps to give the visual spread of diversity of issues on each aspect. This section reflects on the second analysis process which made use of the numerical analysis derived by the aspectual profiles. See Appendix VI for details.

In situations where certain issues have been mentioned more than once, the Researcher has gone back to check that these were not mere repetitions. The Researcher discovered that these issues were mentioned meaningfully in different ways and in various contexts, therefore, it is a true count of the importance of these issues.

This analysis process gave an overview of the diversity spread of aspectual issues. It availed the opportunity to begin pattern comparisons amongst cohorts, such as users versus literature, and between schools, years and genders. An advantage of this process is the wide recognition of meaning it provides for ICT issues. The aspectual profiles also gave the opportunity to dig deeper by posing questions of why schools or years differed on 'X' aspect. This led to the third analysis process that deals with depth.

8.1.3.6.2 Qualitative Aspectual Analysis

As discussed in section 7.4, the qualitative aspectual analysis aims to demonstrate the diversity of ICTE issues and helps us to understand the kind of DTE issues (diversity, depth and values) Teachers find meaningful in ICT use in the classroom. This section reflects on the third analysis process which opened up the patterns derived from the numerical analysis process, as similar bars of aspects do not always connote the same set of issues. It compared issues Teachers found meaningful with what the literature discussed. It also explored the qualitative analysis of various cohorts such as, genders, years and schools. The interesting findings are discussed in section 7.4.

8.1.3.7 Cohort Analysis

The demographic profile (section 4.6.3; Table 4.1) was very helpful in creating the various cohorts. The simple categories this study divides the cohorts into are gender, year groups and schools. The gender cohorts includes only the male and female participants, the year group cohorts includes the Early Years, Year 1 up to Year 6 participants and schools which includes the three school A, B and C.

The aspectual analysis spread has helped to indicate to what extent issues in cohorts, via the set of patterns, are sensitive to the diversity of issues found in the literature. The quantitative cohort analysis helped to focus on patterns as opposed to focusing on certain aspects which is the usual approach. It reveals the ICT issues that are mostly stressed. An advantage of this process is the wide recognition of meaning it provides for ICT issues.

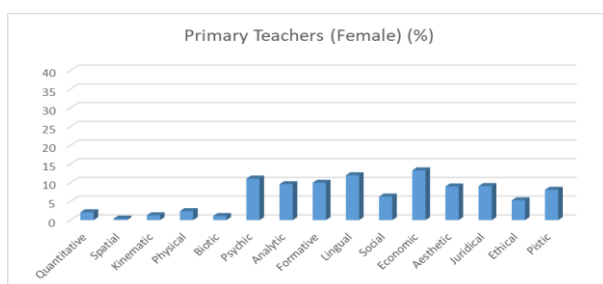


Figure 8:5 Aspectual Profile of Primary Teachers Female, as percentage: Female

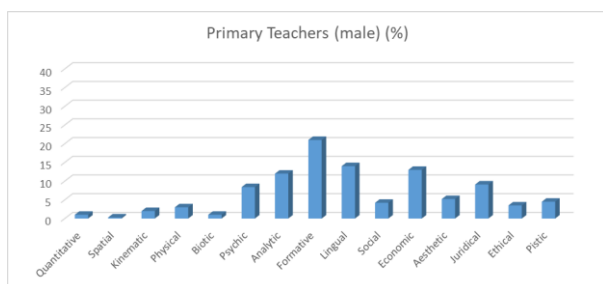


Figure 8:6 Aspectual Profile of Primary Teachers Male, as percentage: Male

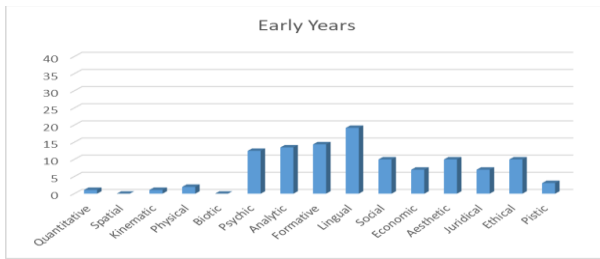


Figure 8:7 Aspectual Profile of Primary Teachers Early Years, as percentage: Early Years

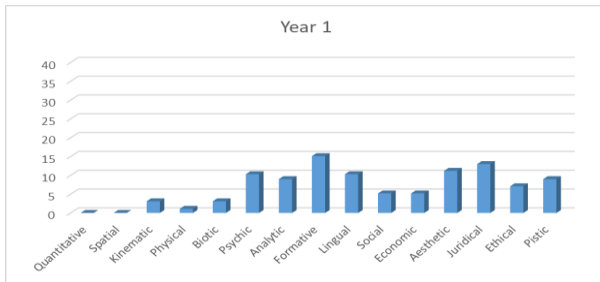


Figure 8:8 Aspectual Profile of Primary Teachers Year 1, as percentage: Year 1

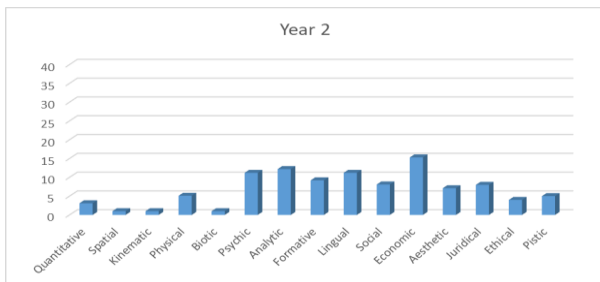


Figure 8:9 Aspectual Profile of Primary Teachers Year 2, as percentage: Year 2

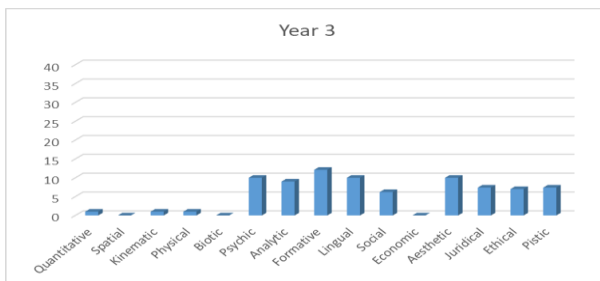


Figure 8:10 Aspectual Profile of Primary Teachers Year 3, as percentage: Year 3

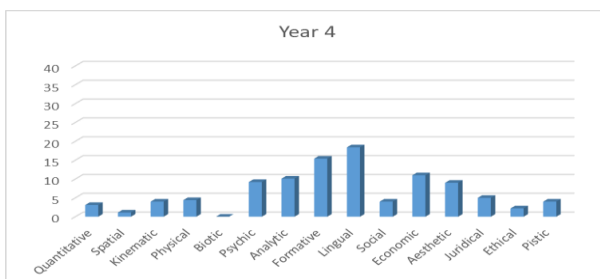


Figure 8:11 Aspectual Profile of Primary Teachers Year 4, as percentage: Year 4

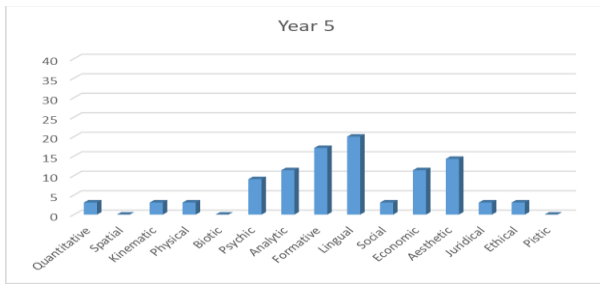


Figure 8:12 Aspectual Profile of Primary Teachers Year 5, as percentage: Year 5

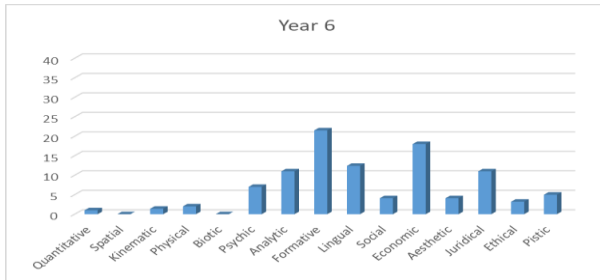


Figure 8:13 Aspectual Profile of Primary Teachers Year 6, as percentage: Year 6

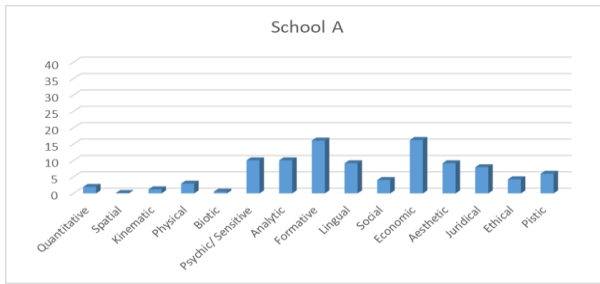


Figure 8:14 Aspectual Profile of Primary Teachers School A, as percentage: School A

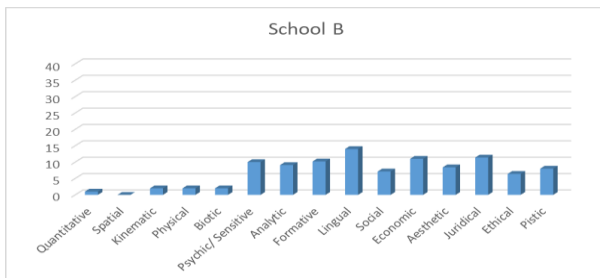


Figure 8:15 Aspectual Profile of Primary Teachers School B, as percentage: School B

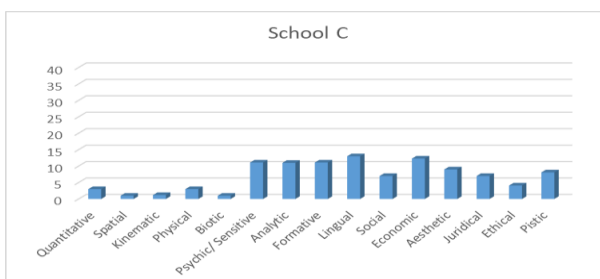


Figure 8:16 Aspectual Profile of Primary Teachers School C, as percentage: School C

8.1.3.8 Discussion of the Use of Dooyeweerd's Aspects in This Research

This section reflects on how the use of Dooyeweerd's aspects has helped to uncover depth, manage diversity and understand Teachers' value-laden issues. It also reflects on how valuable Dooyeweerd's aspectual analysis is in the complexity of everyday life. This research has shown that the use of aspects gives a richer view compared with conventional approaches. In particular the use of aspects help to uncover taken for granted issues.

8.1.3.8.1 How I used Dooyeweerd - Diversity`

The approach used in this study shows how issues are diverse via the taxonomy of meaning. The collation of these issues as taxonomy helps reveal the diversity. The list of issues is not likely to be complete. However, Dooyeweerd's suite of aspects helps to cover the entire range of meaningfulness that these issues express.

Categorisation of diversity could have been done by normal coding but Dooyeweerd offers a different way of qualitative analysis. That is not focusing on what, but focusing on meaning (Dooyeweerd Vol 1. Page 3, section 3.7.2). Dooyeweerd's aspects helped manage the taxonomy of meaning derived from the analysis, as shown in figure 7.1.

Also reviewing the diversity of issues, there are overlaps between some of these issues. Aspectual analysis can reveal where the overlap occurs and indicate how to separate it out. An example of this is shown in section 8.1.3.3.2.

8.1.3.8.2 How I used Dooyeweerd - Depth

This study does not categorise based on texts – that is what texts show. Rather categorisation is based on the meaningfulness of these texts and aspects help show what is actually meaningful. Some issues Primary School Teachers discussed are ambiguous. The text is analysed to find out what is most meaningful about the issues mentioned and help to clarify their meanings. Dooyeweerd's aspects are used as a reference point in this process. That is as a categorisation of ways in which things can be meaningful.

8.1.3.8.3 How I used Dooyeweerd - Values

This study has shown how issues are valuable by the use of Dooyeweerd aspects as ways things can be good or value laden. The comparative study done on values has revealed the diverse normativity encountered in everyday life of Primary School Teachers. It also prevents false judgement of actions that bring benefits in one aspect (e.g. the juridical) while bringing harm in others (e.g. the biotic). This can help with models of Information and Communication

Technology in Education use that are useful in guiding evaluation and design. Specifically the use of aspect helps to reveal the bias in value systems.

In conclusion, Dooyeweerd's aspects have helped to reveal deep issues, understand diversity and understand values in research and practice.

8.1.3.8.4 Show the richness of Dooyeweerd

The insight Dooyeweerd's Aspect provides cannot be overlooked. Using excerpts from the lingual Aspect in the 1st order terms as an example, aspects have helped to indicate types of issues to make provision for:

"...I can't teach them if I don't know how to use power point..." [V14-094]

"...I have got children who don't speak in English..." [V14-097]

The examples above account for some of the diversity of issues in the lingual aspect by Primary Teachers in ICT usage. The use of aspects has helped to analyse this diversity without diminishing it or overlooking issues that are important.

However, in practice, there is a notion that sometimes there is an undue ambiguity about the issue with availability of resources, which often leads to confusion and misunderstanding between people, whether developers, maintainers or users. Aspects can be useful in helping to tease apart such ambiguity.

Examples on how the issue with availability of resources has its meaningfulness in three different aspects such as Economic, Formative and Juridical aspects are shown below.

For example:

In the economic aspect on the female gender qualitative analysis, various issues were raised in this regards. However, the ambiguity of availability of resources is broken down into the 2nd order themes. These 2nd order themes were constructed based on the 1st order terms emphasised by the respondents.

For example:

Examples from the economic aspects are given below

Access to resources (2nd order theme)

Quoted remarks (1st order terms)

“...we have to sometimes loose the key to the bank where they are all kept so we can't get in there anyway...”[V3-087]

“...we can't access the network so I can't access my shared drive or my network on the computers which means I can't access document I have prepared and things like that...”[V12-063]

For example:

Examples can be drawn from issues regarding the formative aspect of qualitative analysis on male gender 1.

Inaccessibility of technology (2nd order theme)

Quoted remarks (1st order terms)

“...Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work...” [V7-033]

“...the problem of connecting to the Wifi connection because sometimes you can't access it...” [V7-041]

For example:

In the Juridical Aspect of School B some of the issues raised are given below.

Denial of what is due (2nd order theme)

Quoted remarks (1st order terms)

“...you might not be able to access something...” [V2-037]

“...then now and again we experience cut-outs and when the internet cuts out, we have no phone because it's all connected...” [V4-084]

The richness of aspectual analysis involves noting the ways each of these three aspects (economic, formative and juridical aspects) express themselves in situations on the ambiguity of availability of resources as being analysed and how they need to be balanced. All such negatives, as they happen, contribute to and constitute the failure of ICT use by Teachers in Primary schools.

Another attribute of aspectual analysis is its usefulness in evaluation. This can ensure that the moral and political issues (ethical and juridical aspects) are not overlooked.

For example- Ethical Aspect:

“one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem...” [V1-066]

Juridical Aspect:

“...subconsciously, I might go oh, I need to have this on my computer because someone is coming in to watch...” [V6-060]

It can also ensure that impacts on the environment are not overlooked, but usually these are indirect impacts.

For example:

“...it doubles up our work, after we have login details into the system, we then print it out, rather these details would have been written directly into the register...”

This analysis shows clearly the diversity of impacts ICT can have when in use not just managerial or technical, but personal, social and juridical. The issues Primary School Teachers have were not just on formal aspects such as ICT competence, trainings and technology integration, but also on the everyday life experiences that are of wide diversity. The richness of aspect has helped to reveal and not overlook the varieties of issues Primary School Teachers face with ICT usage.

The varieties of issues found by the DTE approach are important because it is Primary School Teachers who are immersed in the everyday usage of ICT in the classroom, including all its nuances and taken-for-granted assumptions. These DTE issues might need to be reviewed by all stakeholders in order to fully maximise the use of ICT in Primary Schools by Teachers.

This study revealed that the kinds of issues found by the DTE approach are not only more numerous than with conventional approaches, but also of different kinds, giving a wider and richer account of ICT use.

8.1.3.8.5 Enriching Text Analysis

This section reflects on the advantages of using Dooyeweerd aspect for text analysis.

Firstly, the standard text analysis such as Gioia methodology finds a single theme in each phrase, by contrast Dooyeweerd can find multiple themes. For example, this phrase shows these aspects.

“Sometimes we are entertained as opposed to being actively involved in the learning.”

Aesthetic (fun)

Analytic (conceptualisation)

This should help to open up diversity of DTE issues.

Secondly, the use of aspect to stimulate ideas.

For example:

“The use of ICT sometimes varies because they are quite young”

Dooyeweerd: Brings out the formative aspect on ‘use’

Stimulating Thought: Why can’t there be ICT tools the (children) can use?

Dooyeweerd helps look beyond the limitation on *‘they are quite young’*.

Thirdly, Dooyeweerd can assign meanings to even the most trivial issues and ensure they are not overlooked. The meaning behind a phrase is more fundamental than its actual being. As such each of these phrases are subject to the aspectual functioning that makes it meaningful.

Fourthly, it is widely acknowledged that the Researcher’s bias can affect the results (Klein & Myers, 1999). Comparing aspectual profiles enables the analyst not only to show that bias exists but to explore the nature of that bias.

8.1.3.8.6 Why Dooyeweerd Can Do It

The nature of computers is closely bound up with human experience. One of the issues discussed was the diversity of our collective experience of computers. Despite the improvement of technology to further suit human use, there are yet still issues holding back its full maximisation both in the academic and commercial sectors.

This research has shown Dooyeweerd's philosophy can be used to explore the relationship between humans and technology and is able to address everyday life issues without losing their meaning. Dooyeweerd's aspects provides this study a philosophical ground for understanding and managing diversity of issues in which meaning is central in the everyday experience of Teachers' use of ICT in the classroom. In everyday experience, every aspect is important none can be dismissed as less meaningful or less deserving of our attention. Aspects have helped to avoid overlooking important issues Teachers find meaningful regarding ICT use in the classroom.

In this study the issues Primary School Teachers face using ICT in the classroom has a multi-aspectual functionality. The aspectual analysis done on the data derived from the Primary Teachers show how issues in ICT use in the classroom are diverse via the taxonomy of meaning. These are ways in which Teachers encounter issues in their everyday life as users. The entire ranges of these issues expressed are put into consideration and the use of Dooyeweerd's aspects helped managed the taxonomy of meaning derived from the analysis.

Fundamentally beneficial impacts come from functioning in line with the laws of aspects while detrimental impacts come from going against the laws of aspects. It is important to know that each aspect yields a definite type of Good (positive) and Evil (negative) which this study has shown by addressing the values Teachers hold with ICT use. Therefore, in developing standards or patterns, the view of normativity is very useful in understanding success and failure in ICT use. This normative perspective might, therefore, be very helpful in formulating guidelines for ICT or Information Systems Development as a whole, helpful in revealing limitations or constraints, also in understanding impacts on society at large.

8.2 The Final Framework for Understanding the DTE Teachers' ICT Issues

In this section the Researcher will summarise some of the characteristics of the theoretical framework used in this study. The theoretical framework applied in this study is drawn from Dooyeweerd's philosophy, but, in fact, Dooyeweerd provides this study with a double framework, one is to understand ICT use and the second is to understand the analysis of ICT use. To a large extent discussions have been made on these two as we discussed the Dooyeweerdian basis for DTE issues (see section 3.6.2). However, this section will separate out the two.

Two major areas of Dooyeweerd's philosophy are stated thus. The first one, which shows the extent the Researcher understands the topic of concern while the second gives a framework by which to understand analysis of ICT use. The two major areas are:-

- 1) Framework for understanding IS use in education.
- 2) A Dooyeweerdian Framework for understanding analysis of IS use.

8.2.1 Evaluating the Framework for Understanding IS Use in Education

The portion of Dooyeweerd's philosophy, which is his notion of irreducible aspects, has been applied to IS field by various authors (see: section 3.7.1). It helps to provide philosophical grounds for understanding diversity, to avoid overlooking important factors and to understand the normativity in ICT use. A suite of fifteen aspects that help to classify Teachers' everyday issues, so none are ignored, is used in this study. Detailed justification of Dooyeweerd's aspects is discussed in section 3.5.

The original theoretical framework for understanding ICT in education that was developed in Chapter 3 is as follows:-

- ICT use in education is multi-aspectual functioning of subject with object:
 - Subject - Subject relationship
 - Subject - Object relationship
- Down-to-Earth Issues: the multi-aspectual functioning raises many meaningful DTE issues:-
 - Diversity : The need for understanding diversity of issues
 - Depth: The need for revealing deep issues
 - Values: The need for revealing value-laden issues
- Aspectual Analysis: use Dooyeweerd's suite of aspects to understand diversity and reveal depth and values

The Researcher discusses how this research confirms or modifies the framework.

8.2.2 ICT Use as Multi-aspectual Functioning

The range of issues meaningful in an area is of different kinds. Dooyeweerd provides a way to understand ICT use as multi-aspectual functioning, that is functioning in all aspects by subjects and involving objects (see section 3.6). As earlier established aspects define different kinds of good. Hence a Dooyeweerdian understanding incorporates normativity, that is the distinction between good and evil, benefit and detriment (see section 3.6).

The Dooyeweerdian framework recognises the complexity of ICT use and that there are many issues that are relevant. It is, therefore, necessary for the Researcher to recognise and uncover the full range of issues in all aspects. Since Dooyeweerd's aspects cover both individual and social and societal aspects, the framework covers all these in an integrated manner. It sees successful use as that in which the subjects are functioning well in all aspects and that dysfunction in any aspects can jeopardise the overall success of ICT use (see section 3.6).

As earlier discussed (section 3.6), Dooyeweerd makes us see the use of computers as multi-aspectual human functioning. Basden (2008) differentiated three multi-aspectual functioning in IS use as engagement with interface and technology, engagement with meaningful content and engagement in life with ICT. The Researcher had the possibility of using these three engagements. Although the three engagements might be involved in the everyday experience of ICT users also, differentiating these engagements would move the research away from its aim. This can be an added refinement to be developed in future research however.

There is a need to relate the research findings with the theoretical framework developed in section 3.10. It has been discussed that ICT use in education is multi-aspectual functioning of subject with object. In the original framework the Researcher expected the subject-subject relationships to be Teacher-Teacher and Teacher-children (see section 3.6.1). In fact this study has found many more types of subject-subject relationship in ICTE with Teachers as one subject and the following as the other subject: Teachers, Head Teachers, school managements, parents, children, while the subject-subject relationship of OfSTED Inspectors as human beings, the functioning of OfSTED itself was juridical functioning.

As discussed earlier (see: section 3.6.1), some objects are prior to the functioning, that is they exist before the functioning begins. Some of the examples Teachers mentioned are shown as the subject-object relationship in ICTE with Teachers as one subject and the following as the other object relationships, ICT equipment such as (whiteboards and other ICT tools as stated in section 1.2) YouTube videos, Google searches, Teachers' hub and books.

Also as the subject-object relationship in ICTE with children as one subject and the following as the other object relationships, Books, Pens, Tablets and many of the aforementioned ICT equipment.

Teachers discussed that the flashiness of these objects (ICTs) attracts children and this creates a struggle to get the children to use other objects such as books, pens, crayons etc. Teachers believe children engage with other objects (ICT tools such as tablets) while with parents at home and it is viewed permissible to balance this out by making children use books, learn how to handle other objects (pens, crayons) in order to improve their writing skills (see some discussion with V5 at section 4.7.4.1). There is a need to take a holistic approach in order to understand the various everyday reality of ICT use. Dooyeweerd's philosophy has helped us to understand everyday experience and meaningfulness of ICT use in the classroom.

The following section will discuss the everyday DTE issues Teachers face with ICT use in the classroom.

8.2.3 Down-to-Earth Issues

Reiterating the discussion in Chapter 2, high level issues are defined as those of interest to management, ICT suppliers and academia. While in Dooyeweerd high level issues are defined as limiting the aspects to role of interest, which breaks the coherence of meaning. Limiting the aspect in high level approach is determined by the role the analyst plays.

Also in Chapter 2, DTE's are characterised as to whom they are meaningful, but the Dooyeweerdian characterisation of the DTE approach lies in refusing to limit the aspects of the situation but by focusing on its whole coherence and diversity of meaning in the situation. Hence, Dooyeweerd helps us ground the DTE approach while also affirming that DTE issues can be characterised to whom it is meaningful. That is, meaningful to the subjects in the multi-aspectual functioning, that is, ICT use. Therefore, DTE issues are the meaningful issues to the users that is Primary Teachers. For detailed discussion on the DTE issues, see 'Justifying Down-To-Earth Issues with Dooyeweerdian Framework' (see section 3.5.2). The following discussion will focus on what the Researcher found out about DTE issues in terms of depth, diversity and values is given below.

Depth: Dooyeweerd would lead us to expect some issues of the multi-aspectual functioning that is ICT use to not be obvious to the Researcher or analyst. Hence, these issues need to be carefully uncovered as the exercise of assigning aspects during analysis helped to bring out

the deeper issues. Examining the data from interviews conducted, some surprising issues were uncovered. For example, the issue of time is mostly discussed in the literature as ‘Lack of time’ which is abstract. However, from this study the issue of time is deeper and can be manifested in lots of ways. Over 50 issues relating to lack of time were found in the data. Each one of these is a string of issues that needed to be uncovered. See Appendix VII. Details on how Dooyeweerd helped uncover depth are discussed in section 8.1.3.3.

Diversity: Dooyeweerd sees analysis as abstracting out issues meaningful in each aspect. In this study over 500 excerpts on things that hinder Primary School Teachers from the use of ICT in the classroom were collated through the use of interviews. Various kinds of issues were disclosed, some were not discussed in the literature while some slightly supports the discussions in the literature. Dooyeweerd helped with the diversity of these issues by giving due attention to the everyday experience of Primary School Teachers (see section 8.1.3.3.2.1).

Values: Dooyeweerd would lead us to expect most issues to have a normative thrust, not just neutral, and therefore to be linked to values that Teachers’ hold. The empirical study has revealed some interesting things regarding the issues Teachers’ value. For example, selfishness, laziness and many more (see: section 7.4.5.3). Discussions are given on the value-laden aspects Teachers find meaningful in ICT use in the classroom (see: section 7.4.5). Thus Dooyeweerd’s suite of aspect helps enrich this discourse by widening it and opening up overlooked aspects.

In conclusion, Dooyeweerd offers a wide range of ways in which issues can be meaningful, namely the suite of 15 aspects. This includes Quantitative, Spatial, Kinematic, Physical, Biotic, Psychic, Analytic, Formative, Lingual, Social, Economic, Aesthetic, Juridical, Ethical and Pistic. These can, therefore, be a good conceptual tool for analysis and research into IS/ICT use. Dooyeweerd’s suites of aspect was used to developed a technique for analysing DTE issues, that is the everyday experience of the person on the ground that makes use of ICT (section 2.8). This will further be discussed in the next section.

8.2.4 Evaluating the Framework for understanding analysis of IS use

8.2.4.1 Points for a Dooyeweerdian framework for understanding analysis of IS use

Dooyeweerd sees analysis, including the research of IS use, not in terms of a detached observer but as the observer. That is, analyst, Researcher being involved in the same world as the IS use where both are subject to the same aspectual laws. Therefore, analysis is not

guaranteed to be either complete or neutral, but rather to provide insight as is interpretive research. However, Dooyeweerd does give a basis to expect that the analyst does in fact understand something of the situation of ICT use being studied. This reflects on the intuitive grasp of aspectual meaning (see section 3.5) to help with the aspectual analysis. This involves intuitively separating what makes each of these DTE issues meaningful into their respective aspects. As earlier stated, this aspectual interpretation is based on intuition because Dooyeweerd suggests that it is possible to grasp the kernel meaning of each aspect through intuition rather than exact definition (Ahmad, 2012). Because aspects are intuitively grasped this implies that it can be easy for interviewees to grasp them as used in MAKE (see Analysis Method, section 4.8.2).

Hence, as argued above, it requires the Researcher or analyst to actively seek all issues that are meaningful to the users and the situation of use. That is, meaningful to the subjects in the multi-aspectual functioning, that is, ICT use.

This leads to the next discussion on the framework for understanding analysis.

8.2.4.2 Aspectual Analysis

This section will discuss the analysis processes developed in this study via a Dooyeweerdian understanding of analysis. These insights were gained during the analysis process of this research and have helped to strengthen the overall framework. A number of the characteristics of the analysis framework were identified. Some of the characteristics are the various sets of issues identified, a detailed descriptive sequence of the data analysis process in a clear and systematic way was developed, guideline criteria for EIV was developed and the kind of values Teachers find important were identified. These findings are briefly discussed below.

Firstly, discussions on the various sets of issues identified are given in section 5.3. However, to summarise a few, during the analysis process the Researcher encountered various sets of issues. For instance, some aspects were obvious within issues, some required some interpretations, some required knowledge of Teachers' situations and some were of multiple aspects.

Obvious Aspect, for example:-

“...and at the end I thought I am wasting time.”

Analysing the above, I decided this was an economic aspect issue because the problem is about the waste of time.

Aspect that required some interpretations, for example:-

Question 2: Do you have problems using these resources?

Aspects from extra information volunteered:-

“...there’s always a problem with computers as they don’t always do what you want, they decide to turn off at the wrong point...”

“... they don’t always do what you want... turn off at the wrong point...”

The juridical aspect connotes: what is due, responsibilities, etc.

I decided this was juridical because the problem is about not giving what's due.

Aspect that required knowledge of Teachers’ situation, for example:-

“... you've got 3-4 children round a laptop...”

(Quantitative aspect (amount- 3-4), spatial aspect- round the laptop)

However, ‘round the laptop’ connotes sharing which is of the social aspect. Therefore, analysing by meaning it ought to be the *social aspect*, rather than analysing by phrase which is the spatial aspect.

Issues that had multiple aspects, for example:

“...think - oh no, I don’t want to do that, it might delete and I might not get it ...”
(Pistic- believe, Psychic-emotions).

I decided this was pistic because the respondent reflects some beliefs towards his/her action.

I decided the issue above is also psychic because of the mixed emotions it portrayed, which are fear of deleting or not getting it right.

Further examples on each type of set of issues are described in details in the sub-sections of 5.3.

Secondly, during the data analysis stage the analyst questioned the analysis process and had to redo the data analysis again, this time with some guidelines as stated in section 5.4. The key difference between the initial analysis and the updated one is that during the initial analysis I followed the series of analysis stages identified in Section 5.2. I became entangled in the

textual analysis by going through phrase by phrase or even word by word and attaching aspects to each. At this point I discovered I was not focusing on analysing, only on the main issues identified. The process of redoing the analysis brought about the guidelines I then imposed. These guidelines have been reviewed in accordance with Klein & Myers' [1999] principles of interpretive field studies. I outline this position below.

The principle of the hermeneutic circle understands a complex whole from preconceptions about the meanings of its parts and their relationships (see section 9.4). This principle helped me to understand the patterns discovered that formed the guidelines. Also the principle of interaction between the Researcher and the participants was useful. It helped underpin the aspectual analysis of questions which revealed the nature of the interviewer's bias. This analysis showed the difference between what the Teachers wanted to talk about from what the interviewer wanted to talk about. The direct answers to questions were filtered out and Extra Information Volunteered (EIV) was analysed. The principle of dialogical reasoning which requires the Researcher to challenge all preconceptions that guided the research process was also used. This underpinned the reason I questioned my analysis process and had to redo my data analysis again. The mode of analysis is worked out in the context of Dooyeweerd and fully described in section 5.2.

The criteria used to separate out EIV from answers are discussed in section 5.2.1.3.1. These criteria were developed in order to reduce the Researcher's bias and equally focus on the DTE issues that are meaningful to the participants. The criteria were developed by identifying and studying the pattern that exists across the data.

Criteria of EIV are expressed in several ways, they are:

1. The point when they are reflecting on their life experiences.
2. When the respondents say what is on their mind (meaningful to them) before they remember to answer the question.
3. Even after they have answered a question and they go on further by saying 'personally' as an example.
4. When respondents go further with explanations (these explanations are unique to them, hence meaningful).

5. When it has an example, that is, when the respondent gives an example willingly (without being prompted).
6. When it is not a direct answer to the interview question, but within the research scope.
7. When the respondent feels what he or she is about to say is irrelevant or of minor importance to the interviewer but still has to say it (issues within scope of research).
8. When the Researcher asked a question, 'Are there other things I have not mentioned that you want to talk about'? The response reveals what is meaningful to the respondent.

Thirdly, another insight gained during the analysis process was the recognition Teachers gave to value-laden issues without even being asked. This helped the Researcher to give more emphasis to values that represent how Teachers behave and how they want children to behave and live. For example, honesty, integrity, courtesy and so on rather than focusing solely on the advantages of ICT use. This clarification helped the Researcher understand the kind of values Teachers place on technology in the classroom. Initially, the Researcher got entangled in the value analysis but later clarified that it is values, rather than value, that is needed for this research. The next stage was to clarify what I needed to find out about values. The Researcher found out what kinds of values Teachers find important by using aspects. The process implemented was to analyse by aspects all the excerpts that are about values in order to see what values are meaningful to Teachers. These were expressed via numbers and a bar chart, which were then discussed. For example, V1's excerpt about values is about patience. Which aspect does that represent? It functions in the ethical aspect.

Fourthly, another insight gained during the analysis process is the methodology developed on how aspects can help reveal the DTE issues (diversity, depth and values), and thus how aspects can generate the findings on the research needs that Teachers find meaningful in ICT use in the classroom. This methodology is made explicit and can be extended to other studies. (See: Table 5.1 on 'Overview of Analysis Stage').

Summary of this methodology is described:

- Stage One: Transcribing the information from the interview, separating out the direct answers from useful information voluntarily given, called EIV.
- Stage Two: Reviewing stage one and identifying issues occurring within each major separation (direct answers and EIV), colour coding of issues.

- Stage Three: Reviewing stage two and separating them out before placing them into a table.
- Stage Four: Assigning of aspects to issues.
- Stage Five: Updating the tabular results in Stage 3 to include the functioning aspect and the reason for the chosen aspect.
- Stage Six: Producing the aspectual result by collating the phrases of issues on each aspect in order to count up frequency.
- Stage Seven: Quantitative analysis: Counting up the frequency of occurrence of issues in each aspect in both direct answers and EIV, creating the aspectual profiles in order to show aspects that are downplayed or emphasised.
- Stage Eight: Qualitative analysis: Opening up the literature and cohort aspectual profile produced in Stage 7.

In this section the Researcher has summarised the developments to the theoretical framework for understanding analysis that occurred during the study. The new framework used in this study, inclusive of all development as a whole, is called the DTE approach or methodology. This DTE methodology helped us to understand this study's analysis of ICT use.

This section has discussed how Dooyeweerd lends this study a double framework. Discussion in this section has also entailed a summary of some characteristics of the theoretical framework used in this study.

The section below presents some of the findings revealed in this study and how Dooyeweerd has met the research needs.

8.3 Overview of Chapter

This chapter has reflected on two main sets of findings as described section 8.1. This chapter has reflected on the research findings in the context of the wider world on what is meaningful to Teachers which include DTE issues in ICT use in the classroom in terms of their depth, diversity and values. Also reflected on the method used to answer the main research question. It has reflected on the validity of Dooyeweerd's aspectual analysis and how this helps discuss the complexity of everyday life. The DTE approach developed has helped to open up the high-level issues in the current literature and given insight into the Teachers' issues in a wider sense. In this chapter, the Researcher has reflected on the theoretical framework used in this study. It reflected on how Dooyeweerd gives this study a double framework, which is to understand ICT use and to understand analysis of ICT use. It has shown how the findings

from the empirical study have influenced the enrichment of the original theoretical framework given in section 3.11. Further discussion showed how Dooyeweerd has met the three research needs set out in this study.

CHAPTER NINE: CONCLUSION

9.1 Introduction

This chapter draws together the research study as a whole from the theoretical and methodological contributions and its relevance to the practitioner community. It serves two purposes. The first is to summarise and collate briefly the main areas of the study, and the second is to comment on what has been done which includes making suggestions for improvement and proposing on future directions.

9.2 Overview of the research and its main findings

This section discusses how Dooyeweerd helped in terms of the research aims and objectives these are, diversity, depth and value. It shows how Dooyeweerd has helped answer the research question.

The conceptual framework developed in this study is summarised in the following bullet points:

- To understand DTE issues as multi-aspectual functioning based on Dooyeweerd's philosophy.
- The method used is open interviews.
- To separate EIV from answers.
- To find out what is meaningful to Teachers and in what ways, including diversity and depth of issues and values Teachers hold via the use of Dooyeweerd's aspects.
- Undertaking quantitative and qualitative analysis as needful.

9.2.1 How Dooyeweerd helped with Depth

Multi-aspectual theory, as a tool based on Dooyeweerd's aspects, fits as the most suitable theoretical framework to help uncover deep issues. It has also been found that an aspectual analysis of text, especially if two or more levels of aspects are used, can reveal deep issues because everything is treated as meaningful from what people say.

9.2.2 How Dooyeweerd helped with Diversity

Multi-aspectual theory, as a tool based on Dooyeweerd's aspects, fits as the most suitable theoretical framework when discussing diversity. As discussed in section 3.6, aspects provide philosophical grounds for understanding diversity and handling complexity. In this study aspects helped to classify and show overall profiles in handling the diversities of issues Teachers face using ICT in the classroom.

9.2.3 How Dooyeweerd helped with Value

This study has revealed some interesting things about what Teachers' value. For example, selfishness, laziness and many more (see section 7.4.5.3). The literature discussed on values were thoroughly examined and the values each focused on were aspectually analysed for uniformity which were later compared to Dooyeweerd's fifteen suits of aspects.

The reason a comparison with Dooyeweerd's suite of aspects was the danger that literature focuses on certain aspects, so that nothing else is meaningful and so other issues become downplayed, suppressed and ignored. The Shalom Principle shows that if we function well in every aspect then things will go well but if we function poorly in any aspect then our success will be jeopardised. This comparison exposed lots of surprises and over-emphasised values.

9.3 Discussion on how the research objectives have been achieved

This study made use of an interpretivist research in its use of open interviews and aspectual analysis, even though its analysis is carried out on both quantitative and qualitative fronts. It is still interpretive research in that the quantitative as well as qualitative does not test hypothesis, but generates insights into the DTE issues that Teachers face in ICT education and also generates insights into the use of Dooyeweerd for analysis. Further on this section highlights the insights gained during the analysis process.

This section also discusses the research objectives earlier set out in section 1.5 and how they have been achieved. These objectives are highlighted below for easy reflection and discussion.

The research objectives are as follows:

1. Explore the diversity of issues discovered in the literature which are meaningful to Teachers using ICT in the classroom.

2. Determine from the literature the needs of the research with regards to using ICT in the classroom.
3. Establish a suitable conceptual framework for the research based on Dooyeweerd Philosophy.
4. Use the conceptual framework developed to discover as wide range of issues as possible.
5. Evaluate and refine the conceptual framework and method developed.

Explore the diversity of issues discovered in the literature which are meaningful to Teachers ***using ICT in the classroom.***

In order to achieve the research aims of this study which is “How can Dooyeweerd discover the down-to-earth issues Teachers face with the use of ICT in the classroom?” The first objective was to explore the diversity of issues discussed in the literature that are relevant to the research question. The exploration process of Chapter 2 intensely reviewed the literature of ICT issues in education and showed the bias discourse of ICT issues. The various ICT issues mostly discussed in the literature were framed as being high or general level issues. Because of the diversity of impacts ICT can have when in use as it relates to the policy makers, ICT suppliers and the academics in education rather than users of ICT in the classroom. The goal of Chapter 2 was not to give a comprehensive list of issues, but to show the types of issues that are often discussed in the literature. This revealed that literature does not fully answer the research question because these high-level issues differ from the meaningful issues to Teachers on the ground that takes the Teachers’ everyday perspectives that are often overlooked, and which I have dubbed DTE issues (see section 2.7). Therefore, there is an urgent need to identify and give attention to the everyday issues Teachers face using ICT in the classrooms. This confirms that the main research question needs asking.

Determine from the literature the needs of the research with regards to using ICT in the classroom.

This study identified the research needs, that is the needs to fulfil in order to answer the main research question which is the second objective of this study. The various issues discovered through the literature showed a close relationship between many of the identified issues as discussed in section 2.7. Sometimes some issues are viewed as simple or light-weight issues which are easily overlooked but have overwhelming repercussions, also there are some issues which Teachers find as value-laden and hence prevent them from using ICT in the classroom.

The research needs are:

- To draw out deeper DTE issues rather than surface or high-level issues.
- To help reveal diversity of issues.
- To help reveal value-laden issues of Teachers' ICT use in the classroom.

Unfortunately, the solutions provided to these high-level issues discussed in these literatures remain unfulfilled, as they differ from the actual everyday issues users encounter with the use of ICT in the classroom.

Therefore, reiterating the understanding of DTE issues as discussed in section 2.8, it is viable to argue that the various classifications of issues can be viewed as being too narrowly restricted to do full justice to the diversity of issues found with the use of ICT in the classroom and also a deep knowledge, rather than surface knowledge, is suggested to understand the type of issues pertinent to Teachers and users on-the-ground. Uncovering the deep issues rather than focusing on the surface issues is likely to give a more robust understanding of the everyday issues faced by Teachers in ICT use. Also, the literature's interpretation of values in ICT education is insufficient to impact on Teacher understandings in using ICT in classrooms. This study therefore focused on the values that represent how Teachers behave and how they want children to behave and live. For example, honesty, integrity, courtesy and so on. Hence, the importance of these research needs has been justified.

Establish a suitable conceptual framework for the research based on Dooyeweerd Philosophy

There is need for a suitable theoretical basis that can fulfil the research needs as follows; the need for a way to understand diversity of issues, the need for a way to reveal deep issues and the need to provide a way to understand the values that drive both research and practice of Teachers using ICT in classrooms. This leads to the third objective to establish a suitable conceptual framework for the research based on Dooyeweerd's philosophy.

Dooyeweerd's philosophy gives insights into everyday life as he recognises diversity of issues, including human and non-human, in response to different spheres of law. For example, computer and human may be seen as both similar and different though in different spheres. This study examines issues related to the use of ICT as well as the human activities that might influence the use of these technologies (ICT) in the classroom. A particular aspect of Dooyeweerd's philosophy, which is his notion of irreducible aspects, has been applied in this study. Dooyeweerd's aspects can help us understand diversity of issues and help to provide ways to reveal deep issues, and help us to understand the values that drive both research and practice of Teachers using ICT in classrooms. A detailed justification of the use of Dooyeweerd's aspects is discussed in section 3.8. On one hand various relevant frameworks were examined as discussed in section 3.3. These frameworks have the possibility of fulfilling part of the research needs but a single framework could not fulfil the three research needs identified in this study. The next objective is to use the conceptual framework developed to discover as wide a range of issues as possible.

Use the conceptual framework developed to discover as wide a range of issues as possible

The conceptual framework developed shows how aspects can help reveal the DTE issues (diversity, depth and values), and thus how aspects can generate the findings on the research needs that Teachers find meaningful in ICT use in the classroom. The conceptual framework was used to discover as wide a range of issues as possible by first conducting open interviews to allow participants give a full picture of issues faced with ICT use in the classroom. The data collated from the interviews was later transcribed and the Researcher undertook aspectual analysis to identify a wide range of issues, and also carried out aspectual analysis of the literature. As discussed in Chapter 5, the aspectual analysis was developed by understanding not only the participant's words but the meaning of those words as used and identifying the aspects that makes each excerpt meaningful. It showed that Dooyeweerd was able to uncover a wider range of issues than the literature. For example, the DTE approach

based on aspectual analysis helped to uncover hidden issues as relating to user's resistance in ICT use by Primary Teachers (see section 8.1.2.3 for details). This study has revealed, reasonably, as wide as possible issues in every aspects (see Figure 8.3).

The use of the developed framework helped the Researcher to see how far Dooyeweerd can stretch. For instance, the DTE approach applied in this study helped to tease out and open up some of the high-level issues discussed in literature. This study found that the DTE approach based on aspectual analysis helps us to understand and enrich some of the highlighted twenty issues discussed in the literature, as many of these DTE issues were often overlooked and they have hindered the use of ICT in the classroom (see section 8.1.2.2). One of the DTE issues identified was the time it takes to get a website unblocked and how this ends up changing the course of the lesson planned. Another impact was the long waiting time it took for a web page to load and also the time consumption involved in ensuring that the video clip was appropriate and suitable for the lesson. The use of aspects helped the Researcher to go into further details on each issue. The varieties of DTE issues which have been revealed are remarkably different from the ones discussed in the literature. The use of aspects in this study helped to tease apart ambiguity and helped to indicate the types of issues to make provision for (see section 8.1.2 for details).

Evaluate and refine the conceptual framework and method developed.

This objective has two sides; to evaluate and refine. The discussion will be split into two for clarity.

Evaluate: The list of issues is far reaching. However, Dooyeweerd's suit of aspects helps to cover the entire range of meaningfulness that these issues express and also helps to reveal overlaps of issues; indicating how to separate them out. This is shown in Figure 8.3 and discussed in details in section 8.1.3. More on the issues Primary School Teachers find meaningful is discussed in section 7.4.

Refine: There are various insights gained during the analysis process about DTE issues that have helped to refine and strengthen the framework. One of these involved separating out direct answers from EIV in order to reduce the research bias, and in order to be able to lay emphasis on the DTE issues that are meaningful to the participants. Other reasons for the use of EIV are explained in more detail in section 5.2.1.3.1 (See Stage 2: Criteria for EIV).

Highlights of these insights gained during the analysis process are discussed in details in section 8.2 and highlighted below:

1. Helped to identify the various sets of issues as some issues in ICT use were not obvious during the analysis process.
2. Developed a detailed descriptive sequence of the data analysis process.
3. Developed guideline criteria for EIV.
4. Identified the kind of values Teachers find important.

Also the aspectual profile developed from the pilot study of literature review is discussed in Appendix XII.

This section has discussed how the research objectives were achieved.

Answer to the main research question

Reflecting on the research aim (see section 1.5) ‘How can Dooyeweerd's philosophy discover the down-to-earth issues Teachers face with the use of ICT in the classroom?’

Dooyeweerd's philosophy can help reveal diversity, uncover depth and understand values. Reflecting on the research aim phrase ‘...can Dooyeweerd...’ the Researcher has made use of aspects, multi-aspectual functioning but not theory of time or ground motives.

Also, reflecting on the phrase ‘...discover...’ this study has shown that the discovery is in revealing diversity, uncover depth and understanding values.

Also, reflecting on the phrase ‘...down-to-earth issues Teachers face with the use of ICT in the classroom...’ From the interviews with twenty Teachers, the Researcher has collated over 500 excerpts of DTE issues Teachers face in the classroom. These issues are those that are most important to the Teachers and not to the Researcher because they are extracted as EIV rather than as direct answers derived during the analysis process (see section 5.2).

In addition, by achieving the research objectives, this study answers very well and has justified in details the usefulness of Dooyeweerd in uncovering DTE issues, hence fulfilled the research aim.

The next section discusses the critique of the research in accordance to Klein & Myers' [1999] principles of interpretive field studies.

9.4 Critique of the Research

There has been renewed interest in interpretive research in information systems; it is argued that documenting the research decisions may be valuable to other Researchers in the information systems community. This section assesses the various decisions made and the reasons behind them. A log of the research decisions can be found in the Appendix XI.

This study has been carried out in according with Klein & Myers' [1999] principles of interpretive field studies, as follows.

Table 9:1 Critique of Research

Summary of Principles for Interpretive Field Research	Relation to research study
<p>1.The Fundamental Principle of the Hermeneutic circle</p> <p>This principle understands a complex whole from preconceptions about the meanings of its parts and their relationships.</p> <p>The Parts: the interpretive Researchers’ and the participants’ preliminary understandings of the study.</p> <p>The Whole: the shared meanings that emerged from the interactions between the Researcher and the participants.</p>	<p>The Parts</p> <p>The utterances made by Teachers were separated into two types: Direct Answers and Extra Information Volunteered (EIV)</p> <p>The Whole</p> <p>My understanding of ICT in education were influenced by all these various pre-understandings:</p> <ul style="list-style-type: none"> (a) The Researcher’s pre-understanding based on literature explored in the field of study. (b) The Researcher’s pre-understanding on some knowledge of British schools, some knowledge of children and a lot of knowledge from another culture (Nigeria). (c) The participants pre-understanding of their experience in the use of ICT. (d) The participants’ pre-understanding based on Researcher’s brief introduction on the research study. <p>Furthermore:</p> <ul style="list-style-type: none"> (a) As the Researcher listened to the Teachers (participants), I interpreted what they said in light of the whole that is the various parts of pre-understanding I held. As I listened to Teachers my understanding of using ICT to teach children changes, so my picture of the whole changes. (b) The rich explanations shared based on participant’s everyday experience which is beyond the Researcher’s pre-understanding conceived from literature. (c) The participants’ understanding of the purpose and importance of the project. That is what Teachers say to me has come from their understanding of teaching with ICT and also the aim of the project. But as they talked and listened to me their understanding of the whole changes. <p>II. In this study the parts are the aspectual issues and the whole is the researcher’s understanding of ICT in the classroom. The Researcher pre-understands that there are some issues that are being ignored which most times are not visible or are considered as less important. Unfortunately, these issues have a ripple effect and affect the quality of ICT in the classroom.</p> <p>The Parts: the research aim on the approach of DTE issues is broken down into.</p>

	<ul style="list-style-type: none"> - Depth: these are the hidden issues and the strings of issues. - Diversity: these are the various kinds of DTE issues discovered. - Values: these are the values Teachers hold when using ICT in the classroom. <p>The Whole: the Researcher's understanding of DTE issues as a whole helped in the analysis method by using Aspects to gain a richer picture of the kinds of DTE issues and the strings of issues faced by Teachers.</p> <p>The fifteen aspects were used in the analysis section. These Aspects were considered individually as it relates to the issues revealed by Primary Teachers.</p> <p>This method reflects the principle of hermeneutic circle which helps to reveal the DTE issues of this study.</p>
In Summary:	The issues are identified in the context of Dooyeweerd's aspects, which are 'global' in their meaningfulness (Basden 2008), and yet the Researcher's understanding of each aspect grew through the study, and I reinterpreted some of the utterances later in view of this (Aiyenitaju & Basden, 2017).
2.The Principle of Contextualisation This principle revealed the difference in understanding due to the historical distance between the interpreter and the author of a text. It refers to the historical background knowledge of the subject in order to inform a need for further investigation. One of the key tasks is seeking meaning in context which includes those associated with the informants or the Researchers.	In this study, for the informants, the school's background, school's rankings system, the standards adhered to in primary schools and the challenges and the enjoyments of ICT usage by Teachers. This context had an influence in the analysis section. It made me understand the meaningfulness of some issues better. The difference in cultural background of the Researcher and participants also had an impact in the interview as discussed in the description of V5 in earlier chapters.
3. The Principle of Interaction between the Researchers and the Subjects This principle requires the Researcher to place himself/herself and the subject	<p>In this study, these are the things socially constructed by participants' and Researcher together.</p> <p>Due to the nature of the research aim, which is to reveal DTE issues, both the Researcher and the participants at some points gave some emotional and intellectual reactions on some issues identified by the participant. However, during the interview process the Researcher's understanding was improved</p>

into a historical perspective. It requires critical reflection on how the research data were socially constructed through the interaction between the Researcher and participants.	and there were instances where assumptions initially held onto were being questioned. This is reflected in the interview description of V5. The aspectual analysis of questions revealed the nature of the interviewer's bias. This analysis showed the difference between what the Teachers wanted to talk about from what the interviewer wanted to talk about.
In Summary:	The direct answers to questions were filtered out and extra information volunteered (EIV) was analysed.
4. The Principle of Abstraction and Generalisation This principle attempts to relate the details disclosed by the data interpretation through the utilisation of principle one and two to general concepts that describe the human understanding and social action (Klein and Myers, 1999).	The details revealed by the data interpretation were related to theoretical, general concepts drawn from Multi-Aspectual theory. According to this theory, Aspects cannot be directly observed but only as they are expressed in things, events, situations and so forth, as ways these can be meaningful. The theory affords dignity to everyday life and to what it means to be fully and socially human. Aspects help you see general concept, but they do not give you general concepts. In this study the use of Aspects to find the meaningfulness of these issues.
In Summary:	Dooyeweerd's aspects are the most abstract things we encounter and all meaningful issues are related to them, but retain their individuality.
5. The Principle of Dialogical Reasoning This principle requires the Researcher to challenge all preconceptions that guided the research process. It emphasises that the Researcher should identify the Interpretivism type preferred, identify its philosophical roots and relate the particular strengths and weaknesses to the research study. It requires sensitivity to the theoretical preconceptions of the research design and the actual findings with subsequent cycles of revision.	In this study the Researcher had two preconceptions. One was about the great benefits of using ICT with its high-level issues as discussed in the current literature. However, from the interviews the Researcher discovered the varieties of DTE issues that are mostly not discussed in the literature. The second preconception held was of Dooyeweerd's Aspect as an efficient tool in discovering DTE issues. This tool proved efficient because it addresses everyday experience and emphasises the importance of every aspect. Based on this none of the issues Primary Teachers revealed were dismissed as less meaningful, less interesting or deserving of less of our attention. The third preconception held was that during the data analysis stage, I questioned my analysis process and had to re-do my data analysis again, this time with some guide lines as stated in section 5.4

In Summary:	The Researcher's original expectation that ICT's unmitigated benefit in teaching became modified by findings.
6. The Principle of Multiple Interpretations This principle suggests the occurrence of multiple viewpoints to the same sequence of event under study.	This principle helped in reviewing different issues Primary Teachers revealed on their use of ICT. The Researcher focused mostly on full time Teachers, but the views of management staffs are also presented. Different participants see things in different ways. However, one person can have multiple interpretations, that is, different aspect of seeing the same issue (Ahmad, 2012). Also, in my analysis I found multiple interpretations in one person and not just between different people and each of their multiple interpretations is an aspect of what they are talking about. The varieties of views on the issue of time, for an example, showed some DTE issues as against the abstract term of 'lack of time' discussed in the literature. The issue of lack of time discussed by various participants helped reveal the different forms this issue connotes and the DTE issues embedded therein. Dooyeweerd's aspect was helpful in these multiple interpretations.
In Summary:	Multiple interpretations of an issue are revealed by aspectual analysis, not only between different people but within each individual.
7. The Principle of Suspicion This principle emphasises the need to understand the meaning of the data because it shows the social world behind the words of the participants. It adopts a critical perspective and does not take the participants' comments at face value.	During the interview, the Researcher also paid due attention to participant's body language. Some participants gave some diplomatic answers especially those that had to do with the management (juridical aspects). The Researcher noticed this and gave further reassurance and probing to this effect. During the analysis section the use of aspects helped opened up the meaningfulness of these issues.
In Summary:	Aspects provide a basis for understanding what is meaningful to participants underneath what they say, and to help them consider issues taken-for-granted.

9.5 Research Limitations

This study has been conducted in Salford in the Northwest of England among relatively disadvantage communities. They also reflect the issues of these primary schools, which may not be apparent in other schools. The results may have been different if data had been collected from more primary schools or from other communities in Salford.

As a small sample size of both participants is used of users and papers studied, the findings of this study might be seen as indicative rather than exhaustive.

The ability to draw general conclusions based on the findings of this study is subject to certain limitations. For instance, the actual bias is shown very much in favour of the formative aspect and very little on the ethical, pistic and social aspects. This actual bias could be a limitation because it can be interpreted as a bias towards the formative aspect and away from the social aspect.

However, on the EIV the bias has lessened because the interviewees have talked about the economic aspect much more than the interviewer asked, and have also talked about the formative aspect with lesser emphasis than the Researcher asked. Also reflecting on some of the aspects such as the psychic, social, pistic, ethical, juridical and economic aspect, participants have talked about it more than the Researcher asked, this shows more areas meaningful to Teachers. Nevertheless, there is a close gap discussion on the aesthetic aspect when comparing questions asked with voluntary information given on this aspect. It is, for example, surprising that the kinematic and spatial aspects are meaningful to the interviewee as the interviewer did not talk on these aspects at all. This is shown in Table 6.26, Figure 6.5.

The Researcher's understanding of Dooyeweerd's aspects and their application was an initial limitation in this study. The Researcher was applying the aspectual analysis to texts but later understood that the analysis ought to be applied to meanings behind the texts. This has been discussed in section 5.4 and within the principle of dialogical reasoning in section 9.5.

Questioning the Researcher's understanding of the aspects in light of the high amount of issues found meaningful in the formative aspect and the low amount of issues found meaningful in the ethical, social and pistic aspects. It can be questioned if the Researcher had only intended to fix too many issues into these aspects. However, in one of the cohorts the Researcher discovered by the evidence of gender analysis that the interpretation of Teachers'

issues in the formative and economic aspects reached an identical view with discourse in the literature (see section 8.1.2.1).

There is a limitation on the Researcher's aspectual interpretation of values as discussed in literature, as the possibility that the values are intertwined and are not specifically functioning in an aspect.

Also considering the limitation of the Researcher's experience in teaching, it must be asked how it affected the study. For example, during the first interview the Researcher did not fully appreciate the process but with subsequent interviews the Researcher had a hold of the discussions.

However, because this research is not primarily aimed at constructing a definitive list of DTE issues that Teachers' face, but rather to find out how Dooyeweerd can help to explore these DTE issues. Hence, the aforementioned limitations are less important for this research.

9.5.1 The Challenge

As argued in Chapter 1, primary education is the bedrock on which the government builds its vision of an information society. In today's technology age, children in their Early Years are surrounded by ICT and the proper use of these technologies by Teachers to support their learning can have a significant impact on the success of student learning with ICT, preparing them for the information society workplace.

This understanding is developed on how Dooyeweerd's suite of aspect has helped us construct frameworks for understanding the DTE issues that are meaningful to Teachers because they affect the quality of ICT use in the classroom.

This research study aims to get the research community and every stakeholder to widen their focus and take into account all aspects in order to promote engagement with these issues, and understand their impact on DTE activities using ICT in education rather than play them down.

9.6 Contributions and Recommendations

This study set out to gain a better understanding of how to reveal the everyday issues facing Teachers using ICT in the classroom. The literature engages with various issues, yet they tend to treat them as generic issues of interest to academics rather than helping to guide the design or use of ICT in classroom. However, this thesis has revealed the aspects of DTE that are directly meaningful to users and those which affect the quality of ICT use in the classroom.

This research study will make some contributions to practice, theory, research method and to Dooyeweerd's scholarship.

9.6.1 Contribution to Theory

This study recommends that ICT theories need to be reviewed or developed to take into account some other aspects so that issues pertaining to aesthetic, ethical and social parameters are not down played. The Technology Acceptance Model (TAM) illustrates this point clearly. It was developed to judge the acceptance and usage behaviour of IS use with two internal beliefs: Perceived Ease of Use and Perceived Usefulness (Davis, 1989). These two parameters show that its focus is on the system and that this focus is task related. These are restricted, mainly due to the formative and perhaps economic aspects of IS use. Although Davis expects them to be expanded by external variables, no guidance is given to ensure that those variables cover all meaningful issues in all aspects.

Researchers tend to focus on the narrow view of issues derived from the use of existing theories which are limited in their range of aspects. It is now high time to try another approach to consider a wider perspective and understand the diversity of issues users encounter with ICT use. This study recommends a DTE approach which gives a deeper understanding of the needs and everyday issues that are meaningful to the users, and outlines a method by which this might be accomplished. Either this method can be used by Researchers to identify the types of issue in each aspect that the theory could incorporate, or the theory could itself warn that all aspects should be considered in relation to its more general constructs.

9.6.2 Contributions to Practice

Policy in education and elsewhere must now take account of ICT in everyday life, and recognise the constraints and abilities ICT gives. Policymakers need to review the interesting implication of DTE issues for future policy, and do so from the user's perspective rather than assume the narrow view and influence of commercial providers, management or academic journals. The narrowness of the latter has been demonstrated above. So policymakers should put into account the deep and meaningful issues users encounter in their everyday activities with ICT rather than play them down. A recommendation to the policymakers is to find a way to consider the DTE issues of Teachers with wider strategic goals.

Karlsson et al., (2012) revealed the gap in existing policies of users' participation and citizen empowerment and the need to involve users in the process of policy implementation. User participation, however, cannot solve all the problems of user participation and empowerment, because of tacit knowledge or the tendency of discussants to focus on acceptable issues.

The aspectual analysis method described in this study is able to uncover depth and helps to focus on aspects that are rarely talked about or the deeper issues that are often overlooked. As it reveals the diversity of issues that might be meaningful, this can be useful to the Department for Education and Skills (DfES), and the Centre for Evidence Informed Policy and Practice in Education.

This research might therefore contribute to a deeper understanding of ICTE policy formation. It can provide the basis for developing an everyday adaptive policy and practice. Here are two examples of ICT problems caused by policy, which were uncovered by the aspectual analysis of down-to-earth issues:

'...we can sometimes get a block on them that's one problem we do encounter, particularly if there's a part of the word that maybe, for instance, looking up the word sexton which is to do with a church caretaker [sexton] but because it's got 'sex' in the beginning of it, that will filter and that would stop...' [V18-021]

'...sometimes doing things that you want to look at really is a very great annoyance that you can't get through purely maybe there's a fraction of the word or a slight meaning that Salford has decided is not acceptable, whereas something we are trying to look at is very harmless to the word we are trying to get to...' [V18-037,043]

9.6.3 Contribution to Methods

This section gives some recommendations regarding this study's contributions to methods and methodology. An example is when literature is used to gain an overview of the field; it does not get a good overview. Another contribution is the concept of the DTE approach in practice and as a research method.

This study has examined the contemporary approaches to and the type of classification of, Teachers' ICT use and suggests that the claims made for the issues of Teachers' ICT use in the literature are not comprehensive but rather have a narrow focus. The pilot study of DTE issues in ten pieces of literature about Teachers' encounters with ICT use suggests that the current literature might be misleading. The pilot study has shown that the sample of literature in ICT in education seems to focus on the economic aspect at the expense of other aspects especially the aesthetic and ethical aspect (See Appendix XII for details). This narrow focus

of issues can propagate through the research community if the issues discussed are mostly based on what previous Researchers feel is important and current Researchers use these same issues without critically evaluating, in their own studies, what might be meaningful to the actual users who use ICT. This study argues that the current literature on Teachers' encounters with ICT use is misleading as a guide to practical evaluation or further research. However, further research is called for. This study can help literature on ICT education widen their focus and take all aspects into account.

This section gives both recommendations and contributions to the concept of the DTE approach in practice and as a research method. The relevance of the list of DTE issues is clearly supported by the current findings collated during this research. It is not only that the collated lists of issues are important but they can stimulate Researchers to think along this line. These lists of issues could be helpful in letting senior management know the types of issues that are relevant and significant to Primary School Teachers using ICT in the classrooms for effective quality planning and guidance. Additionally, a possible contribution this study produced is that it gives a general idea of the types of issues both the senior management and Teachers have not thought about but might have experienced because some of them might be tacit in nature and this could help improve the existing use of ICT in the classroom. The concept of DTE issues and aspectual framework will give Teachers confidence in their views that the issues they encounter will be listened to and that this could empower users in relating to managers. Also this research might help to understand the DTE issues behind the poor performance of children in deprived communities such as Salford as discussed in section 1.2.1.

The comparative analysis revealed that the DTE approach produced a richer profile of meaningful issues when compared with issues in literature. This finding indicates that DTE approach gives a richer and broader view on issues users find meaningful in ICTE. The evidence from this study can help Researchers find meaningful issues in any situation by the use of aspects. Management in Primary Schools can apply this research method to study other DTE issues in other challenged areas. Government Researchers on ICT in education can apply the aspectual method used to study other DTE issues and this can be fed into the discussion on the New Opportunity Fund, an initiative of the UK government. The methodology of this study can also be useful to interpretive Information Systems (IS) research in general.

This Researcher hails from Nigeria and hoped to carry out this study there but various reasons, highlighted in the motivation chapter, hindered this plan. However, it will be helpful

to apply this study in a developing country. It is not all the list of issues discovered that are relevant to Primary Teachers in Nigeria, but the method of finding them is helpful. This can be fed into the discussions concerning the Universal Service Provision Fund (USPF), an initiative of the Nigerian government with technology companies on introducing ICT into schools to improve the benefits ICT can bring into Nigeria education.

Contribution to Dooyeweerd's scholarship shows this study as an exemplar of the use of aspectual analysis to help understand what various authors and Researchers present in literature on the issues of ICTE as this has not been researched before. Additionally, Dooyeweerd has revealed that it can show the kind of biases that happen during the interview process.

9.6.4 Contribution to IS Development

Many DTE issues that are crucial to the success or quality of ICT in Education are overlooked in its evaluation by the current literature. Hence, the design of software and the installation of ICT in the classrooms should not be governed too much by discourse in the literature but by the everyday issues that are likely to occur, which can be revealed by aspectual analysis.

Also for both design and policy in ICTE values are important because they reflect an individual's sense of right and wrong or what ought to be (Singh, 2015). For instance, in technical design, technical culture, social values, aesthetic ethos and political agendas, and so one of the designers must be examined. This study's ability to uncover the values Teachers have and identify as important will help with policy and design, since they create the future of ICTE.

The DTE approach recognises the entire range of meaningful issues, including those that are overlooked by the analyst or not clearly stated by the users themselves. For example:

'...Too often the machines are updating and a couple of hours still on updates, you can't get on...' [V7-050,077]

'...we've got new technology which is not as simple to use as the older technology was...' [V8-018]

Such issues, important in everyday experience with ICT, are seldom taken seriously by designers or management and yet they can significantly affect the effectiveness of the activity that the ICT is supposed to serve. Hence, this research proposes the need for guidelines and this is further discussed in the subsequent section 9.6.4.1.

9.6.4.1 Use of DTE Approach on IS Development

This section outlines some specific aspectual suggestions that are often taken for granted. The Researcher outlined two examples of IS development guidelines, compared to the proposed aspectual guidelines, in order to reveal the wider spread of aspects or issues that are often taken for granted. Details of this discussion are in Appendix XIII. This study will propose a guideline to help IS developers with future educational software development.

This guidance is discussed in the following subsection 9.6.4.2.

9.6.4.2 Guidance for Practitioners

This subsection discusses the contributions of the DTE approach to guidance in ICT design. The DTE issues derived from the empirical study that helped produce the guidelines below. As discussed in section 2.6.2, there is a gap in guidance for practitioners as software development companies often end up supplying inappropriate educational software that does not meet the instructional requirements of the way teaching and learning is delivered. This is because they are most often unable to carry out adequate software evaluation and testing by Teachers and/or students before instructional software is placed on the market. This section provides a means for practitioners to use the DTE approach to inform their anticipated technology use decisions.

The design of a system significantly influences how it can be used. The underlying problem of most educational software and ICT facilities is then most often the narrowness of the design guidelines. This study has helped reveal some of the DTE issues faced by Teachers in their everyday use of ICT in the classroom. In accordance with the findings this study has also demonstrated that ICT designs should be appropriate to everyday life and requirements of the end users; for instance, Teachers and users on-the-ground.

Below are some questions and guidelines that software development companies, ICT designers or developers might ask and bear in mind before supplying educational software. Some of the Teachers' meaningful issues based on the empirical study are incorporated. Though all of the 15 aspects have been discussed and are all important in human activities with ICT, here only a few indicative aspectual examples are given (See Table 9.2).

Table 9:2 Proposed ICT Development Guidelines from DTE Issues

Aspect	Questions and Guidelines	Proposal
Biotic	When Primary Teachers make use of our designed educational or ICT products will it threaten or reduce their health and vitality?	This study proposes that ICT educational products should be designed to improve health and vitality.
Psychic	When Primary Teachers make use of our designed educational or ICT products, will they find its use frustrating or stressful?	This study proposes that ICT educational products should be designed to reflect easy recognition of shapes, sounds and also minimise cognitive activities such as clicks, movements and so on. The use of the product should also make users feel better and happier.
Analytic	When Primary Teachers make use of our designed educational or ICT products, will they use them in relevance to their everyday living or teaching patterns that has been a blind spot to us? How logical are the instructions? Is the system confusing to use or operate? When in use in the classroom does our system promote learning or is it mostly entertaining?	This study proposes that ICT educational products should be designed in transparency so Teachers can understand clearly the structures of the system and how it operates. It should also bring greater clarity in understanding to both the Teachers and children involved in the learning activities.
Formative	When Primary Teachers make use of our designed educational ICT products, are there possibilities of them using it for other purposes we	This study proposes that ICT educational products should be designed in flexibility and robustness

	cannot imagine yet? How frequently is technical malfunction, system downtime or routine maintenance hindering the learning objectives?	to accommodate the classroom context. It should also be designed to promote skill formations such as writing and research skills. Products should reflect a good structure of information.
Lingual	When Primary Teachers, who are the direct users, make use of our designed educational ICT products, will they be able to communicate or teach better or will their style of teaching and modelling be restrained because of our products?	This study proposes that ICT educational products should be designed in a manner that Primary Teachers can clearly interpret instructions on the screen and be able to provide input, that is, Teachers' engagement with the ICT product should be made easier and the ICT product should be user-friendly. This can be done when ICT developers' carefully design the graphic user interface and the wordings and explanations in the operational or instructional manuals in a way that users will easily engage with to produce a successful teaching and learning session.
Social	When Primary Teachers make use of	This study proposes that

	<p>our designed educational ICT products in the classroom, will this make both the children and the Teacher more or less socially active? Would it, on the other hand, promote technology addiction? How will cultural differences and assumptions be represented in our products?</p>	<p>ICT educational products should be designed in a manner that promotes social interactions and engagement in the classroom. Also, the design of these products should put in consideration the multicultural users by the appropriate use of cultural connotations, humour, idioms and also respecting cultural sensitivity.</p>
Economic	<p>When Primary Teachers, who are the direct users, make use of our designed educational ICT products in the classroom, will their management of resources, for example, time, paper, raw materials and so on change?</p> <p>How will the ICT product, by design, comply with regulatory standards relating to climate change, consider the amount of energy consumed by ICT facilities not in use and left on for hours or the automated attendance register designed to save paper which is then printed off on paper for head count during a fire outbreak?</p>	<p>This study proposes that ICT educational products should be designed in a way that tends toward more frugality rather than waste or excess of resources. There should be good use of the screen area, good response time and easy access to relevant information.</p>

Aesthetic	When Primary Teachers make use of our designed educational ICT products in the classroom, will they find their teaching session interesting? Will our products work in harmony with other versions? What about compatibility with other ICT brands?	This study proposes that ICT educational products should be designed in a way that teaching and learning is made interesting, stimulating and provoking new thinking. There should be consistency in the visual style and also reflect elegance and harmony.
Juridical	When Primary Teachers make use of our designed educational ICT products in the classroom, will all stakeholders be given their due? How will inappropriate contents or adverts be managed by the Teacher in the classroom? In what way will the designs of our products promote educational standards and be flexible from the Teachers' perspective?	This study proposes that ICT educational products should do justice to the content provided and to the users involved. Designers should ensure that the display style is appropriate to the type of information being displayed.
Ethical	When Primary Teachers make use of our designed educational ICT products in the classroom, will it make children more selfish and promote unhealthy competition or will children be more self-giving, generous and be collaborative in the classroom?	This study proposes that ICT educational products should be generous, that is, to give more than strictly necessary. ICT products should be designed in ways that promote values in children, such as self-giving, generosity, integrity and so on. Fulfilment of this can set up a positive

		attitude in a community at large that allows all to become less defensive or competitive but rather more self-giving.
Pistic	When Primary Teachers make use of our designed educational ICT products in the classroom, can they rely on it? Can our product be trusted by all stakeholders? In what way can we design our ICT education products to be in line with the vision of the users and their schools? Will the use of our product promote good faith or hinder it?	This study proposes that ICT educational products should be reliable and trustworthy. Design of the products should reflect the vision of the schools and users involved. It should be products that promote good faith, thereby creating a peaceful community.

Table 9.2 has shown the richness of aspectual analysis when used as guidelines in ICT educational tools. It explains how educational ICT products can bring real benefits. The proposed ICT development guidelines have given a clear basis to the designers' understanding for differentiating what the ICT products are intended for and what they are actually used for in the classroom. The guideline has proposed to educational ICT product designers that every aspect of day-to-day life should be represented but some aspects may be omitted if there is an acceptable expectation of the inactive use. For example, the calculator where the represented content would focus on the quantitative aspect. The aspectual approach to normativity, as illustrated in Table 9.2 above, manifests not as a set of rules but pointers to the kind of normative issues that requires attention during an ICT project. However, this study emphasises the importance of giving due diligence to all aspects. As reflected in Table 9.2, values can be reinstated because users are no longer seeking their advantage, pushing their views but seeking to listen to others and understanding their views.

The next sub-section will discuss more about these recommended guidelines.

9.6.4.3 Reflection on Recommended Guidelines

The recommended guidelines show in more detail in relation to the earlier conventional guidelines described in Table 9.2. For example, a look at some of the aspects on the paper on ‘Design Guide for Developers of Educational Software’ (Beale & Sharples, 2002) shows a different view of what is expected from Primary School Teachers. What the developer looks at, from an aesthetic aspect, is simple design while the recommendation given from this study mentions that when Primary School Teachers make use of our designed educational ICT products in the classroom, will they find their teaching session interesting? Will our products work in harmony with other versions? What about compatibility with other ICT brands? In addition to the stated stimulating questions, this study further proposes that ICT educational products should be designed in a way that teaching and learning is made interesting, stimulating and provoking new thinking.

Another example is the juridical aspect. The conventional guideline simply states Political Details. However, this study proposes some stimulating questions, such as when Primary School Teachers make use of our designed educational ICT products in the classroom, will all stakeholders be given their due? How will inappropriate content or adverts be managed by the Teachers in the classroom? In what way will the designs of our products promote educational standards and be flexible from the Teachers’ perspective?

This study has taken the DTE everyday Teachers’ issues in view and has proposed some guidelines that can help encourage the ICT developers to think of things often overlooked and possibly engage more stakeholders in their data requirements.

Furthermore, taking a cue from the recommended guidelines, many requirements are expected to be proposed on each aspect, and it is now the ICT developer/designers’ responsibility to bear in mind these requirements and design in line with these suites of aspect. This study encourages practitioners to set some aspectual questions for review and to engage in the aspectual analysis process.

This study recommends that the use of aspectual analysis can help indicate the overlooked everyday issues that Teachers face when using ICT in the classroom. It has provided evidence of the overlooked DTE issues in order that policymakers and practitioners could make more sensitive judgements in policy formation and best practice.

The ICT developers have the responsibility to ensure they are sensitive to a wide range of DTE aspectual issues. Using aspectual analysis to capture the everyday issues of Teachers’

ICT use in the classroom will provide so much richness compared to their usual design process or scheme, which has the disadvantage of overlooking important and taken-for-granted aspects. Doing this will not only make ICT designers produce better ICT products and ensure best practice but also enable them develop a brand that is more trusted.

9.7 Future Research

The methodology employed in this study, and the discussion of the results, is indicative of the kind of issues that might come up when a more detailed study is explored to find out what issues Teachers face in ICT education and provide appropriate solutions to these relevant issues.

Another finding from this study is that many other sectors have similar challenges of DTE issues and this approach might also be applied to other sectors in the everyday life of people. As discussed in section 7.4.5, a future study can focus on comparing aspectual values across cohorts.

Future research should focus on a more extensive project that will give room to a robust testing of the conceptual framework and method developed in this study. There is need to incorporate other deprived communities and examine their kind of issues.

9.8 Conclusion

This study set out to find a way to understand the issues Teachers face with the use of ICT in the classroom. It established three research needs that could help achieve the research aim.

This thesis has proposed a DTE approach to understanding issues with ICT use in the classroom through the use of Dooyeweerd's suite of aspects as the conceptual tool and analysis method. This study can provide practitioners, policy-makers and the research community with a reliable basis to formulate decisions and take action.

A new way of looking at and understanding meaningful data has been explored. Extra Information Volunteered (EIV) helps to indicate what the interviewees rather than the interviewer finds meaningful. This method can benefit the Researcher to help bring out meaningful statements which are worth including as data and also to use aspects in EIV for social construction of data.

In summary, this study sheds new light on ways it can help theories, policy-makers and ICT designers handle diversity to widen their focus and take all aspects into account so as to understand the challenges of ICT in an everyday setting like the classroom. This study offers some important insights into uncovering the deep issues that are often overlooked and helps to reveal values held by ICT education designers and policy makers.

Therefore, this study recommends that the use of aspectual analysis helps to handle diversity, uncover depth and values. It also proposes the DTE approach in uncovering everyday issues that might have been overlooked in ICT use in the classroom.

Many other sectors have similar challenges of DTE issues and this approach might also be applied to anywhere in any sector in the everyday life of people.

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APPENDICES

LIST OF APPENDICES

Appendix 1: Ethical Approval

This research falls under the scope of the Research Governance and Ethics Committee (RGEC). Hence the Researcher applied for ethical approval prior to conducting the field study. This is discussed in the sub-section of Ethical consideration. See section 4.10.1.

Appendix 2: Consent Form (CF) and Participant Information Sheet (PIS)

This form acted as a proof that the participant has given his/her consent to the research and to the information he/she provides through his/her participation to the research project. This is discussed in the sub-section of background information on Teachers interviewed. Also it was made mentioned of in Ethical consideration section. See section 4.6.3, 4.10.1 respectively.

Appendix 3: Letter sent to school

A sample of the letter sent out to schools in Salford is shown in appendix 3. This letter gave brief background information of the Researcher, the study, the request and the school's benefit of this research. This is discussed in the sub-section 4.6.2.

Appendix 4: V7 Analysis

Appendix 4 focuses on the data analysis process using V7 as a sample. It shows the various stages of the aspectual quantitative analysis process. As this shows the stages on how aspectual analysis was carried out on the twenty interview transcripts (V1-V20).

This Appendix has the complete data analysis stages of V7. This is discussed in section 6.2 of Preparing Data for Analysis. This appendix entails the transcript of V7 interview. Please see Table 4.1 in section 4.6.3 of the Demographic Profile of Participants for details about V7. This appendix entails the analysis phases described in Table 5.1 in section 5.2.1 of Aspectual Analysis.

Appendix 5: Value Analysis

The value analysis was performed to reveal Teachers' aspectual value concern caused by ICT use. In addition, this appendix contains the value aspectual comparison profile of users and literature that helped reveal the value-laden aspects Teachers find meaningful in ICT use in the classroom.

Appendix 5 is referenced in the following sub-sections:-

Section 3.10.4 Comparison of Dooyeweerd's suite of Aspect with Extant Theories of Values

Section 5.3.6 Phase Six: Analysis of Values

Section 7.3.4 Qualitative Analysis of DTE Issues by Value Literature and Table 7.32; 7.33; 7.34

Section 8.2.3 Value Discussion

Appendix 6: Quantitative Analysis of V1-V20

This Appendix contains the quantitative analysis to compare answers and EIV for each interviewee from V1-V20.

The use of Appendix 6 is discussed in the sub-section 6.3.2 of Aspectual Analysis of Questions, Answers and Extras. This appendix gives a tabular breakdown of V1-V20.

Appendix 7: Gender Analysis

The gender cohort includes only the male and female participants and helps us to understand the kind of issues that is most meaningful to them. The comparison of the male and female gender will allow the Researcher to understand the kind of DTE issues that are peculiar with each gender, and valuable insights can be gained into new topics emerging in the rapidly changing field such as ICT in education.

Appendix 7 comprises of both quantitative and qualitative analysis. This is discussed in section 7.2.1 and 7.3.

Appendix 8: Qualitative Analysis of DTE Issues by Teachers' Years

Teachers' years means the primary school segmentation, that is, Early Year till year 6.

Appendix 8 shows the aspectual analysis breakdown and how the 2nd order themes correlate with the 1st order terms and also gives the 1st order codes.

The purpose of the DTE issues comparison in the school years will reveal some kind of issues that are more pertinent per year. That is issues meaningful to Teachers that deal with younger children (Early Years) compared to older children preparing for the National Test or SAT examinations. These results will be more useful in practical analysis than the collated issues from literatures which are mostly generic.

Appendix 8 is discussed in the sub-section of 7.3.2 and 8.2.4.

It gives in details the 1st order terms of the following Aspects and years along with its 2nd order terms:-

Early Years (Social Aspects) (See: Section 7.3.2.1)

Early Years and Year 4 (Lingual Aspects) (See: Section 7.3.2.2)

Year 1 (Juridical Aspect) (See: Section 7.3.2.3)

Year 6 (Formative Aspect) (See: Section 7.3.2.4)

The 1st order terms are coded for transparency and this can be linked to the main data analysis of V1-V20 (See Appendix 6)

Appendix 9: Qualitative Analysis of DTE Issues by Schools

As earlier mentioned in the main body of the thesis, three schools were used in this research and are coded as school A, B, C. Appendix 9 shows the aspectual analysis breakdown and how the 2nd order themes correlate with the 1st order terms and also gives the 1st order codes.

Appendix 9 opens up some of the surprises from this aspectual quantitative chart as discussed in section 7.3.3. It specifically focuses on some of these aspects to reveal the kind of issues discussed therein.

This is discussed in the sub-section of 7.3.3 and 8.2.4.

It gives in details the 1st order terms of the following Aspects and years along with its 2nd – order terms:

School A (Formative Aspect) (See: Section 7.3.3.1)

School A (Social Aspect) (See: Section 7.3.3.2)

School A (Economic Aspect) (See: Section 7.3.3.3)

School A (Lingual Aspect) (See: Section 7.3.3.4)

School B (Juridical Aspect) (See: Section 7.3.3.5)

School B (Pistic and Aesthetic) (See: Section 7.3.3.6.1)

School C (Pistic and Aesthetic) (See: Section 7.3.3.7)

School B (Ethical Aspect) (See: Section 7.3.3.8)

Appendix 10: Diversity Overview

This gives an interpretation of meaning by assigning aspects to the issues collated; this demonstrates ‘diversity’ of the down-to-earth issues of what Teachers hold as meaningful. Each of these aspects further reveals the meaningful issues behind the utterances of the data.

Appendix 11: Critique of the Research

Appendix 11 contains a log of the various research decisions made by the Researcher and the reasons behind them. As discussed in section 9.4, documenting the research decisions may be valuable to other Researchers in the information systems community.

Appendix 12: Qualitative Comparison of Literature with DTE Issues of Users’

Dooyeweerd’s suite of aspects was used to analyse the various issues discussed in the literature. Appendix 10 gives a detailed breakdown of each paper that discuss the various issues from the Teacher’s perspective of ICT use in the classroom.

As discussed in section 7.3.5, there are ten papers reviewed and each of these papers are coded, for example, paper 1, paper 2 and so on. The first column gives detail about the paper, and the code (PL1.01) signifies the serial number of the issue identified from paper 1, the aspect column states the functioning aspect of the issue highlighted while the last column gives the reason why the Researcher chose the selected aspect.

This is discussed in the sub-section of 7.2.5 and 7.3.5

This Appendix presents the aspectual analysis of the ten papers used in Literature (B) that produces the source for the quantitative and qualitative aspectual analysis.

Appendix 13: Justification Guidelines

Gives a detailed review of educational software and used Dooyeweerd’s suite of aspects was used to analyse the various guidelines used by developers of educational software and websites (Beale & Sharples, 2002; Kara, 2007).

Appendix I

ETHICAL APPROVAL



College of Arts & Social Sciences
Room 633 Maxwell Building
The Crescent
Salford, M5 4WT
Tel: 0161 295 5876

03 December 2014

Opeoluwa Adewolu-Aiyenitaju
University of Salford

Dear Opeoluwa

Re: Ethical Approval Application – 140006

I am pleased to inform you that based on the information provided, the Research Ethics Panel have no objections on ethical grounds to your project.

Yours sincerely

Deborah Woodman
On Behalf of CASS Research Ethics Panel

Appendix II

PARTICIPANT INFORMATION SHEET

Diversity of Issues Teachers face with Information & Communication Technology (ICT) in the classrooms.

The purpose of this document is to inform the participants on the key issues related to this academic research study and your role in this study so that you can decide whether you would like to participate or not. If any additional information about the research is required you can get in touch with the Researcher or supervisor whose contact details can be found at the end of this document.

The focus of the study is to explore the diversity of issues Teachers face with computers and other ICT in teaching.

Why have I been invited to participate in the research?

You have been invited to participate in this research to provide daily experience of using, or refraining from using, computers and to what extent it affects your teaching and work practices.

Is my participation compulsory?

Your participation in this research is entirely voluntary.

How will I participate in this research?

You will be asked to sign a consent form. Then you may contribute to this research by sharing your opinions, experiences and expectations of ICT in classroom/education with the Researcher usually via interview session(s).

What if I decide to withdraw from the study?

You are free to withdraw from the study at any stage, in which case you will be asked to complete the accompanying withdrawal slip and forward it to the Researcher. If you wish any data or quotation you have provided to be discarded, please tick the box in the withdrawal slip.

Are there any risks associated with the participation to the research?

The research does not have any known risks or hazards to the mental or physical wellbeing of the research participants.

What happens in the case of a problem occurring?

If concerns of any kind arise and you would like to express any complaints, please refer to the Researcher's academic supervisor whose contact details are available at the end of the document.

What is the Researcher's policy towards confidentiality?

- Any information including sensitive data provided will remain confidential
- Participant(s) responses will be confidential. No individual(s) will be identified from any collated data, written report of the research or any publications arising from it
- Data held on computers, phones and 'hard' copy files will be kept securely. Access will be only available to the Researcher and their supervisor.

What will happen after the data collection process?

The results of the research study will be analysed and published in the final PhD Thesis that will reside in the University's library. Results may be included in published papers and other publications. The Researcher might wish to quote some things you said exactly. If you do not wish this to happen please indicate this on the consent form.

Further Information and Contact Details

Further information about the University of SALFORD and the Post Graduate Research in particular can be found on the following web address: <http://www.salford.ac.uk/research>

Information regarding the research project can be obtained from the Researcher Opeoluwa Adewolu-Aiyenitaju, or her PhD Supervisor, Prof. Andrew Basden

Researcher	Supervisor
Opeoluwa Adewolu-Aiyenitaju	Prof. Andrew Basden
Maxwell 926 Salford Business School University of Salford Salford Greater Manchester M5 4WT UK	Maxwell 304 Salford Business School University of Salford Salford Greater Manchester M5 4WT UK
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CONSENT FORM

RESEARCH TITLE: Diversity of Issues Teachers face with Information & Communication Technology (ICT) in the classrooms.

RESEARCHER: Opeoluwa Adewolu-Aiyenitaju

Thank you for considering whether to take part in this study which is looking at the diversity of issues Teachers face with Information & Communication Technology (ICT) in the classrooms.

The research data will be collected via an open interview. The research is being conducted by Opeoluwa Adewolu-Aiyenitaju under the supervision of Prof. Andrew Basden from the University of Salford.

Please be assured that:

- II. Your participation is completely voluntary; you do not have to participate.
- III. You can always contact the Researcher if you have any queries regarding the research.
- IV. Any information including sensitive data provided will remain confidential.
- V. Your responses will be confidential. No individuals will be identifiable from any collated data, written report of the research, or any publications arising from it.
- VI. You have the right to ask for your data to be withdrawn, as long as this is practical, and for personal information to be destroyed.
- VII. Data held on computers, phones and 'hard' copy files will be held securely, access to which will be available only to the Researcher and the supervisor.
- VIII. Data collected will be forwarded back to you for any amendments and corrections that may be required.
- IX. Data analysis will be available on request.
- X. Your signature is used only as a proof of reading the consent statement below and will not be used in any other way.

III. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and had these answered satisfactorily. (Please Tick to confirm)

☐

IV. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. (Please Tick to confirm)

☐

I agree to take part in the above study. (Please Tick if you agree)

☐

V. I agree to the recording of my interview and/or focus group participation. (Please Tick if you agree)

☐

VI. I agree to the use of direct quotes within and after the Researcher's final thesis publication.
(Please Tick if you agree)

☐

Name

Date

Signature

WITHDRAWAL FORM

RESEARCH TITLE: Diversity of Issues Teachers face with Information & Communication Technology (ICT)
in the classrooms.

I wish to withdraw from this research (Please Tick to confirm)

☐

I require any data or quotation I have provided to be discarded (Please Tick to confirm)

☐

Name

Date

Signature

Appendix III

Sample Letter to Schools



Tel: 01928-733930
Email: A.Basden@salford.ac.uk

Please reply to: Prof. A. Basden
24 Penrith Close,
Frodsham,
Cheshire,
WA6 7ND

Mr. L. Ashton,
The Head Teacher,
Lower Kersal Community Primary School
St Aidan's Grove, Salford, M7 3TN

Dear Mr. Ashton,

5 December 2014

One of my PhD students is undertaking research to discover the 'down-to-earth' issues of using computers and other ICT (information and communication technology) in the classroom. I would be grateful if you will allow her to interview members of your staff.

The Research: Whereas 'big' issues like costs, privacy and security of ICT are widely recognised, many 'down-to-earth' issues like time-wasting and frustration are often ignored. So ICT sometimes arrives ill-designed and poorly installed. My student, Opeoluwa (aka. 'Hope') Adewolu-Aiyenitaju, is trying to uncover down-to-earth issues by using a method called 'aspectual analysis', and she would like to undertake interviews with members of your staff about their experience of ICT use or non-use.

My Request: I would be grateful if you will give Hope permission to undertake such interviews with teachers and other staff. These need take only 30-40 minutes, and can be at any time: daytime, after school, weekends or during the Christmas holidays. We realise that teachers are tired at the end of the day, so if interviews are carried out then, Hope will bring along something to boost energy (chocolates has been suggested!). Interviews will be at a level comfortable to the interviewee, who may withdraw at any point without needing to give a reason.

Background: Formal ethical approval for the interviews has been obtained from the University's Research Committee. Since she does not intend to have any contact with children, I understand that Hope does not need a Vetting & Barring Check. (Though strictly speaking irrelevant, you may be interested to know she has a CRB for teaching children in her church.) Each interviewee will receive an Information Sheet and will be asked to sign a short Consent Form.

Feedback: Hope will feed back to you the findings of her research, to assist best practice. Neither the school nor any individual will be identified in any publication.

If you are willing to allow such interviews, please reply to me in any medium you prefer (contact details above) and arrangements can then be made. If interviews can take place during December or January we would be most grateful.

Please let me know if you have any queries or requirements.
I look forward to hearing from you.

Yours sincerely,

Andrew Basden,
Professor of Human Factors and Philosophy in Information Systems

University of Salford, The Crescent, Salford, M5 4WT, United Kingdom
t: +44 (0)161 295 5000 www.salford.ac.uk

Appendix IV

DATA ANALYSIS ON V7

Appendix 4 focuses on the data analysis process using V7 as a sample. It shows the various stages of the aspectual quantitative analysis process. As this shows the stages on how aspectual analysis was carried out on the twenty interview transcripts (V1-V20).

This Appendix has the complete data analysis stages of V7. This is discussed in section 6.2 of Preparing Data for Analysis. This Appendix entails the transcript of V7 interview. Please see Table 4.1 in section 4.6.3 of the Demographic Profile of Participants for details about V7. This Appendix entails the analysis phases described in Table 5.1 in section 5.2.1 of Aspectual Analysis.

Question 1: So far, what are the issues you encounter using these in teaching?

Answers to the main question: A: uhhh, *the problem is things going wrong. Sometimes things don't work, so you plan to use something, obviously you get things as such. sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money again getting WiFi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and it won't connect to the internet.*

Meaningful Issues from the Extras: *The issues with them obviously the age of technology makes a difference to them as well, so we have got like a pretty brand new set of laptops which we only got last year. obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace, sometimes you waste time a lot around something to work or you also have times where children have to share if there's not quite enough to go round. sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, so you have to work together which not everyone can do successfully. So those are the main problems, technology can fail from time to time or it doesn't work as you want it to do. So there are the main things that can sort of hold you back.*

Question 2: Please can you give me an example or scenario of it happening - having a challenge and making it work while teaching, a story about it?

Meaningful Issues from the Extras: Uhhh, I think the one I can probably relate to is the one I tried to use for the new curriculum where uhhh, we also have a filtering system, we have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, sometimes you find that some sites are blocked when you want to go on them. And we have tried to use a particular website in a lesson, the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. *I spent a long time planning what we are going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. So you get to a stage where you have to think on your feet, just go with an alternative. It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. That's sort of a primary example; it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really.*

Question 3: That day, how did you solve it?

Answers to the main question: I used an alternative, *I just did something else. It was during our ICT lessons, so I did a lesson I had done before which I knew would work*

Meaningful Issues from the Extras: *but it wasn't the same learning objective and didn't meet the expectations, but the children did enjoy it and still learnt something from it, but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that.*

Question 4: So what happened next?

Answers to the main question: At that that time you start to deal with it there and then, in terms of it working in the future. There are certain things you've discerned happening which you have to sort out, we have a relationship with our RM they can change the filters so they can change the settings, so we contact them

Meaningful Issues from the Extras: *Given hindsight, I would have done that before, but there wasn't a reason why it would be blocked because it wasn't an inappropriate site, it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't. It's about getting them to change the settings, so they can use it in future.*

Question 5: Can you tell me any other scenarios of using these technologies in teaching whereby it wasn't successful, where you had issues?

Meaningful Issues from the Extras: uhhh, I think there are times things would get in the way, *I think that's just the way the technology is, you've got to accept that it's not always going to work perfectly or things are going to go wrong. Even down to the fact that's just the way of... we have trolleys that we use class-to-class and there's often issues with them just being charged properly, either children or members of staff haven't put them back correctly, so they haven't been charged or*

something has gone wrong with them, things that might hinder, when you might not have enough of what you need, where you have got to adapt your lesson and people just share things. I think in a perfect world, you've everyone with a charged laptop that's going to work and everyone has one each, but it never has happened like that. You've always got to be aware that things might go wrong, to some extent you've always got to have a contingency plan just in case, just have a way of adapting your lesson to cope with it. But as far as that's what've got to do, even away anyway from having technology that can happen in a lesson, whether it's the behaviour of the children, a child not understanding, you've got to constantly adapt. It's not like something you are not used to doing as a Teacher; you just have to be prepared to do that. So really it's just another thing that can go wrong or cannot work in a way you wanted it, so you've got to adapt and deal with it in a way that's... obviously you get annoyed and frustrated but that doesn't help, because when you have a class full of children waiting to learn, waiting to do something, you have just got to deal with it as best as you can really and find a way to overcome it.

Question 6: Please can you tell me more about the contingency plans?

Meaningful Issues from the Extras: *it's just about ... it will vary from Teacher to Teacher. It's just about having awareness that something could go wrong. E.g. you plan to use the internet, what if you can't, obviously you can't just sit there for an hour, you have to think of what's the alternative, what's it that you have - a set of books on standby that you could use, do a different lesson and come back to it later. You just have to have things on standby that if it doesn't work, it's better if the alternative is similar to things you want to do, but sometimes you might have to go with something else, but it should still serve the purpose and help children to learn.*

Question 7: You mentioned that, for example, you could have exercise books as a standby which is the traditional way of learning and teaching, do you achieve the same objectives using that as well as if you could have used ICT?

Answers to the main question: I still think so, some textbooks work in certain ways that children can still find out the information they need to be sort of... but in terms of research the internet is really good where you can refine your search using Google and many people in life have gotten used to doing that and it makes things more easier, obviously you find more information.

Meaningful Issues from the Extras: *but children have to be aware of what's appropriate, what's the best information because sometimes you can end up on the wrong website or wrong information whereas with a book you can control it a bit more, a book that's suitable and one that you know you can find answers, you probably leave yourself more open with using the internet which might not necessarily take you the right path to finding the right information.*

Question 8: Are there any other ICT facilities you could use but you don't want to go there?

Meaningful Issues from the Extras: *It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school. The most recent thing we bought, we invested in the touch screen TVs, every member of staff have got one, before that it was a different kind of interactive white boards, it still did the same kind of job, obviously they spent a lot of money buying them as well as iPads, as well as laptops and traditional desktops and last year we invested in a new set of 30 laptops so it always comes down to what money we've got available and what's the priority at that time really.*

Question 9: But so far from your assessment as the head of department, do you think you are getting value from your money from these investments?

Answers to the main question: I think with bits of it yes, like the laptops are always in demand and always being used, and we could always need more laptops to get used in school, so if we were to go and buy more, we will definitely get them used.

Meaningful Issues from the Extras: *I think the iPads we are probably not using as we could, but I think that's for a combination of reasons as I mentioned about the problem of connection to the Wifi connection because sometimes you can't access it, sometimes problems where some of the apps sometimes get wiped off. The way the iPad work, they would work in sync to one main computer where any apps you want to download for the school to use, you put them in that one computer and send them to the other iPads, but from time to time, some of these apps get wiped off, we have had a few technical issues on the way, where certain things have been lost so for that reason it obviously affects our ability to use them as well as we would like. We also had an issue where all staff have got an iPad to use themselves and we would give them trainings on how to use them within the class that could be used in sync with the board. So, for example, if I was teaching a lesson, if I wanted to go over to a child, so I can stand at the back use the camera, I could take a picture of what they are doing at that moment in time and it could come up on the screen so everyone can look at them and we could look at them together and say "right this person has done this really, really well", it's on the board for you to look at or this person is stuck on this piece of work it's on the board for anyone to help. We might have a sort of group discussion, we have all been trained but because of tech issues it hasn't worked as it should. So we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to. That's something, another thing that has stood in our way and has made it difficult, so that's probably why I said the iPads are not used well as we could. But it isn't just down to not wanting to use it, but so many issues have gotten into the way*

Question 10: You mentioned something about applications were wiped off, can you give me a deeper story on it?

Answers to the main question: Obviously we have got an iTunes app store where we can download educational apps or specific things that might tie into the curriculum, and sometimes we can get these for free or you can subscribe by paying to install stuffs.

Meaningful Issues from the Extras: Obviously if you were to buy it and put them all on the iPads, you might have a class where it might be that you want the children to use a particular app and not to use it, it's just been for the fact that for whatever reason from time to time they get wiped, they have reset themselves. *So again if you planned using them in your class, you get the iPads out and children can't access what you want them to access on it. Things like that have happened from time to time.*

Question 11: Is someone responsible for wiping them off, is it the children or?

Answers to the main question: Again, the company that we use RM, they are able to come in and put apps on and we can do it ourselves.

G: The reason the iPads are being wiped is that the rope to the back has been disconnected and nobody has been given the chance to go to the back of it and reconnect it.

A: I didn't know that, yes, it sort of stands in the way. So when you've planned round the iPads it sort of influences how you are going to think or the decisions that you make. If it's not going to work you will think of something else.

Meaningful Issues from the Extras:

Question 12: So far, I think I have covered my basic questions, I don't know if you have anything in mind that you can tell me more about the issues you encounter, maybe a story you will never forget, and probably it really ruined your day that you could blame it on technology?

Meaningful Issues from the Extras: *Too often the machines are updating and a couple of hours still on updates, you can't get on. Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.*

It's an issue with the wireless connection not working as it should, and again, the school has spent a lot of money, it's meant to be all singing all dancing now, obviously we are in a school where we've got about 400 children and it's meant to be able to cope with one full class accessing the internet on their laptops and another full class on their iPads, but it just doesn't work.

For instance if we have the iPads on in here and then next door puts their laptops on, you will lose half of the signals. It will only let half of them connect at once. It's very limited to the amount of computers you can put on at one time, and if you are within a certain distance and you start teaching, some of the children start saying 'Ms. I have lost connection' and that's because someone else has logged on.

Question 13: What did your technological company say about it?

Answers to the main question: *They obviously gave us quite a lot of excuses, and at the end of the day, they haven't delivered what they said they would.*

Meaningful Issues from the Extras: *Obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because we have told them so many things we want to do, so they promised we will be able to do them. It just hasn't quite worked as it should and I think it is quite frustrating more than anything.*

Question 14: Do you have any additional examples?

Answers to the main question: *I think it's probably down to money and budget. In an ideal world you have more money, more laptops and more desktops. We obviously don't have an ICT Suite only the trolley which is good, so you can use it in the classroom, but sometimes it's nice to go into a room and use it, where you are sat at a traditional desktop, just having that range.*

Meaningful Issues from the Extras: *You go into some schools where you have Apple Mac which are really good with what you can do in primary schools like animation. Apple Mac has different things that traditional desktops don't have. So in an ideal world different technology, go out and try different things you could use. I am an ICT coordinator, so I have been on trainings where you see things very good and when you come back to school we really can't afford to do that as much as we'd love to. This is a major investment to buy laptops, but at least we knew they were going to get used. You can sort of hand on, if we spend this money we will get it used by the children and sometimes they can be good but not get used, so you don't get value for money that way. So I think that's like a massive thing that comes into decision making. I think I have covered all major issues. Is there anything else, you wanted to ask me?*

	Answers	EIV
So far, what are the issues you encounter using these technologies in teaching?	Uhhh, <i>the problem is things going wrong. Sometimes things don't work</i> , so you plan to use something, obviously you get things as such. <i>Sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money, again Wi-Fi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and it won't connect to the internet.</i>	<i>The issues with them obviously the age of technology makes a difference to them as well</i> , so we have got like a pretty brand new set of laptops which we only got last year. <i>Obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace, sometimes you waste time a lot around getting something to work or you also have times where children have to share if there's not quite enough to go round.</i> Sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, <i>so you have to work together which not everyone can do successfully.</i> So those are the main problems, <i>technology can fail from time to time, or it doesn't work as you want it to do.</i> So they are the main things <i>that can sort of hold you back.</i>
Please can you give me an example or scenario of it happening- having a challenge making it work while teaching, a story about it.		Uhhh, I think the one I can probably relate to is the one I tried to use for the new curriculum where ummm, we also have a filtering system, we have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, <i>sometimes you find that some sites are blocked when you want to go on them.</i> And we have tried to use a particular website in a lesson, the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. <i>I spent a long time planning what we are going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.</i> So you get to a stage where you have to think on your feet, just go with an alternative. <i>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</i> That's sort of a primary example; <i>it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really.</i>
That day, how did you solve it?	I used an alternative, <i>I just did something else.</i> It was during our ICT lessons, so I did a lesson I had done before which I knew would work.	<i>But it wasn't the same learning objective and didn't meet the expectations</i> , but the children did enjoy it and still learnt something from it, <i>but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that.</i>
So what happened next?	<i>There are certain things you've discerned happening</i> which you have to sort out, we have a relationship with our RM they can change the filters so they can change the settings, so we contact them.	Given hindsight, I would have done that before, <i>but there wasn't a reason why it would be blocked because it wasn't an inappropriate site</i> , it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't.
Can you tell me any other scenario of using these technologies in teaching whereby it wasn't successful, (where you had issues)		Uhhh, I think there are times things would get in the way, <i>I think that's just the way the technology is, you've got to accept that it's not always going to work perfectly or things are going to go wrong.</i> Even down to the fact that just the way of... we have trolleys that we use class-to-class and <i>there's often issues with them just being charged properly, either children or members of staff haven't put them back correctly, so they haven't been charged or something has gone wrong with them, ... things that might hinder, when you might not have enough of what you need, where you have got to adapt your lesson and</i> 338 <i>people just share things.</i> I think in a perfect world, you've everyone with a charged laptop that's going to work and everyone has one each, but it never has happened like that. <i>You've always got to be aware that</i>

		<i>things might go wrong, to some extent you've always got to have a contingency plan just in case, just have a way of adapting your lesson to cope with it...obviously you get annoyed and frustrated but that doesn't help, because when you have a class full of children waiting to learn, waiting to do something, you have just got to deal with it as best as you can really and find a way to overcome it.</i>
Please can you tell me more about the contingency plans?		... It will vary from Teacher to Teacher. It's just about having awareness that something could go wrong. e.g. you plan to use the internet, what if you can't, obviously you can't just sit there for an hour, you have to think of what's the alternative, what's it that you have - a set of books on standby that you could use, do a different lesson and come back to it later. You just have to have things on standby that if it doesn't work, it's better if the alternative is similar to things you want to do, but sometimes you might have to go with something else, but should still serve the purpose and help children to learn.
You mentioned that for example you could have exercise books as a standby which is the traditional way of learning and teaching, do you achieve the same objectives using that as well as if you could have used ICT?	I still think so, some textbooks work in certain ways that children can still find out the information they need to be sort. but in terms of research, the internet is really good where you can refine your search using Google and many people in life have gotten used to doing that and it makes things more easier, obviously you find more information,	<i>But children have to be aware of what's appropriate what's the best information, because sometimes you can end up on the wrong website or wrong information whereas with a book you can control it a bit more, a book that's suitable and one that you know you can find answers, you probably leave yourself more open with using the internet and it might not necessarily take you the right path to finding the right information.</i>
Are there any other ICT facilities you could use, but you don't want to go there?		<i>It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school. The most recent thing we bought, we invested in the touch screen TVs, every member of staff has got one, before that it was a different kind of interactive white boards, they still did the same kind of job, obviously they spent a lot of money buying them as well as iPads, as well as laptops and traditional desktops and last year we invested in a new set of 30 laptops so it always comes down to what money we've got available and what's the priority at that time really.</i>
But so far from your assessment as the Head of Department, do you think you are getting value for money from these investments?	I think with bits of it yes, like the laptops are always in demand and always being used, and we could always need more laptops to get used in school, so if we were to go and buy more, we will definitely get them used.	<i>I think the iPads we are probably not using as we could, but I think that's for a combination reasons as I mentioned about the problem of connection to the Wi-Fi connection because sometimes you can't access it, sometimes problems where some of the apps sometimes get wiped off. The way the iPads work, they would work in sync to one main computer where any apps you want to download for the school to use, you put them in that one computer and send them to the other iPads, but from time to time, some of these apps get wiped off, we have had a few technical issues on the ware, where certain things have been lost so for that reason it obviously affects our ability to use them as well as we would like... We have all been trained but because of tech issues it hasn't worked as it should. so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to... But it isn't just down to not wanting to use it, but so many issues have gotten into the way</i>
You mentioned something about	Obviously we have got an iTunes app store where we can download educational apps or specific things that might tie into the	Obviously if you were to buy it and put them all on the iPads, you might have a class where it might be that you want the children to use a particular app and not to use it, it's just been for the fact that for

applications were wiped off, can you give me a deeper story on it?	curriculum, and sometimes we can get these for free or you can subscribe by paying to install stuff.	<i>whatever reason from time to time they get wiped, they have reset themselves. So again if you planned using them in your class, you get the iPads out and children can't access what you want them to access on it. Things like that have happened from time to time.</i>
Is someone responsible for wiping them off, is it the children or...?	<p>Again, the company that we use RM, they are able to come in and put apps on and we can do it ourselves</p> <p>G: The reason the iPads are being wiped is that the rope to the back has been disconnected and nobody has been given the chance to go to the back of it and reconnect it.</p> <p>A: I didn't know that, yes, it sort of stands in the way. So when you've planned round the iPads it sort of influences how you are going to think or the decisions that you make. If it's not going to work you will think of something else.</p>	
... Can you tell me more about the issues you encounter, maybe a story you will never forget, and probably it really ruined your day, that you could blame it on technology?		<p><i>Too often the machines are updating and a couple of hours still on updates, you can't get on. Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with, once again, the wireless connection.</i></p> <p><i>It's an issue with the wireless connection not working as it should, and again, the school has spent a lot of money, it's meant to be all singing all dancing now, obviously we are in a school where we've got about 400 children and it's meant to be able to cope with like one full class accessing the internet on their laptops and another full class on their iPads, but it just doesn't work.</i></p> <p>For instance if we have the iPads on in here and then next door puts their laptops on, you will lose half of the signals. It will only let half of them connect at once. <i>It's very limited to the amount of computers you can put on at one time.</i> And if you are within a certain distance and you start teaching, <i>some of the children start saying 'Ms. I have lost connection' and that's because someone else has logged on.</i></p>
What did your technological company say about it?	They obviously give us quite a lot of excuses, and at the end of the day, they haven't delivered what they said they would.	<i>Obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because we have told them all the many things we want to do, so they promised we will be able to do them. It just hasn't quite worked as it should, and I think it is quite frustrating more than anything.</i>
Do you have any additional examples?	<i>I think it's probably down to money and budget. In an ideal world you'd have more money, more laptops and more desktops. We obviously don't have an ICT Suite, only the trolley which is good, so you can use it in the classroom, but sometimes it's nice to go into a room and use it, where you are sat at a traditional desktop, just having that range.</i>	<i>You go into some schools where they have Apple Mac which are really good with what you can do in primary schools like animation. Apple Mac has different things that traditional desktops don't have. So in an ideal world with different technology, go out and try different things you could use. I am an ICT Coordinator, so I have been on trainings where you see things are very good and when you come back to school we really can't afford to do that as much as we'd love to. The major investment was to buy laptops, but at least we knew they were going to get used. You can sort of hang on, if we spend this money we will get it used by the children, and sometimes they can be good but not get used, so you don't get value for money that way. So I think that's like a massive thing that comes into the decision making.</i>

STAGE FOUR: Aspectual Analysis of Data

Question: So far what are the issues you encounter using these technologies in teaching?

Aspects from the answers: Uhhh, *the problem is things going wrong. Sometimes things don't work, so you plan to use something, obviously you get things as such. Sometimes it's a lot of issues connecting to the internet and that's a bit of the school's problem but we have spent quite a lot of money, again getting Wi-Fi installed which should be strong enough to cope with 30 children all logged onto the internet at once or even more than that around the school, but for whatever the reason we still get this problem from time to time. Sometimes we would get our laptops or iPads out and it won't connect to the internet.*

2. ... Sometimes things don't work,
(a)= formative: shaping, achievement
3. ... it's a lot of issues connecting to the internet
(b) Formative: technology
(*) connecting to the internet is one trying to achieve, technology
4. ... we have spent quite a lot of money
(a)= economic: frugality, budget
5. ... it won't connect to the internet.
(a)= formative
(*)= technology

Aspects from EIV: *The issues with them obviously the age of technology makes a difference to them as well, so we have got like a pretty brand new set of laptops which we only got last year. Obviously if someone else is using them, we have to use older laptops which don't work as well and that can be a bit frustrating and slow as well and if you want the speed of a lesson to go at a certain pace, sometimes you waste time a lot around waiting for something to work or you also have times where children have to share if there's not quite enough to go round. Sometimes it's good to have one each of everything, but sometimes you might have to work with a partner, then you sort of share the workload, so you have to work together which not everyone can do successfully. So those are the main problems, technology can fail from time to time, or it doesn't work as you want it to do. So these are the main things.*

- 2 ...obviously the age of technology makes a difference to them as well,
(a)=sensitive= feelings, emotions
(b)= formative= technology
(*)= It affects their mentality and feelings
(*)= technology is what makes the difference
- 3 ... we have to use older laptops which don't work as well and that can be a bit frustrating
(a)= sensitive= emotions
(b)= formative= shaping, technology
(*)= negative emotions
(*)= making use (shaping). Laptops (technology)
- 4 ... and slow as well and if you want the speed of a lesson to go at a certain pace,
(a)= kinematic: flow in movement
(b)= analytic: logicity of goals, clarity
(c)= Aesthetic: harmony of organisation
- 5 ... sometimes you waste time a lot around getting something to work
(a)= economic: frugality
(b)= formative: shaping, achievement, technology
- 6 ... children have to share if there's not quite enough to go round.
(a)= ethical: self-giving, care, generosity
(b)= social: social interaction, relationship, team building
- 7 ... so you have to work together which not everyone can do successfully
(a)= social: team building
(b)= Aesthetic: harmony, fun
- 8 ... technology can fail from time to time
(a) formative: technology, achievement
- 9 ... it doesn't work as you want it to do.
(a)= formative: shaping, achievement, planning
- 10 ... that can sort of hold you back
(a)= ethical: self-giving

Question: Pease can you give me an example or scenario of it happening, having a challenge and making it work while teaching, a story about it?

Aspects from EIV: Uhhh, I think the one I can probably relate to is the one I tried to use for the new curriculum where ummm, we also have a filtering system, we have a company that installs all of our new programs and also controls how we access the internet obviously for the children's safety. So we have a filter where we can't access some websites, *sometimes you find that some sites are blocked when you want to go on them.* And we have tried to use a particular website in a lesson,

the website was SCRATCH, which is to do with coding and programming, which is in the curriculum. *I spent a long time planning what we were going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, had a clear idea of what I was going to do with the children. Obviously, it got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.*

So you get to a stage where you have to think on your feet, just go with an alternative. *It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.* That's sort of a primary example; *it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. It doesn't work when you want it to work, that's the biggest issue really.*

- 9 ... sometimes you find that some sites are blocked when you want to go on them.
(a)= Economic
- 10 ... I spent a long time planning what we are going to do,
(a)= economic
(b)= formative
- 11 got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
(a)= economic
(b)= analytic
(c)= formative
- 12 Had a clear idea of what I was going to do with the children.
- 13 (a)= analytic
- 14 Obviously, it got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
(a)= formative
(b)=psychic
(*)= disappointment
- 15 It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
(a)= **psychic**
(b)= **economic**
(c)= **formative**
(d)= **analytic**
(*)= **frustration, negative emotions**
(*)= **frugality of resources**
(*)= **shaping- to make it work or not**
(*)= **distinction, clarity- thinking up another option**
- 16 It's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.
(a)= **analytic**
(b)= **psychic**
- 17 It doesn't work when you want it to work, that's the biggest issue really.
(a)= **formative**
(*) **shaping**

Question: That day, how did you solve it?

Aspects from the answers: I used an alternative, *I just did something else.* It was during our ICT lessons, so I did a lesson I had done before which I knew would work

X. I used an alternative, I just did something else.

- (a) **formative**
- (b) **analytic**

Aspects from EIV: *but it wasn't the same learning objective and didn't meet the expectations, but the children did enjoy it and still learnt something from it, but it wasn't what I wanted to do, it was an alternative really, so that's the biggest stress when things go wrong like that.*

1. ... but it wasn't the same learning objective and didn't meet the expectations,
(a)= analytic
(b)= juridical
(*)=
(*)= not giving what is due
2. ... but it wasn't what I wanted to do, it was an alternative really
(a)= analytic
(*) distinction, clarity on what to do
3. ...so that's the biggest stress when things go wrong like that
(a)= psychic= feeling

Question: So what happened next?

Aspects from the answers: *There are certain things you've discerned happening* which you have to sort out, we have a relationship with our RM and they can change the filters so they can change the settings, so we contact them

18. There are certain things you've discerned happening
 (a)= psychic
 (*)= instinct, recognition of a pattern

Aspects from EIV: Given hindsight, I would have done that before, *but there wasn't a reason why it would be blocked because it wasn't an inappropriate site*, it was just something that should be used by children. It's a site that should have been accessible, but for whatever reason, it wasn't.

19. ... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site,
 (a)= ethical
 (b)= lingual
 (*)= appropriate
 (*)= web site

Question: Can you tell me any other scenario of using these technologies in teaching whereby it wasn't successful, (where you had issues?)

Aspects from EIV: uhhh, I think there are times things would get in the way, *I think that's just the way the technology is, you've got to accept that it's not always going to work perfectly or things are going to go wrong*. Even down to the fact that just the way of... we have trolleys that we use class-to-class *and there's often issues with them just being charged properly, either children or members of staff haven't put them back correctly, so they haven't been charged or something has gone wrong with them*, ... things that might hinder, *when you might not have enough of what you need, where you have got to adapt your lesson and people just share things*. I think in a perfect world, you've got everyone with a charged laptop that's going to work and everyone has one each, but it never has happened like that. *You've always got to be aware that things might go wrong*, to some extent you've always got to have contingency plan just in case, just have a way of adapting your lesson to cope with it...*obviously you get annoyed and frustrated but that doesn't help*, because when you have a class full of children waiting to learn, waiting to do something, you've just got to deal with it as best as you can really and find a way to overcome it.

20. ... I think that's just the way the technology is,
 (a)= formative
 (*)= technology
21. ... you've got to accept that it's not always going to work perfectly or things are going to go wrong.
 (b)= juridical
 = pistic:
 (*)= not giving what is due
 (*)= prejudice- opinion formed beforehand
22. ... there's often issues with them just being charged properly,
 (a)= physical
 (*)= physical knowing, electric charge
23. ... either children or members of staff haven't put them back correctly,
 (a)= formative
 (*)= shaping
24. ... so they haven't been charged or something has gone wrong with them,
 (a)= physical
25. ... when you might not have enough of what you need,
 (A)= economic
 (*)= scarcity, frugality
26. ... where you have got to adapt your lesson and people just share things.
 (a)= formative
 (b)= social
 (*)= creativity, achievement
 (*)= social interaction, sharing
27. ... you've always got to be aware that things might go wrong,
 (A)= psychic
 (b)= pistic
 (*)= emotions
 (*)= prejudice
28. ... obviously you get annoyed and frustrated but that doesn't help,
 (a)= psychic
 (*)= negative emotions

Question Please can you tell me more about the contingency plans?

Aspects from EIV: ... it will vary from Teacher to Teacher. It's just about *having awareness that something could go wrong*. e.g. you plan to use the internet, what if you can't, obviously you can't just sit there for an hour, you have to think of what's

the alternative, what's it that you have - a set of books on standby that you could use, do a different lesson and come back to it later. You just have to have things on standby that if it doesn't work, it's better if the alternative is similar to things you want to do, but sometimes you might have to go with something else, but should still serve the purpose and help children to learn.

- X. ... having an awareness that something could go wrong
 (a)= formative
 =pistic
 (*)= knowing something, knowledgeable
 (*)= prejudice

Question: You mentioned that, for example, you could have exercise books as a standby which is the traditional way of learning and teaching, do you achieve the same objectives using that as well as if you could have used ICT?

Aspects from the answers: I still think so, some textbooks work in certain ways that children can still find out the information that need to be sort. But in terms of research, the internet is really good where you can refine your search using Google and many people in life have got used to doing that and it makes things more easier, obviously you find more information.

Aspects from EIV: *but children have to be aware of what's appropriate what's the best information, because sometimes you can end up on the wrong website or wrong information whereas with a book, you can control it a bit more, a book that's suitable and one that you know you can find answers, you probably leave yourself more open with using the internet and it might not necessarily take you the right path to finding the right information.*

- but children have to be aware of what's appropriate what's the best information,
 (a)= lingual
 (*)= information
- because sometimes you can end up on the wrong website or wrong information
 (b)= lingual
 (*)= website, information
- whereas with a book, you can control it a bit more,
 (c)= Lingual
 = physical
 (*)= book
- a book that's suitable and one that you know you can find answers,
 (d)= lingual
 = physical
 = analytic
 (*)= documentation
 (*)= a physical book
 (*)= suitability and answers requires clarity and distinction
- You probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information.
 (a)= formative
 (*)= making use of the internet is shaping and technology
 (b)= juridical
 (*)= what do you measure right or wrong by, when you get what is due

Question: Are there any other ICT facilities you could use, but you don't want to go there?

Aspects from EIV: *It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.* The most recent thing we bought, we invested in the touch screen TVs, every member of staff has got one, before that it was a different kind of interactive white boards, it still did the same kind of job, obviously they spent a lot of money buying them as well as iPads, as well as laptops and traditional desktops and last year we invested in a new set of 30 laptops so it always comes down to what money we've got available and what's the priority at that time really.

12. *It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.*
- (a)= economic
 (*)= money, budget
 (b) analytic
 (*)= clarity to prioritise

Question: But so far from your assessment as the Head of Department, do you think you are getting value for money from these investments?

Aspects from the answers: I think with bits of it yes, like the laptops are always in demand and always being used, and we could always need more laptops to get used in school, so if we were to go and buy more, we will definitely get them used.

Aspects from EIV: I think on the iPads we are probably not using them as we could, but I think that's for a combination of reasons, as I mentioned about *the problem of connection to the Wi-Fi connecting because sometimes you can't access it, sometimes problems where some of the apps sometimes get wiped off*. The way the iPads work, they would work in sync to one main computer where any apps you want to download for the school to use, you put them in that one computer and send them to the other iPads, but from time to time, some of these apps get wiped off. *We have had a few technical issues on the ware, where certain things have been lost so for that reason it obviously affects our ability to use them as well as we would like... We have all been trained but because of tech issues it hasn't worked as it should, so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to... But it isn't just down to not wanting to use it, but so many issues have got into the way*

- the problem of connecting to the Wi-Fi connection because sometimes you can't access it,
(a) formative
(*) technology
- sometimes problems where some of the apps sometimes get wiped off.
(a) Economic
- we have had a few technical issues on the ware,
(a)= formative
- where certain things have been lost so for that reason obviously it affects our ability to use them as well as we would like
(a)= formative
- ...we have all been trained but because of tech issues it hasn't worked as it should.
(A)= Formative
(*)= training
- so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to
(a)= analytic
(*)= conceptualisation
(b)= formative
(*)= shaping
- ... But it isn't just down to not wanting to use it, but so many issues have gotten into the way
(a)= **formative**

Question: You mentioned something about applications were wiped off, can you give me a deeper story on it?

Aspects from the answers: Obviously we have got an iTunes app store where we can download educational apps or specific things that might tie into the curriculum, and sometimes we can get these for free or you can subscribe by paying to install stuff.

Aspects from EIV: Obviously if you were to buy it and put them all on the iPads, you might have a class where it might be that you want the children to use a particular app and not to use it, it's just been for the fact that, *for whatever, reason from time to time they get wiped, they have reset themselves. So again if you planned using them in your class, you get the iPads out and children can't access what you want them to access on it. Things like that have happened from time to time.*

For whatever reason from time to time they get wiped, they have reset themselves.

(a)= economic

So again if you planned using them in your class,

(b)= formative

(*)= planning, shaping

You get the iPads out and children can't access what you want them to access on it.

(C)= **economic**

Question: Is someone responsible for wiping them off, is it the children or...?

Aspects from the answers: Again, the company that we use RM, they are able to come in and put apps on and we can do it ourselves

A: I didn't know that, yes, it sort of stands in the way. So *when you've planned round the iPads it sort of influences how you are going to think or the decisions that you make*. If it's not going to work you will think of something else.

- 1 When you've planned round the iPads it sort of influences how you are going to think or the decisions that you make.
 (a)= analytic
 (*)= clear thinking
 = formative
 (*)= planning

Aspects from EIV: G: The reason the iPads are being wiped is that *the rope to the back has been disconnected and nobody has been given the chance to go to the back of it and reconnect it.*

- 9 the rope to the back has been disconnected
 (a)= formative
 (*)= technology
- 10 And nobody has been given the chance to go to the back of it and reconnect it.
 (b)= juridical
 (*)= authority
 = formative
 (*)= technology- reconnection

Question: Can you tell me more about the issues you encounter, maybe a story you will never forget, probably it really ruined your day, that you could blame it on technology.

Aspects from EIV: *Too often the machines are updating and a couple of hours still on updates, you can't get on. Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with, once again, the wireless connection.*

It's an issue with the wireless connection not working as it should, and again, the school has spent a lot of money, it's meant to be all singing all dancing now, obviously we are in a school where we've got about 400 children and it's meant to be able to cope with one full class accessing the internet on their laptops and another full class on their iPads, but it just doesn't work. For instance if we have the iPads on in here and the next door puts their laptops on, you will lose half of the signals. It will only let half of them connect at once. It's very limited to the amount of computers you can put on at one time. And if you are within a certain distance and you start teaching, some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on.

- 3) Too often the machines are updating and a couple of hours still on updates, you can't get on.
 (a) formative
 (*)= updating,
 (b)= economic
- 4) Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with, once again, the wireless connection.
 (a)= lingual
 (b) formative
- 5) It's an issue with the wireless connection not working as it should,
 (c)= formative
 = juridical
- 6) and again, the school has spent a lot of money,
 (e)= economic
- 7) But it just doesn't work.
Formative
 (*)= can't achieve
- 8) It's very limited to the amount of computers you can put on at one time.
 (a)= economic
- 9) Some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on.
 (b)= formative

Question: What did your technological company say about it?

Aspects from the answers: *They obviously gave us quite a lot of excuses and, at the end of the day, they haven't delivered what they said they would.*

- 1 They obviously give us quite a lot of excuse,
 (a)= analytic
- 2 And at the end of the day, they haven't delivered what they said they would.
 (b)= juridical

Aspects from EIV: *Obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because we have told them all the so many things we want to do, so they promised we will be able to do them. It just hasn't quite worked as it should, and I think it is quite frustrating more than anything.*

- obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because
(a)= economic
- we have told them all the so many things we want to do,
(a) analytic
(*)= clarity
(b)=formative
- So they promised we will be able to do them.
(c)= pistic
(*)= commitment
- It just hasn't quite worked as it should,
(d)= formative
- and I think it is quite frustrating more than anything
(e)= psychic
(*)= negative emotions

Question: Do you have any additional example?

Aspects from the answers: *I think it's probably down to money and budget. In an ideal world you have more money, more laptops and more desktops. We obviously don't have an ICT Suite, only the trolley which is good, so you can use it in the classroom, but sometimes it's nice to go into a room and use it, where you are sat at a traditional desktop, just having that range.*

I think it's probably down to money and budget. In an ideal world you have more money, more laptops, and more desktops.

(a)= economic

We obviously don't have an ICT Suite, only the trolley which is good, so you can use it in the classroom,

(b)= formative

but sometimes it's nice to go into a room and use it,

(c)= Aesthetic

Where you are sat at a traditional desktop, just having that range.

(d)= formative

Aspects from EIV: You go into some schools where you have Apple Mac which are really good, with what you can do, in primary schools like animation. Apple Mac has different things that traditional desktops don't have. *So in an ideal world different technology, go out and try different things you could use. I am an ICT coordinator, so I have been on trainings where you see things are very good and when you come back to school we really can't afford to do that as much as we'd love to.* This is the major investment was to buy laptops, but at least we knew they were going to get used. You can sort of hang on, if we spend this money we will get it used by the children and *sometimes they can be good but not get used, so you don't get value for money that way.* So I think that's like a massive thing that comes into decision making.

- So in an ideal world different technology, go out and try different things you could use.
(a)= formative
- I am an ICT coordinator, so I have been on trainings
(b)= formative
- where you see things very good
(c)= psychic
- And when you come back to school we really can't afford to do that as much as we'd love to.
(d)= economic
- sometimes they can be good but not get used,
(e)= juridical
- So you don't get value for money that way.
(f)= economic
= juridical

STAGE FIVE: Tabular Arrangement II

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Quantitative				
Spatial				
Kinematic			... and slow as well and if you want the speed of a lesson to go at a certain pace,	flow in movement
Physical			... there's often issues with them just being charged properly, ... so they haven't been charged or something has gone wrong with them, ...whereas with a book, you can control it a bit more, ...a book that's suitable and one that you know you can find answers,	physical knowing, electric charge book a physical book
Biotic				
Psychic	...There are certain things you've discerned happening	instinct, recognition of a pattern	...obviously the age of technology makes a difference to them as well, ... we have to use older laptops which don't work as well and that can be a bit frustrating Obviously, I got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. It's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. ...so that's the biggest stress when things go wrong like that ... you've always got to be aware that things might go wrong, ... obviously you get annoyed and frustrated but that doesn't help, ...and I think it is quite frustrating more than anything where you see things very good	feelings, emotions: It affects their mentality and feelings emotions: negative emotions disappointment frustration, negative emotions feeling emotions negative emotions negative emotions

Analytic	<p>I used an alternative, I just did something else.</p> <p>When you've planned round the iPads it sort of influences how you are going to think or the decisions that you make.</p> <p>They obviously give us quite a lot of excuse,</p> <p>XI.</p>	clear thinking	<p>... and slow as well and if you want the speed of a lesson to go at a certain pace,</p> <p>...got resources ready for it, had sets of instructions, spent my own time researching how it will be used,</p> <p>Had a clear idea of what I was going to do with the children.</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>It's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.</p> <p>... but it wasn't the same learning objective and didn't meet the expectations,</p> <p>... but it wasn't what I wanted to do, it was an alternative really</p> <p>...a book that's suitable and one that you know you can find answers,</p> <p>It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.</p> <p>So we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to</p> <p>We have told them all the so many things we want to do,</p>	<p>logicality of goals, clarity</p> <p>distinction, clarity- thinking up another option</p> <p>distinction, clarity on what to do</p> <p>suitability and answers requires clarity and distinction</p> <p>clarity to prioritise</p> <p>conceptualisation</p> <p>clarity</p>
Formative	<p>Sometimes things don't work</p> <p>it's a lot of issues connecting to the internet</p> <p>... it won't connect to the internet.</p> <p>I used an alternative, I just did something else.</p> <p>When you've planned round the iPads it sort</p>	<p>shaping, achievement</p> <p>technology</p> <p>technology</p> <p>planning</p>	<p>...obviously the age of technology makes a difference to them as well,</p> <p>... we have to use older laptops which don't work as well and that can be a bit frustrating</p> <p>... sometimes you waste time a lot around something to work</p> <p>... technology can fail from time to time</p>	<p>technology is what makes the difference</p> <p>Shaping, technology: making use (shaping). laptops (technology)</p> <p>shaping, achievement, technology</p>

	<p>of influences how you are going to think or the decisions that you make.</p> <p>We obviously don't have an ICT Suite, only the trolley which is good, so you can use it in the classroom,</p> <p>Where you are sat at a traditional desktop, just having that range.</p>	<p>formative</p> <p>formative</p>	<p>... it doesn't work as you want it to do.</p> <p>... I spent a long time planning what we are going to do,</p> <p>...got resources ready for it, had sets of instructions, spent my own time researching how it will be used,</p> <p>Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>It doesn't work when you want it to work, that's the biggest issue really</p> <p>... I think that's just the way the technology is,</p> <p>... either children or members of staff haven't put them back correctly,</p> <p>... Where you have got to adapt your lesson and people just share things.</p> <p>... having an awareness that something could go wrong</p> <p>You probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information.</p> <p>...the problem of connecting to the Wi-Fi connection because sometimes you can't access it,</p> <p>...we have had a few technical issues on the ware,</p> <p>where certain things have been lost so for that reason obviously affect our ability to use them as well as we would like</p> <p>...we have all been trained but because of tech issues it hasn't worked as it should.</p> <p>So we have had a lot of problems with it so you will find as staff</p>	<p>technology, achievement</p> <p>shaping, achievement, planning</p> <p>shaping, achievement</p> <p>shaping- to make it work or not</p> <p>technology</p> <p>shaping</p> <p>creativity, achievement</p> <p>knowing something, knowledgeable</p> <p>making use of the internet is shaping and technology</p>
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			<p>want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to</p> <p>... but it isn't just down to not wanting to use it, but so many issues have gotten into the way</p> <p>So again if you planned using them in your class, the rope to the back has been disconnected</p> <p>And nobody has been given the chance to go to the back of it and reconnect it.</p> <p>Too often the machines are updating and a couple of hours still on updates, you can't get on.</p> <p>Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.</p> <p>It's an issue with the wireless connection not working as it should,</p> <p>But it just doesn't work.</p> <p>Some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on.</p> <p>...we have told them all the so many things we want to do,</p> <p>It just hasn't quite worked as it should,</p> <p>So in an ideal world different technology, go out and try different things you could use.</p> <p>I am an ICT coordinator, so I have been on trainings</p>	<p>technology</p> <p>training</p> <p>shaping</p> <p>planning, shaping</p> <p>technology</p> <p>technology- reconnection</p> <p>can't achieve</p>
Lingual	11		<p>... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site,</p> <p>...but children have to be aware of what's appropriate what's the best information,</p> <p>...because sometimes you can end up on the wrong website or wrong information</p> <p>whereas with a book, you can control it a bit more,</p>	<p>web site</p> <p>information</p> <p>website, information</p>

			<p>a book that's suitable and one that you know you can find answers,</p> <p>Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.</p>	documentation
Social			<p>... Children have to share if there's not quite enough to go round.</p> <p>... so you have to work together which not everyone can do successfully</p> <p>... where you have got to adapt your lesson and people just share things.</p>	<p>social interaction, relationship, team building</p> <p>team building</p> <p>social interaction, sharing</p>
Economic	<p>we have spent quite a lot of money</p> <p>I think it's probably down to money and budget. In an ideal world you have more money, more laptops, and more desktops.</p>	<p>frugality, budget 9.</p>	<p>... sometimes you waste time a lot around something to work</p> <p>... I spent a long time planning what we are going to do,</p> <p>...got resources ready for it, had sets of instructions, spent my own time researching how it will be used,</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.</p> <p>... when you might not have enough of what you need,</p> <p>It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.</p> <p>For whatever reason from time to time they get wiped, they have reset themselves.</p> <p>You get the iPads out and children can't access what you want them to access on it.</p> <p>Too often the machines are updating and a couple of hours still on updates, you can't get on.</p> <p>...and again, the school has spent a lot of money,</p>	<p>Frugality</p> <p>frugality of resources</p> <p>scarcity, frugality</p> <p>money, budget</p>

			<p>It's very limited to the amount of computers you can put on at one time.</p> <p>Obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school</p> <p>And when you come back to school we really can't afford to do that as much as we'd love to.</p> <p>So you don't get value for money that way. ... Sometimes you find that some sites are blocked when you want to go on them.</p> <p>Sometimes problems where some of the apps sometimes get wiped off.</p>	Non availability of resources
Aesthetic	<ul style="list-style-type: none"> but sometimes it's nice to go into a room and use it, (c)= Aesthetic 	10.	<p>... and slow as well and if you want the speed of a lesson to go at a certain pace,</p> <p>... so you have to work together which not everyone can do successfully</p>	<p>harmony of organisation</p> <p>harmony, fun</p>
Juridical	<p>3 And at the end of the day, they haven't delivered what they said they would.</p>		<p>... but it wasn't the same learning objective and didn't meet the expectations, ... you've got to accept that it's not always going to work perfectly or things are going to go wrong.</p> <p>You probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information. And nobody has been given the chance to go to the back of it and reconnect it.</p> <p>It's an issue with the wireless connection not working as it should,</p> <p>...sometimes they can be good but not get used,</p>	<p>not giving what is due</p> <p>not giving what is due</p> <p>what do you measure right or wrong by, when you get what is due</p> <p>authority</p>
Ethical			<p>... children have to share if there's not quite enough to go round.</p> <p>... that can sort of hold you back</p> <p>... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site, web site</p>	<p>self-giving, care, generosity</p> <p>self-giving</p> <p>appropriate</p>
Pistic	1		<p>... you've got to accept that it's not always going to work perfectly or things are going to go wrong.</p>	<p>prejudice- opinion formed beforehand</p>

			<p>... you've always got to be aware that things might go wrong,</p> <p>... having an awareness that something could go wrong</p> <p>So they promised we will be able to do them.</p>	<p>prejudice</p> <p>prejudice</p> <p>commitment</p>
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PHASE SIX

Aspects from EIV:

Kinematic

3. ... and slow as well and if you want the speed of a lesson to go at a certain pace,

Physical

1. ... there's often issues with them just being charged properly,
2. ... so they haven't been charged or something has gone wrong with them,
3. whereas with a book, you can control it a bit more,
4. a book that's suitable and one that you know you can find answers.

Psychic

1. ...obviously the age of technology makes a difference to them as well,
- 2.... we have to use older laptops which don't work as well and that can be a bit frustrating,
3. Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
4. It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
5. it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything,
6. ...so that's the biggest stress when things go wrong like that,
7. ... you've always got to be aware that things might go wrong,
8. ... obviously you get annoyed and frustrated but that doesn't help,
9. and I think it is quite frustrating more than anything,
10. where you see things very good.

Analytic

1. ... and slow as well and if you want the speed of a lesson to go at a certain pace,
2. got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
3. Had a clear idea of what I was going to do with the children.
4. It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
5. it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything.
6. ... but it wasn't the same learning objective and didn't meet the expectations,
7. ... but it wasn't what I wanted to do, it was an alternative really,
8. a book that's suitable and one that you know you can find answers,
9. It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.
10. so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to,
11. we have told them all the so many things we want to do.

Formative

4. obviously the age of technology makes a difference to them as well,
5. we have to use older laptops which don't work as well and that can be a bit frustrating sometimes you waste time a lot around something to work,
6. ... technology can fail from time to time,
7. ... it doesn't work as you want it to do,
8. ... I spent a long time planning what we are going to do,
9. got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
10. Obviously got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work.
11. It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
12. It doesn't work when you want it to work, that's the biggest issue really.
13. ... I think that's just the way the technology is,
14. ... either children or members of staff haven't put them back correctly,
15. ... where you have got to adapt your lesson and people just share things,
16. ... having an awareness that something could go wrong,
17. You probably leave yourself more open with using the internet it might not necessarily take you the right path to finding the right information.
18. the problem of connecting to the Wifi connection because sometimes you can't access it,
19. we have had a few technical issues on the ware,
20. where certain things have been lost so for that reason it obviously affects our ability to use them as well as we would like,
21. ...we have all been trained but because of tech issues it hasn't worked as it should.

22. so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to,
23. ... But it isn't just down to not wanting to use it, but so many issues have got in the way,
24. So again if you planned using them in your class,
25. the rope to the back has been disconnected,
26. And nobody has been given the chance to go to the back of it and reconnect it.
27. Too often the machines are updating and a couple of hours still on updates, you can't get on.
28. Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.
29. It's an issue with the wireless connection not working as it should,
30. But it just doesn't work.
31. Some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on.
32. we have told them all the so many things we want to do,
33. It just hasn't quite worked as it should,
34. So in an ideal world different technology, go out and try different things you could use.
35. I am an ICT coordinator, so I have been on trainings.

Lingual

9. ... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site,
10. but children have to be aware of what's appropriate, what's the best information,
11. because sometimes you can end up on the wrong website or wrong information,
12. whereas with a book, you can control it a bit more,
13. a book that's suitable and one that you know you can find answers,
14. Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection.

Social:

- VII. ... children have to share if there's not quite enough to go round,
- VIII.... so you have to work together which not everyone can do successfully,
- IX. ... where you have got to adapt your lesson and people just share things.

Economic:

- ... sometimes you waste time a lot around something to work,
- ... sometimes you find that some sites are blocked when you want to go on them,
- ... I spent a long time planning what we are going to do,
- got resources ready for it, had sets of instructions, spent my own time researching how it will be used,
- It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.
- ... when you might not have enough of what you need,
- ... where you have got to adapt your lesson and people just share things,
- It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school.
- Sometimes problems where some of the apps sometimes get wiped off.
- You get the iPads out and children can't access what you want them to access on it.
- Too often the machines are updating and a couple of hours still on updates, you can't get on.
- and again, the school has spent a lot of money,
- It's very limited to the amount of computers you can put on at one time.
- obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school because,
- And when you come back to school we really can't afford to do that as much as we'd love to.
- So you don't get value for money that way.
- sometimes they can be good but not get used,

Aesthetic:

7. ... and slow as well and if you want the speed of a lesson to go at a certain pace,
8. ... so you have to work together which not everyone can do successfully.

Juridical

- 12 ... but it wasn't the same learning objective and didn't meet the expectations,
- 13 ... you've got to accept that it's not always going to work perfectly or things are going to go wrong.
- 14 You probably leave yourself more open with using the internet, it might not necessarily take you the right path to finding the right information.
- 15 And nobody has been given the chance to go to the back of it and reconnect it.
- 16 It's an issue with the wireless connection not working as it should,
- 17 sometimes they can be good but not get used.

Ethical:

5. ... children have to share if there's not quite enough to go round,

6. ... that can sort of hold you back,
7. ... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site.

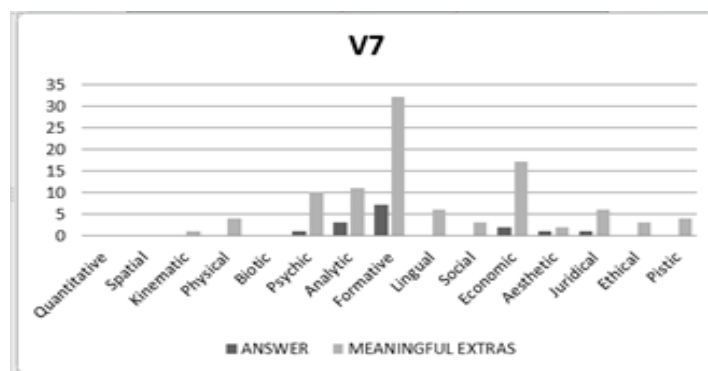
Pistic

- xxi. ...you've got to accept that it's not always going to work perfectly or things are going to go wrong.
- xxii. ... you've always got to be aware that things might go wrong,
- xxiii. ... having an awareness that something could go wrong,
- xxiv. So they promised we will be able to do them.

STAGE SEVEN: Aspectual Profile

Aspectual Profile for V7

Aspects	Answers	EIV
Quantitative	-	-
Spatial	-	-
Kinematic	-	1
Physical	-	4
Biotic	-	-
Psychic	1	10
Analytic	3	11
Formative	7	32
Lingual	-	6
Social	-	3
Economic	2	17
Aesthetic	1	2
Juridical	1	6
Ethical	-	3
Pistic	-	4



Appendix V

Appendix 5: Value Analysis

The value analysis was performed to reveal Teachers' aspectual value concern caused by ICT use. In addition, this appendix contains the value aspectual comparison profile of users and literature that helped reveal the value-laden aspects Teachers find meaningful in ICT use in the classroom.

This appendix is referenced in the following sub-sections

Section 3.9.4	Comparison of Dooyeweerd's suite of Aspect with Extant Theories of Values,
Section 5.3.6	Stage Six: Analysis of Values,
Section 7.3.4	Qualitative Analysis of DTE Issues by Value Literature and Table 7.32; 7.33; 7.34
Section 8.2.3	Value Discussion

Comparison of Dooyeweerd's Suite of Aspects with Extant Theories of Values

This section discusses the comparison of values from various authors with Dooyeweerd aspects. The aspectual interpretation of extant texts, as with literatures on values, can indicate to what extent the authors are focusing on certain aspects at the expense of others. This will help in developing a successful Information System (IS). It shows the breakdown of the aspectual analysis and how Aspectual analysis on values was arrived at.

The Theory of Basic Values (Schwartz, 2007)

These are the ten basic values that form the theory of basic values by Schwartz (2007). Alongside the column is the aspectual analysis on each value.

S/N	Values	Aspect
1	Power	Juridical
2	Achievement	Formative
3	Hedonism	Aesthetic
4	Stimulation	Psychic
5	Self-Direction	Formative
6	Universalism	Ethical
7	Benevolence	Social
8	Tradition	Pistic
9	Conformity	Juridical
10	Security	Juridical

Values in Information Technology (IT)

This table shows the aspectual analysis of the values that are transferred from human actors to technological objects in technical design.

S/N	Values	Aspects
1	Technical Culture	Formative
2	Social Values	Social
3	Aesthetic Ethos	Aesthetic
4	Political Agendas	Juridical
5	Order	Juridical
6	System	Juridical
7	Control	Juridical

Others Values in IT

This table extracts the various interpretations of values in Information Technology. These excerpts are aspectually analysed to reveal the aspects these values focus on.

S/N	Values	Aspects
1	Principles	Analytic
2	Standards	Juridical
3	Qualities that guide Actions	Analytic, formative

The VSD methodology (Friedman, Khan, and Borning, 1997)

The Value Sensitive Design (VSD) methodology is a development from the Human Computer Interaction to account for human values in the design of computer system. There are twelve values from VSD that are aspectually analysed.

S/N	Values	Aspects
1	Human Welfare	Social
2	Ownership and Property	Juridical
3	Privacy	Ethical
4	Freedom from Bias	Analytical
5	Universal Usability	Ethical
6	Trust	Pistic
7	Autonomy	Pistic
8	Informed Consent	Lingual
9	Accountability	Juridical
10	Identity	Pistic
11	Calmness	Psychic
12	Environmental Sustainability	Biotic

Values in Education

This table gives a breakdown of the ways values are interpreted differently by various people in education. Aspectual analysis is done on these values in order to show us what is overlooked or over emphasised.

S/N	Values	Aspects
1	Democratic Education	Juridical
2	Rights and Duties of Citizenship	Juridical
3	Religion	Pistic
4	Teaching about Values	Lingual
5	Community Influence	Social
6	Extra-Curricular Activities	Aesthetic
7	School Discipline	Juridical
8	Charity Work	Ethical
9	Pastoral Care	Pistic
10	School Ethos	Social
11	Ability to Think	Analytical
12	Act Morally	Formative, Ethical
13	To make Moral Decisions	Analytic

Values in General

This table is based on the aspectual analysis of the general discussion about values and how they are interpreted diversely.

S/N	Values	Aspects
1	Social	Social
2	Intellectual	Analytic
3	Emotional	Psychic
4	Spiritual	Pistic
5	Qualities of Behaviour	Ethical
6	Thought	Analytical
7	Character	Ethical
8	Accepted as Essentially Good by the Society	Social, Juridical
9	Worthy of Emulation by Others	Lingual
10	Individual's Sense of Right and Wrong or What "Ought" To Be	Juridical

Values in Technology Education (Layton, 1991)

This table reveals the aspectual analysis of the values from literature in technology education (Layton, 1991).

S/N	Values	Aspects
1	Economic	Economic
2	Aesthetic	Aesthetic
3	Moral	Ethical
4	Environmental	Biotic
5	Technical	Formative
6	Spiritual	Pistic

Other authors in the field (Prime, 1993; Breckon 1998; Holdsworth & Conway 1999)

This is analysed below:

S/N	Values	Aspects
1	Personal	Psychic
2	Social	Social
3	Economic	Economic
4	Political	Juridical
5	Cultural	Social
6	Environmental	Biotic
7	Moral	Ethical
8	Technical	Formative
9	Aesthetic	Aesthetic

Values in Teaching by Teachers (Pavlova, 2002)

This table gives a breakdown of the teaching values Teachers placed priorities on. These values are analysed for uniformity.

S/N	Values	Aspects
1	Technical	Formative
2	Aesthetical	Aesthetic
3	Economic	Economic
4	Environmental	Biotic
5	Social	Social
6	Culture	Social
7	Moral	Ethical
8	Political	Juridical

Value Qualitative Analysis

In this section the whole of the data collated were aspectually analysed; see section 5.3.6.1. The table below shows how Dooyeweerd's suite of aspects was used to analyse the normative issues. The table is divided into the aspect that reflects the functioning normative issue of the excerpts of the participants (COD) and the reason for choosing such aspect. The colour code is used to identify the issues easily. Detailed discussion on the qualitative analysis of value is shown in section 5.3.6.

ASPECT	CODEE	EXCERPTS	REASON
Ethical	V1	It's much more instance maybe they are <i>losing patience</i> . They expect everything instant.'we live in the instant mash society' where everything has to be done immediately.nobody wants to wait for anything. And you know obviously I have gone to 'come on, load up...'go faster'...	i.e. selfish, centred on 'Me'.
Social	V3	If you get iPads out, they are all just in their own world focusing on these things and there's no <i>social interaction</i> , there's no like..., talk to your friend about this or get other people's perspective on some things, it's just you in your own world. So I think it does hinder that social interaction a little bit, definitely.	Social interaction
Ethical	V3	I think it hinders you <i>accepting people's opinions</i> because you are used to it's just been me, but you are not prepared to listen to people,	The opposite of selfish, in one's opinions
Formative	V3	It makes you <i>lazier</i> because you just go (type and found it) but when I used to do my homework in the old days, you have to find a book or go to the library or ask mum and dad.	Not achieving
Ethical	V3	If they want some thing they want it right now, they are <i>not prepared to wait</i> , a lot of things in the computer they don't have to, they can press the button and it's there, they can play a game and it's done, there's no waiting, but life is not like that. Loads of times in life you have to wait for things, nothing comes to you instantly like finding a job, when you get into a supermarket and you have to wait in a queue, you have to wait in a lot of instances, nothing... perhaps it's making people more <i>impatient</i> .	Negative functioning cos centred on Me Me!
Social Aesthetic	V3	They won't have to take turns if they have got their own laptops or iPads and their own <i>imaginations</i> , because its hindering writing, if they come to write a story or have been asked to use their own imagination, a lot of these computer games and video games they don't have to think of anything at all, it's all done for you, you just play and stop. It's not like when they come to sit and write a story and think of their own characters, their own settings, their own problem. It's like waooh, it doesn't come that easily anymore because I'm used to it being put in front of me. This will eventually <i>hinder their imaginations</i> .	Social - taking turns Aesthetic- imaginations probably yes. Aesthetic aspect of formative knowing - hinder their imaginations

Juridical/ social	V4	Also we know a lot, the boys particularly, usually play on 18 games you know very violent games (Black Ops, all sorts off). You hear them saying - I didn't sleep, I was up playing Black Ops, so that obviously doesn't help the next day in school and they are tired and sometimes they say they have had nightmares because they have watched horror things. So that's the down side, I think children are <u>losing their innocence</u> a lot younger/earlier.	Juridical and negatively functioning in the social aspect- losing their innocence
Juridical, Psychic	V4	I think a lot of children do spend a lot more time indoors than we did and we find the children around here tend to be one extreme or the other, they are like kept in all the time because the parents think it's <u>not safe going out</u> which to be honest it's not very safe around here, or they just want them off out of the house, which neither is great. Ones that aren't free are on computers all the time but they are risking in other ways, and the ones that stay inside they are a lot of the time watching telly or on a computer or that sort of thing.	I's not safe
Psychic	V4	I think it affects their <u>attention</u> span as well; they want everything to be very (demonstrates). They are used to everything being fast and exciting and some of them find it quite hard to sort of concentrate for a while, they are not easy to handle in the class, they are certainly not as good as it could be.	Attention Is more likely to refer to mental attention span, which is psychic
Formative	V5	I think the biggest problem with ICT is sometimes some people get over-reliant on it, I think Teachers who are recently qualified and are so used to ICT being there become quite reliant on it and it's only when you've not had it that you find other <u>creative</u> ways to doing things.	Creative Because it's to do with doing
Social	V5	We find in Early Years the draw back has been a lot of our children coming at three with speech and language delay and it's because they spend a lot of time watching telly and they spend so much time focusing on the TV, so that speech isn't there because they are <u>not used to interacting because</u> they are so used to being put in front of the TV.	Negative functioning not used to interacting
Formative	V5	So if they spend their whole life engaged in ICT and computers and they don't get to go outdoors, they don't get to do messy play and everything else, then at no point do they get that <u>sense of risk or that taking part</u> . A lot of them don't even like going outside because they are so used to being in.	Formative - sense of risk or taking part. It is formative, at least partly. Taking part might refer to doing things rather than not. But it might refer to the 'with others' of doing things
Formative, Aesthetic	V5	You didn't have all this kind of stuff then you are used to <u>being more creative</u> .	Formative, Aesthetic - being more creative.
Lingual	V5	But this morning just 45 minutes of just playing the instruments, the children don't get the chance to do that nowadays, everything is there on the tablet, on the computer. That whole research purpose we had or I had when I was in school has gone because Google does it for you. GO INTO A BOOK, A BOOK, picking up a book and looking for something. That <u>research skill of skimming and scanning element it's got</u> .	Lingual - research skill of skimming and scanning element it's got. They are thinking of lingual when 'going into a book'?
Formative, Juridical	V5	It does make you think about what will happen in the next generation. <u>they won't be used to doing anything for themselves because everything would be done for them</u>	Formative, Juridical- they won't be used to doing anything for themselves
Pistic	V5	I do my shopping online, it's easier and convenient, then you don't have the interaction side of things and I think as well with the shopping element. Unless children go out and experience that shopping element, they do not have that <u>life experience</u> which is why when they get to now doing college work and things they are now doing (which sounds bizarre) life experience classes because they don't know how to it anymore because everything is done for them.	Pistic - life experience their vision of what life is about, which is pistic

Social	V5	Research shows that children that are read to on a regular basis are the children that do better with reading, with writing, with communication and everything else, because unless they've got that kind of vocabulary, they've got that kind of... story, they've got that kind of listening skill, nothing else, it doesn't matter what you are teaching them, it doesn't matter if you are reading maths, IT or whatever, if they've not got the basics they can't do anything else, they can't take it in. They've not got that <i>life experience</i> , so when they do get older, they are going to be constantly on catch up.	Social - life experience because they are talking about catching up and presumably that refers to compared with others.
Pistic	V5	Doing something through being <i>creative</i> , going on a basic and then you use your ICT as your backup. They still get more out of going on a trip to the farm, we went physically, all of us, 60 of us, freezing day it was to the farm where we saw the animals, we fed the animals, that experience those kids now in year three will remember rather than lets watch a video about the farm.	Pistic- creative The bit about farm was about widening their horizons, and also maybe a little love for animals. Widening horizons
Pistic/ Formative	V5	Our kids nowadays their <i>life experience</i> is through computers. They don't go out and actually play, they don't go out on bike rides, <i>they don't take risks</i> and they don't do all the things we did as kids because they can do that by sitting down with a nice remote control that can do it for them.	Pistic/ formative- life experience Maybe life experience means their vision of what life is about, which is pistic. Formative- taking risks
Psychic,	V6	If you just use a computer, you are not going to use the library, you will just forget about books.	Psychic, Aesthetic- didn't have that joy
Juridical, Biotic	V6	I think it's more important to teach children to read properly, write with a pen and get their letters	Juridical, Biotic- use their brain properly
Social	V10	The children can be all over the place and they are arguing over who is <i>taking what turn</i> and who is having a go and things like that.	Social - taking what turn
Social	V10	Like socially - children's <i>social skills</i> and things like that, conversations. Yes people become reliant on using tech, these days I will pick up a phone to try and work out some things instead of using my head to do it, so I guess children are the same. They rely on it rather than...	Social - social skills
	V11	If you have got children of age 4/5, if I kind of move or turn my back or kind, you can have the ones that could <i>lose their attention</i> and things like that. So yes it can have a negative impact.	
Social Social Economic	V13	So the down side of technology for me is that I suppose all those <i>conversation skills</i> and things you would have naturally done 10/20 years ago, speak to people face to face, so the <i>interaction</i> with mobile phones, iPads, Xbox, everybody has got a telly and everything, it's just a negative impact for me, for all that is lack of social skills and lack of skills like reading and being able to use a book.... <i>people just think convenience</i> don't they.... at the snap of your finger, you want to be able to find the answer.	Social - conversation skills, Social - interaction Economic - people just think convenience
Social Social	V14	Because they are only 30, sometimes their batteries aren't charged so when we come to get them batteries are dead so you might have out of 30 laptops, 6 don't work so some children have got to <i>share</i> one which they are not happy about, they <i>don't want to share</i> , they want one of their own.	Social - to share Social (negative functioning)- don't want to share
Economic Economic	V15	A lot of their <i>experiences are limited</i> so they don't often go out for the weekend with the family, so they might go to the park or shopping, but that.... their <i>experiences are quite limited</i> .	Economic - experiences are limited Economic - experiences are quite limited
Juridical, Aesthetic	V16	Erm, in the future it's terrifying, especially as a Teacher and a parent, it really is <i>finding the right balance between invading their privacy and keeping them safe</i> , you know, I don't want to be checking her account all the time, I've got to have some trust but equally keeping her safe is more important than her privacy (laughs) so it's something I have thought about with the class.	Juridical, Aesthetic - finding the right balance between invading their privacy and keeping them safe

Social Ethical Social Aesthetic	V19	The <u>social aspects</u> definitely. Chasing the <u>patience</u> away, <u>taking turns</u> . <u>Aggressive</u> as well, if the tab is not coming on, they go on banging, you know, getting quite aggressive, on the game console at home as well.	Social - the social aspects Ethical - chasing the patience away Social - taking turns Aesthetic - Aggressive
Formative/ Aesthetic Formative/ Aesthetic Formative/social Formative/Aesth	V20	Erm, some of it can take away from them their <u>imagination</u> because they are not exploring in the same way, everything is kind of thrown at them, even when they are on computer games and things like that it's just information being thrown at them at times, so they are <u>not really using their imagination to get those experiences</u> , so in the playground you find <u>a lot the younger children specifically don't really know how to play unless you give them something</u> . We had a late play time today, so usually we have play zones where the activities are going on but because we had a late play time, they've been put away, so we were like you have got the slides, the climbing wall <u>use your imagination</u> , and they were like, it's a bit boring isn't it when we've not got those things, what do you usually do.	Formative/ Aesthetic- imagination Aesthetic- imagination Aesthetic aspect of formative knowing - hinder their imaginations Formative/ Aesthetic -not really using their imagination to get those experiences
Psychic/ Aesthetic	V20	Humm, I think their <u>enthusiasm to participate in sporty kind of things</u> . We get kids that love sport, but then you get some that just want to play on the games, on the computer games. That's their own interest, they haven't got any outside activity interests. So I think that's probably affecting them quite a lot. They are so focused on these games that they don't have anything outside, even when we didn't have all of that, we had to find other stuff to do otherwise it could get quite boring, you had to think up games or had outside activities to do.	Psychic/ Aesthetic - enthusiasm to participate in sporty kind of things.
Ethical Psychic	V20	Yes, I think boys haven't got particularly any special <u>patience</u> , <u>they react very quickly and they shout back very quickly</u> . I think their reaction side of things are a lot quicker than possibly used to their patient level.	Ethical - patience Psychic - they react very quickly and they shout back very quickly
Social Social Ethical	V20	Also they don't know how to play, because if you didn't have all that, you learned to play together. All the <u>social skills</u> , you learn how to <u>cooperate with people, be patient even though you get into arguments</u> , you still learn those social skills, whereas on the games they don't have the same social interactions do they? So when somebody does annoy you it's like 'roar'!	Social - social skills Social - cooperate with people Ethical - be patient even though you get into arguments

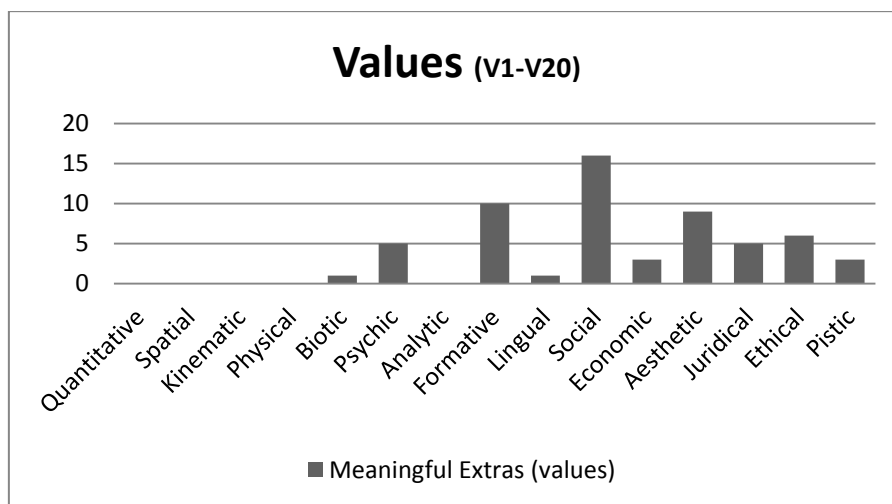
Quantitative Analysis of DTE Issues by Values

This section 7.2.4 is the quantitative analysis of normative issues discussed by Teachers. It reflects the Table 7.7 in section 7.2.4 and shows the meaningful excerpts on what Primary Teachers view as normative issues of using ICT in the classroom. These excerpts are categorised into their functioning aspects. The frequencies of occurrence on each aspect are recorded and the result of analysis is produced.

Table Count on Values

Aspects	EIV (values)
Quantitative	
Spatial	
Kinematic	
Physical	
Biotic	1
Psychic	5
Analytic	
Formative	10
Lingual	1
Social	16
Economic	3
Aesthetic	9
Juridical	5
Ethical	6
Pistic	3

Table above provides the graph below.



Aspectual Profile on Values

Appendix VI

Quantitative Analysis APPENDIX 6

This appendix contains the quantitative analysis to compare answers and EIV for each interviewee from V1-V20. This is discussed in the sub-section 6.3.2 of Aspectual Analysis of Questions, Answers and Extras. This appendix gives a tabular breakdown of V1-V20.

This section counts the number of occurrence of each aspect as it relates to the questions, answers and EIV for the twenty interviews. The tabular breakdown of each data and interview code name V1...V20 and is shown below.

Analysis on Data (V1-V20)

V1

ASPECTS	ANSWERS	EIV
Quantitative	0	2
Spatial	0	0
Kinematic	1	3
Physical	0	2
Biotic	0	0
Psychic	1	8
Analytic	1	6
Formative	2	6
Lingual	4	11
Social	0	1
Economic	4	12
Aesthetic	0	7
Juridical	2	9
Ethical	0	3
Pistic	0	5

V2

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	1
Physical	0	0
Biotic	0	0
Psychic	0	9
Analytic	3	3
Formative	4	4
Lingual	1	4
Social	0	0
Economic	1	5
Aesthetic	1	8
Juridical	1	6
Ethical	0	0
Pistic	1	4

V3

ASPECTS	ANSWERS	EIV
Quantitative	0	2
Spatial	0	2
Kinematic	0	0
Physical	0	1
Biotic	0	3
Psychic	0	11
Analytic	2	17
Formative	6	17
Lingual	3	18
Social	1	7
Economic	2	10
Aesthetic	0	11
Juridical	1	13
Ethical	1	8
Pistic	0	23

V4

ASPECTS	ANSWERS	EIV
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Quantitative	0	0
Spatial	0	0
Kinematic	0	0
Physical	0	2
Biotic	0	5
Psychic	0	8
Analytic	1	10
Formative	0	4
Lingual	1	15
Social	0	15
Economic	0	9
Aesthetic	1	10
Juridical	1	19
Ethical	0	23
Pistic	1	20

V5

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	2
Physical	0	1
Biotic	0	2
Psychic	0	10
Analytic	1	7
Formative	7	12
Lingual	2	9
Social	0	3
Economic	1	3
Aesthetic	0	4
Juridical	0	7
Ethical	0	4
Pistic	0	3

V6

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	1	1
Physical	0	1
Biotic	1	0
Psychic	3	10
Analytic	3	10
Formative	3	9
Lingual	4	13
Social	4	9
Economic	0	3
Aesthetic	2	5
Juridical	0	6
Ethical	0	0
Pistic	0	3

V7

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	1
Physical	0	4
Biotic	0	0
Psychic	1	10
Analytic	3	11
Formative	7	32
Lingual	0	6
Social	0	3
Economic	2	17
Aesthetic	1	2
Juridical	1	6
Ethical	0	3
Pistic	0	4

V8

ASPECTS	ANSWERS	EIV
Quantitative	0	1

Spatial	0	1
Kinematic	1	1
Physical	1	3
Biotic	0	0
Psychic	0	3
Analytic	1	8
Formative	0	10
Lingual	0	10
Social	0	2
Economic	1	1
Aesthetic	1	4
Juridical	0	0
Ethical	0	0
Pistic	0	1

V9

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	0
Physical	0	3
Biotic	0	3
Psychic	1	3
Analytic	1	3
Formative	1	7
Lingual	0	4
Social	0	6
Economic	0	5
Aesthetic	0	2
Juridical	1	0
Ethical	0	2
Pistic	0	2

V10

ASPECTS	ANSWERS	EIV
Quantitative	0	3
Spatial	1	1
Kinematic	1	4
Physical	2	4
Biotic	0	0
Psychic	2	7
Analytic	1	5
Formative	6	13
Lingual	1	14
Social	3	5
Economic	0	8
Aesthetic	0	4
Juridical	0	1
Ethical	0	1
Pistic	1	3

V11

ASPECTS	ANSWERS	EIV
Quantitative	0	1
Spatial	0	0
Kinematic	0	1
Physical	0	2
Biotic	0	0
Psychic	1	12
Analytic	0	8
Formative	1	20
Lingual	1	11
Social	0	4
Economic	4	39
Aesthetic	1	9
Juridical	2	13
Ethical	1	14
Pistic	0	13

V12

ASPECTS	ANSWERS	EIV
Quantitative	0	1
Spatial	0	0
Kinematic	0	1
Physical	1	1

Biotic	0	0
Psychic	1	3
Analytic	1	4
Formative	0	6
Lingual	1	7
Social	1	1
Economic	4	4
Aesthetic	3	5
Juridical	0	1
Ethical	0	1
Pistic	0	0

V13

ASPECTS	ANSWERS	EIV
Quantitative	0	1
Spatial	0	0
Kinematic	0	1
Physical	0	0
Biotic	0	0
Psychic	0	1
Analytic	0	7
Formative	0	6
Lingual	0	14
Social	0	4
Economic	1	15
Aesthetic	1	5
Juridical	0	13
Ethical	0	3
Pistic	1	5

V14

ASPECTS	ANSWERS	EIV
Quantitative	0	9
Spatial	1	0
Kinematic	0	3
Physical	0	6
Biotic	0	0
Psychic	0	30
Analytic	1	25
Formative	0	17
Lingual	0	14
Social	0	7
Economic	1	31
Aesthetic	0	14
Juridical	0	15
Ethical	0	3
Pistic	0	7

V15

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	1
Physical	0	0
Biotic	0	1
Psychic	0	2
Analytic	0	3
Formative	0	5
Lingual	0	3
Social	0	3
Economic	0	3
Aesthetic	0	9
Juridical	0	8
Ethical	0	4
Pistic	0	7

V16

ASPECTS	ANSWERS	EIV
Quantitative	0	6
Spatial	0	2
Kinematic	0	0
Physical	0	9
Biotic	0	1
Psychic	1	12

Analytic	1	14
Formative	0	9
Lingual	0	9
Social	0	6
Economic	2	27
Aesthetic	0	9
Juridical	0	9
Ethical	0	7
Pistic	1	6

V17

ASPECTS	ANSWERS	EIV
Quantitative	0	0
Spatial	0	0
Kinematic	0	0
Physical	0	1
Biotic	0	2
Psychic	0	0
Analytic	0	2
Formative	0	7
Lingual	0	8
Social	0	4
Economic	1	1
Aesthetic	0	4
Juridical	0	3
Ethical	0	0
Pistic	0	1

V18

ASPECTS	ANSWERS	EIV
Quantitative	0	1
Spatial	0	0
Kinematic	0	1
Physical	0	0
Biotic	0	0
Psychic	0	4
Analytic	0	5
Formative	0	9
Lingual	0	7
Social	0	2
Economic	1	7
Aesthetic	0	6
Juridical	0	4
Ethical	0	1
Pistic	0	2

V19

ASPECTS	ANSWERS	EIV
Quantitative	0	2
Spatial	0	0
Kinematic	1	0
Physical	0	0
Biotic	0	0
Psychic	0	11
Analytic	1	0
Formative	0	3
Lingual	1	5
Social	0	4
Economic	4	5
Aesthetic	0	3
Juridical	0	6
Ethical	0	1
Pistic	0	2

V20

ASPECTS	ANSWERS	EIV
Quantitative	0	1
Spatial	0	0
Kinematic	0	1
Physical	1	0
Biotic	0	0
Psychic	0	12
Analytic	0	14

Formative	0	8
Lingual	0	12
Social	0	11
Economic	1	9
Aesthetic	2	14
Juridical	0	5
Ethical	0	3
Pistic	0	5

Qualitative Analysis

Aspects	Phrase from Answers (V1)	Reason	Phrase from EIV (V1)	Reason
Quantitative			I still only got about 8 kids work out of 40 because the others wouldn't let me on (Q- count, E- time). 30 iPads and it take a time to charge it up (Q- count, K- charge), [001]	
Spatial				
Kinematic	We have to do one of them individually, it's a slow process. (K- slow process).		Because I am not particularly a good typist, I wouldn't have been able to type and explain... (Kin- movement, Analy- clarity) [002] You have to charge them up before you go out (K- charge), 30 iPads and it take a time to charge them up (Q- count, K- charge), [003]	
Physical			The projectors are temperamental (Ling., Phys), [004] It runs out of battery when it's charged(Phys) [005]	
Biotic				
Psychic/ Sensitive	If you split the page into half, you haven't got enough information that is in a big enough font for them all to see (E- limited screen area, PSY- appear on screen, visual),		I can kill a computer at 20 places, if I look at it will go wrong (Psy), [006] One poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem.(Ethical- Psychic-emotion) [007] When you are in a hurry and you are doing a million and one jobs you can't really check.(A- illogicality, Psyc- sensory overload) [008] It's very dark, you have to turn the light off so the kids can see your work,(Psychic- use of eyes,) [009] ... so you have to remember to turn the volume down so they don't hear the advert in case there's anything on it (Psy- ears in hearing) [010] They are complete pain in the neck. (Psychic- feeling) [011] And it's a pain (Psy- feeling). [012] It is not a 2 minute job, it's a five minute job by the time you have worked out where it is, so that's sometimes why people don't use them because they don't want to go through this.(E- time, Psy- not willing to go through the effort required, ETH- no self-giving) [013]	
Analytic	But I was - 'excuse me a minute, I have to change what we were doing'. (Ana- clarity on pieces of data, L- represented content)		When you are in a hurry and you are doing a million and one jobs you can't really check.(A- illogicality, Psyc- sensory overload) [014] Because I am not particularly a good typist, I wouldn't have been able to type and explain... (Kin- movement, Analy- clarity) [015] You have to remember to take the photos off very quickly and put them in a folder (L-pictures, A- logicality of instruction), [016] That sounds lazy but the thing is it's practical (form- lazy, A- logical/practical),[017] That sounds lazy but the thing is it's practical (form- lazy, A- logical/practical), [018] it a practical reason rather than somebody says it takes a lot of this, lot of that (A- logical, E- frugality of resources) , [019]	
Formative	When they don't work and you don't know why (F- can't shape, technology; J- no clarity) But under those circumstances, had I know in advance, I would have been able to get somebody else to draw it or find a photograph or something.... (F- planning, L- draw)		We had a power cut and everything went (F- destruction), [020] We do have power cuts periodically and everything goes wrong (J- injustice, form- destroying) [021] In order to get the projector to work (F-tech)- [022] We use words that we have typed in PowerPoint with cd and sometimes it just would not work (F- tech, L- cd, PowerPoint). [023] That sounds lazy but the thing is it's practical (form- lazy, A- logical/practical), [024] It doesn't tell you when it's run out of paper (F- tech, E- resources)...[025]	

Lingual	<p>You have to log in on various things and go through each stage (L-login; J- go through each stages),</p> <p>Not all the iPads have the same programs downloaded (L- programs)</p> <p>But I was - 'excuse me a minute, I have to change what we were doing'. (Ana- clarity on pieces of data, L- represented content)</p> <p>But under those circumstances, had I known in advance, I would have been able to get somebody else to draw it or find a photograph or something.... (F- planning, L- draw)</p>		<p>You are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic (E- waste of time, L- reduced access to information). [026]</p> <p>The projectors are temperamental (Ling., Phys),[027]</p> <p>So when we do hymn practice (Ling), I have to stand in the far corner of the hall and [028]</p> <p>I like to scribble in and demonstrate rather than this is how you do it (L- reduced/poorer quality information) [029]</p> <p>When the power cut happens, it does affects the log in system... (L-login system, Aes- no harmony) [030]</p> <p>So it all takes time for the children to get their log in so they can save their own data (Eco- mismanagement of time, L- login, save data) [031]</p> <p>If I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use, (L-word document, Aesthetic-disharmony) [032]</p> <p>We use words that we have typed in PowerPoint with cd and sometimes it just would not work (F- tech, L- cd, PowerPoint). [033]</p> <p>On the internet it's the popular ones, you get adverts before it and it's very hard to time is so you don't get the advert (L-advert, E- timing). [034]</p> <p>And the advert was way inappropriate (J-inappropriate, L-advert) [035]</p> <p>You have to remember to take the photos off very quickly and put them in a folder (L-pictures, A- logicity of instruction), [036]</p>	
Social			<p>I wouldn't like to do the job, it would be very difficult (S- structure of org/job, Aesth- difficultly). [037]</p>	
Economic	<p>It takes a long time to setup (E- time)</p> <p>You can't sort of show two pages at a time when you want them to compare things (E- use of limited screen area),</p> <p>If you split the page into half you haven't got enough information that is in a big enough font for them all to see (E- limited screen area, PSY- appear on screen, visual),</p> <p>It takes a long time (E- long time)</p>		<p>You are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic (E- waste of time, L- reduced access to information). [038]</p> <p>So it all takes time for the children to get their log in so they can save their own data (Eco- mismanagement of time, L- login, save data) [039]</p> <p>So it took me quarter of an hour the other day to try and save everything on the stick (E- waste of time) [040]</p> <p>So time can be an issue with it (E-time) [041]</p> <p>I still only got about 8 kids work out of 40 because the others wouldn't let me on (Q- count, E- time). [042]</p> <p>A 40seconds delay of the settling down of them trying to be quite is quite a long time to keep a whole school quite (E- frugality of resources) [043]</p> <p>The limits on the memory (E- limit) [044]</p> <p>On the internet it's the popular ones, you get adverts before it and it's very hard to time is so you don't get the advert (L-advert, E- timing). [045]</p> <p>It is not a 2 minute job, it's a five minute job by the time you have worked out where it is, so that's sometimes why people don't use them because they don't want to go through this.(E- time, Psy- not willing to go through the effort required, ETH- no self-giving) [046]</p> <p>It a practical reason rather than somebody says it takes a lot of this, lot of that (A- logical, E- frugality of resources) , [047]</p> <p>Don't use too much colouring because it's too expensive.(Aesth- decoration, E- cost) [048]</p> <p>It doesn't tell you when it's run out of paper (F- tech, E- resources).</p> <p>[049]</p>	
Aesthetic			<p>I don't generally prepare lessons on it, because with me it always goes wrong. (AES-misfitting, pist- prejudice) [050]</p> <p>When the power cut goes on, it does affect the log in system... (L-login system, Aes- no harmony) [051]</p> <p>If I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use, (L-word document, Aesthetic-</p>	

			<p>disharmony) [052]</p> <p>You think any compatibility? (Aesth) [053]</p> <p>You have to find the right cable for the right number (Aes- harmony) [054]</p> <p>I wouldn't like to do the job, it would be very difficult (S- structure of org/job, Aesth- difficulty). [055]</p> <p>Don't use too much colouring because it's too expensive.(Aesth- decoration, E- cost) [056]</p>	
Juridical	<p>When they don't work and you don't know why (F- can't shape, technology; J- no clarity)</p> <p>You have to log in on various things and go through each stages (L-login; J- go through each stages),</p>		<p>Blocked sites (J- unduly blocked) [057]</p> <p>So it won't let things about 'Jesus' through, but will let things about other things through (J- injustice, Pistic- religion) [058]</p> <p>I am banned from approaching a computer because as I walk towards it, it goes wrong (Juri,-)[059]</p> <p>Where somebody is watching you and evaluating yourr lesson; there's nothing you can do about that. (J-authority,assessment) [060]</p> <p>We do have power cuts periodically and everything goes wrong (J- injustice, form- destroying)[061]</p> <p>And the advert was way inappropriate (J-inappropriate, L-advert) [062]</p> <p>And print them off, you have to remember to delete them before the next person and put them on charge again (J- responsibility) [063]</p> <p>The main problem is the people who govern the system (J-authority) [064]</p> <p>The new teaching of code is not going well in this class at the minute, not only you can't choose not to use it (J- legal matters)..... [065]</p>	
Ethical			<p>One poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem.(Ethical- Psychic-emotion) [066]</p> <p>It is not a 2 minute job, it's a five minute job by the time you have worked out where it is, so that's sometimes why people don't use them because they don't want to go through this.(E- time, Psy- not willing to go through,the effort required, ETH- no self-giving) [067]</p> <p>Well it does and the kids get the amount of my extra time benefit out of it (Eth- self-giving), [068]</p>	
Pistic			<p>So it won't let things about 'Jesus' through, but will let things about other things through (J- injustice, Pistic- religion) [069]</p> <p>I don't generally prepare lessons on it, because with me it always goes wrong. (AES-misfitting, pist- prejudice) [070]</p> <p>I believe there are plenty that haven't got numbers on (Pis- believe), [071]</p> <p>It's much more instance maybe they are losing patience (pistic- patience)[072]</p> <p>They expect everything instant.'we live in the instant mash society' where everything has to be done immediately. Nobody wants to wait for anything (Pistic- prejudice) [073]</p>	

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		
Spatial		
Kinematic		I used to use electric typewriter but they were sort of slow (K- slow,) {001}
Physical		
Biotic		

Psychic/ Sensitive		<p>It's frustrating and stressful when things don't go as they should do (Psy- feeling). [002]</p> <p>Yes it's frustrating (Psy- sensory overload), [003]</p> <p>It's frustrating when you can't get it done and everything (Psy- deprivation). [004]</p> <p>Because I'm not good with technology, it does sort of stress me a bit (Psy-stress). [005]</p> <p>Then you think "well there's something wrong with the computer and it's not me".(Psy- not user friendly) [006]</p> <p>It was a bit scary really that you were going to do things right on (Psync- feeling, J- responsibility), [007]</p> <p>Or you can't remember everything you have learnt ((Psy-remember, Ana- clarity,)) or you are supposed to have learnt (Jurid- responsibility). [008]</p> <p>I think it frightens me a bit (Psy- frightens). [009]</p> <p>I am frightened I'm going to do something that will break it off (Psy- feeling, F- destruction)[010]</p>
Analytic	<p>The computer is sort of black and white sort of thing (L- conveying truth), so you've got the right information yet it's telling you there's something wrong (L- deceit, misunderstanding; A- confusion),</p> <p>The office is quite busy, so you sort of manage to get through your work and everything and there's not enough time to sit down and think (E- limited time, A-clarity, F- achievement)</p> <p>It's sort of a bit mind bugling because you haven't really done it (A- confusing,)</p>	<p>The transition was hard, at first it was quite complicated. (Anal- no clarity; Aesth- not fun) [011]</p> <p>Even though it's sort of like a bit confusing (A- confusion) [012]</p> <p>So it was like a case of how do I do this and how do I do that (A- conceptualising, F-shaping). [013]</p>
Formative	<p>We have sort of had problems with the photocopier sometimes, that's sort of things like paper jams or toners not working properly (F- technology),</p> <p>I can't use excel (F- shaping, tech),</p> <p>The office is quite busy, so you sort of manage to get through your work and everything and there's not enough of time to sit down and think (E- limited time, A-clarity, F- achievement)</p> <p>I will do or touch something that would break it or delete it. (F- tech, destruction)</p>	<p>I'm not that good with sort of technology, (F-shaping, techn;) [014]</p> <p>We have the main frame in the computer room, sometimes if something goes wrong with that, you might not be able to access them programs (F- destruction, J- no access/denial) [015]</p> <p>I can't use my phone properly (F- tech, shaping), [016]</p> <p>I'm not sort of technically minded (F- tech), [017]</p>
Lingual	<p>The computer is sort of black and white sort of thing (L- conveying truth), so if you've got the right information yet it's telling you there's something wrong (L- deceit, misunderstanding; A- confusion),</p>	<p>The technology wasn't sort of... it kept saying there was errors on the information, but as far as I was concerned, there weren't any errors(L- information; J-error; P- believe) [018]</p> <p>When you go on the courses of course, it doesn't cover every eventuality (L-courses, A- awareness) [019]</p> <p>It didn't sort of sink in easily (L-understanding), [020]</p> <p>Not being able to retrieve some information (L- information) .so it tends to [021]</p>
Social		

Economic	The office is quite busy, so you sort of manage to get through your work and everything and there's not enough time to sit down and think (E- limited time, A-clarity, F- achievement)	It's sort of like time restrained (E- limited resources;), [022] At first it was like time consuming (E- limited resources), [023] You don't seem to have that time (E- limited resources)[024] It just takes time (E- resources). [025] My use is limited (E- limited), [026]
Aesthetic	It's such a big change, it's hard to sort of (Aest- difficult)...	It's quite hard at first (Aesth- Not fun) [027] It was quite hard to move over and it obviously ...word problems (Aesth- not fun). [028] The transition was a bit sort of mind bugling at first (Aesth- imbalance ;). [029] The transition was hard, at first it was quite complicated. (Anal- no clarity; Aesth- not fun) [030] Even though you don't sort of welcome the change (Aes-switch/change) [031] I think I'm not sort of interested in technology (Aesth- interest).[032] I'm not inclined to pursue it (Aesth- indifference). [033] I'm really not that interested in them other than work (Aest- boredom) [034]
Juridical	It wasn't a gradual change, it was sort of like - from this date, you will do it on here (J- authority)	We have the main frame in the computer room, sometimes if something goes wrong with that, you might not be able to access them programs (F- destruction, J- no access/denial) [035] The technology wasn't sort of... it kept saying there were errors on the information, but as far as I was concerned there weren't any errors(L- information; J-error; P- believe)[036] You might not be able to access something (J- no access), [037] If anything breaks it affects different people in the school because they can't photocopy things for their classes (J-denial of what is due);. [038] It was a bit scary really that you were going to do things right on (Psyc- feeling, J- responsibility), [039] Or you can't remember everything you have learnt ((Psy-remember, Ana- clarity,)) or you are supposed to have learnt (Jurid- responsibility). [040]
Ethical		
Pistic	I think it's because I'm older, sort of set in my ways (Pis- belief).	The technology wasn't sort of... it kept saying there were errors on the information, but as far as I was concerned, there weren't any errors(L- information; J-error; P- believe) [041] You sort of get used to these machines and their problems (P- idolatry). [042] I think I'm kind of part of the older people (Pis- belief). [043] most people just automatically turn to computers to look at things, but I prefer books (Pis- idolatry) [044]

V3

Aspects	Phrase from Answers	Reason	Phrase from EIV	Reason
Quantitative			In classrooms it happens a lot, if they are all on laptops at the same time (Q- amount) [001] A lot of the times it goes wrong in the hall when they are doing assemblies when they are trying to show hymns (Q-a lot, L-project hymn) [002]	
Spatial			Then it has to do with where you are (SP- layout).[003] Because all they have ever seen was an iPad screen (Spatial, Psyc).[004]	
Kinematic				
Physical			But then their grip on their pens and pencils is getting worse definitely (Physical- grip,)[005]	
Biotic			Also probably because of my age (B- age).[006] This generation, they grew up with it (B- growth,S- generation), [007]	

			They've had iPads from like 2-3 years old and they just flick through (F-tech, B-age,A-awareness), [008]	
Psychic/ Sensitive			<p>I am frightened of using it a lot (Psy- feeling)[009]</p> <p>I think "oh no, I don't want to do that, it might delete and I might not get it" (Pis- believe, Psy- emotions), [010]</p> <p>I think especially the children, they don't have that fear (Psy- fear,).[011]</p> <p>They show me all the time because they don't have that fear (Psy- fear,).[012]</p> <p>Whereas on that system, there were too many things that could go wrong (Aes- misfit, Psy- fear), [013]</p> <p>Then every child has to remember their log in and password and they can't always remember it (Psych-Memory, Ana- clarity), [014]</p> <p>The children have to remember their log ins (Psy-memory,).[015]</p> <p>It doesn't come that easily anymore (Psy-sensory)[016]</p> <p>Which is sad in away (Psyc)[017]</p> <p>But I can tell you there's still loads that I'm still a bit wary of (Psychic).[018]</p> <p>Because all they have ever seen was an iPad screen (Spatial, Psyc).[019]</p>	
Analytic	<p>Even basic things like how to watch your DVD on the system-(An- logicity of instruction)</p> <p>Wanting to do something and not know how to do (A- clarity)</p>		<p>This is something I don't use in my day-to-day life (P-identity, A-awareness). [020]</p> <p>Whereas I'm like "oh no, I don't know what to do" (A-clarity and logicity of instructions)[021]</p> <p>They've had iPads from like 2-3 years old and they just flick through (F-tech, B-age,A-awareness), [022]</p> <p>They transfer from one thing to another really quickly and I'm like... how did you do that? (A- conceptualizing)?[023]</p> <p>For example, like I didn't know you press the little icon in the corner and it gets bigger, so it's my familiarity with these (Anal- awareness). [024]</p> <p>So if I didn't know you can click the little icon in the corner (A- conceptualising).[025]</p> <p>Whereas on that system, there were too many things that could go wrong (Aes- misfit, Psy- fear), [026]</p> <p>A lot of factors that you could eliminate if you didn't use technology (Ana-distinction, F-techn). [027]</p> <p>Then every child has to remember their log in and password and they can't always remember it (Psych-Memory, Ana- clarity), [028]</p> <p>And their own imaginations (Ana- imagination), [029]</p> <p>They don't have to think of anything at all (A- conceptualising).[030]</p> <p>This will eventually hinder their imaginations (Anal).[031]</p> <p>If they come to write a story or been asked to use their own imagination (L- story, A-imagination).[032]</p> <p>It's not like when they come to sit and write a story and think of their own characters their own settings, their own problem (An- conceptualisation, L- story, Aes- write,harmony). [033]</p> <p>They didn't know how to physically turn the page (Anal)[034]</p> <p>Because if its default to American a lot of words will be spelt wrong (Ana), [035]</p> <p>So you still have to know when to spell the word in a right place (Ana, Lin).[036]</p>	
Formative	<p>I don't use those notebooks, I don't know how to use it (F- tech,shaping).</p> <p>It's one that I have never used before (F- shaping).</p> <p>I have never used the interactive smart notebook before because I don't know how to use it (F-</p>		<p>But I don't know how to use it (F- skill). [037]</p> <p>They've had iPads from like 2-3 years old and they just flick through (F-tech, B-age,A-awareness), [038]</p> <p>When you want to do something then it says no connection (F-achievement).[039]</p> <p>And then it will freeze and then all the laptops are frozen (F- tech) [040]</p> <p>It's usually to do with the connections, internet connections that we have problems (Form- tech) [041]</p> <p>Not knowing how to turn a video clip into full screen (F- Technology skills)-[042]</p> <p>The other week the projector broke, so you can't show anything, you can have it on there and not on here (F- tech).[043]</p>	

	<p>shaping).</p> <p>So you will be in the middle of watching a YouTube collection and you get buffer and it stops (F- tech)</p> <p>We do get quite poor connection in the school (F- internet connection),</p> <p>Like, I've got a DVD player at home, but I never watch them on a laptop so I don't know (Form- shaping).</p>		<p>If that system is down throughout the whole school network (F- tech),[044]</p> <p>It makes you lazier because you just go (type and found it) (F- laziness) [045]</p> <p>Or whatever they show on the big screen and that doesn't work or the sound doesn't work (F-shaping). [046]</p> <p>Like we need internet connections (F-tech), [047]</p> <p>A lot of things in the computer they don't have to (F- tech),[048]</p> <p>Maybe eventually nobody will but you don't know what the future is going to bring but at the moment it's really an important skill that they need to have (F-skill, L- expression-believe),[049]</p> <p>You find that as they are coming in (nursery) they are so used to iPads (Form), [050]</p> <p>I know a lot of people text light (Formative)[051]</p> <p>Somebody told me down there, I don't know whether its true or not, they went to read a book, a physical book and they were going like this (swiping) because they are so used to swiping on an iPad (F-skill, Juri- quality). [052]</p> <p>Also you do have spell-check on computers but you have to make sure it's on English not American (f),[053]</p>	
Lingual	<p>There are programs I have never come across before (Lingual- programs)</p> <p>I'm not very good with emails because I don't really email very often so I'm not very good at that (L-emails).</p> <p>I think it hinders you accepting people's opinions because you are used to it just being me. (Eth-self-centeredness, Lin- opinion)</p>		<p>And you think “ oh no, I really need that for my lesson” because you will be following up the lesson on the video that you just watched (L-discourse) [054]</p> <p>For instance writing on that board because I know that the worst thing that can happen to me is the pen will run out and I will just find another one (L-writing, Eco- resources, P-absolute). [055]</p> <p>You are not prepared to listen to people (L-listen, S- interaction), [056]</p> <p>When I used to do my homework in the old days, you had to find a book or go to the library or ask mum and dad (L-book, S- relshp). [057]</p> <p>A lot of kids nowadays probably don't need to, they just go on the computer or laptops and just Google it and they have found it (Aesth- embracing change, L- signage).[058]</p> <p>A lot of the time it goes wrong in the hall when they are doing assemblies when they are trying to show hymns (Q-a lot, L-project hymn) [059]</p> <p>I can see Teachers trying to take the strain off them a bit by saying, hey I have found a clip on that, I will just show you (L-video, Eth-selfishness).[060]</p> <p>They can play a game and it's done (L- games)[061]</p> <p>If they come to write a story or have been asked to use their own imagination (L- story, A-imagination), [062]</p> <p>A lot of these computer games and video games (L-games) [063]</p> <p>It's not like when they come to sit and write a story and think of their own characters their own settings, their own problem (An- conceptualisation, L- story, Aes- write,harmony) . [064]</p> <p>But their writing skills because they have got really poor handwritings (Aes- writing skill, L-write), [065]</p> <p>It's like when do you use a pen (L-symbol). [066]</p> <p>Maybe eventually nobody will but you don't know what the future is going to bring but at the moment it's really an important skill that they need to have (F-skill, L- expression-believe), [067]</p> <p>Because they are so used to ta ta ta (demonstrating: typing, swiping) texts, typing on there (L- typing, P-devoted). [068]</p> <p>I definitely noticed spellings have got a lot worse (Ling). [069]</p> <p>Because you've got words like lightning (as in fog lightning) and something is lightening (becoming lighter), that's two different spellings and it won't correct it because it would recognise it as an actual word (Ling),[070]</p> <p>Sso you still have to know when to spell the word in a right place (Ana, Lin).[071]</p>	
Social	<p>If you get iPads out, they are all just in their own world focusing on these things and there's no social interaction (S-</p>		<p>I think it's definitely like a generational thing (S-structure of generation). [072]</p> <p>This generation, they grew up with it (B- growth,S- generation),[073]</p> <p>We end up watching the whole thing little (S- 'we', J-appropriateness).[074]</p>	

	relationships),		<p>There's no like talk to your friend about this or get other people's perspective on some things (S- relationships), [075]</p> <p>I think it does hinder that social interaction a little bit, definitely.(S- friendship) [076]</p> <p>You are not prepared to listen to people (L-listen, S- interaction), [077]</p> <p>When I used to do my homework in the old days, you had to find a book or go to the library or ask mum and dad (L-book, S- relshp).[078]</p>	
Economic	<p>My lack of skills a lot of the time (E-lack of skill),</p> <p>In the school at the moment we have got a lot of times where a lot of people want the laptops at the same time(Ec-limited resources),</p>		<p>And then you feel the whole lesson is wasted now because we can't get on to what we are supposed to be doing (E- waste, technical limitation). [079]</p> <p>So it's my lack of basic knowledge probably (Eco- lack).[080]</p> <p>For instance writing on that board because I know that the worst thing that can happen to me is the pen will run out and I will just find another one (L- writing, Eco- resources, P-absolute).[081]</p> <p>There are too many things that could go wrong such as technical problems that can throw you out (E- technical limitation).[082]</p> <p>We do have filters in school but they don't work well (E- techn limitation). [083]</p> <p>We get a lot of sound problems because these interactive white boards, for some reason, the sound doesn't work (E- limitation). [084]</p> <p>There is not enough laptops (Eco- limited resources). [085]</p> <p>There's definitely not enough and more and more we find that as the school gets bigger and more Teachers are using computers in their lessons which is good but then you haven't got enough for everybody (Eco- limited resources). [086]</p> <p>We have to sometimes loose the key to the bank where they are all kept so we can't get in there anyway (E-access to bank). [087]</p> <p>Whether we are going to need it or not (E-resources), [088]</p>	
Aesthetic			<p>And then if you've not been able to watch it, then you can't do the next bit so that happens quite a lot in school (Aes- harmony). [089]</p> <p>You know I rely on the old way of doing things because it's less things that can go wrong,(P- rely, Aes-chaotic) [090]</p> <p>A lot of kids nowadays probably don't need to, they just go the computer or laptops and just Google it and they have found it (Aesth- embracing change, L- signage). [091]</p> <p>They can watch something but not hearing it makes it useless, (Aesth-harmony) [092]</p> <p>It's like lots of different things every day (Aes-assuming occurrences).[093]</p> <p>You just play and stop (Aes- fun).[094]</p> <p>Because its hindering writing (Aes- writing),[095]</p> <p>It's not like when they come to sit and write a story and think of their own characters, their own settings, their own problem (An- conceptualisation, L- story, Aes- write, harmony). [096]</p> <p>But their writing skills because they have got really poor handwritings (Aes- writing skill, L-write), [097]</p> <p>As in (c u) and okay and abbreviate words like tmorz instead of tomorrow and you can see it coming through into their writings definitely (Aesth-style of writing).[098]</p> <p>Also a word could be spelt right but you have used it in the wrong context (Aesth, Lin), [099]</p>	
Juridical	Doubling up is definitely (J- appropriateness) things like fire alarms, like your class list sheet		<p>We end up watching the whole thing little (S- 'we', J-appropriateness).[100]</p> <p>So many of the Teachers are familiar with that and they expect you to be familiar with that (Juri).[101]</p> <p>You are doubling up on our work(J- appropriateness).[102]</p> <p>You're doing it on there (pc) and then having it on a piece of paper outside as well, so that's doubling up (J-appropriateness) [103]</p> <p>There's also a lot of dangers I think on the internet like you can Google something and just weird things come up and you don't necessarily want the children to see (Eth-Ethics, J- appropriateness,) [104].</p> <p>There's no limit to how much you can censor and you can't.(E-limit, J-Legal) [105]</p> <p>There's no waiting (Juri). [106]</p> <p>I's all done for you (Juri), [107]</p>	

			<p>Because I'm used to it being put in front of me (J-rights). [108]</p> <p>Because the actual physical books are just going, they are not seeing them anymore (Juri). [109]</p> <p>So you do have to make sure that the computer set are on right default (J). [110]</p> <p>Whereas it's a relatively new thing to me (Jur).[111]</p> <p>Somebody told me down there, I don't know whether true or not, they went to read a book, a physical book and they were going like this (swiping) because they are so used to swiping on an iPad (F-skill, Juri- quality). [112]</p>	
Ethical	I think it hinders you accepting people's opinions because you are used to it's just been me. (Eth-self-centeredness, Lin- opinion)		<p>I just think it's safer and I feel more confident with them (P-believe, Eth-safety).[113]</p> <p>There's also lot of dangers I think on the internet like you can Google something and just weird things come up and you don't necessarily want the children to see (Eth-Ethics, J- appropriateness,) [114].</p> <p>There's no limit to how much you can censor and you can't.(E-limit, J-Legal) [115]</p> <p>I can see Teachers trying to take the strain off them a bit by saying, "hey I have found a clip on that, I will just show you" (L-video, Eth-selfishness).[116]</p> <p>Sometimes it's easier for the Teacher (I know it's more work), to just stand up themselves and tell the class because then you haven't got to rely on the sound system working or not (Pis-commitment, Eth- giving.). [117]</p> <p>Like if they want some things they want it right now (Eth- self-centeredness), [118]</p> <p>Yea, taking turns, they won't have to take turns if they have got their own laptops or iPads (Eth-take turns). [119]</p> <p>Then you can also see a lot of slangs coming through (Eth- writing ethics). [120]</p>	
Pistic			<p>Just because I don't use it in my everyday life (P- commitment) [121]</p> <p>This is something I don't use in my day-to-day life (P-identity, A-awareness). [122]</p> <p>Because I think if I press the wrong button I am going to lose it all (Pis- believe),[123]</p> <p>Think- oh no, I don't want to do that, it might delete and I might not get it (Pis- believe, Psy- emotions), [124]</p> <p>They don't think it's going to disappear (Pis- trust),[125]</p> <p>I have a lot more confidence in teaching in traditional way (P-certainty)[126]</p> <p>For instance writing on that board because I know that the worst thing that can happen to me is the pen will run out and I will just find another one (L- writing, Eco- resources, P-absolute).[127]</p> <p>You know I rely on the old way of doing things because it's less things that can go wrong,(P- rely, Aes-chaotic) [128]</p> <p>I just think it's safer and I feel more confident with them (P-believe, Eth-safety).[129]</p> <p>Sometimes it's easier for the Teacher (I know it's more work), to just stand up themselves and tell the class because then you haven't got to rely on the sound system working or not (Pis-commitment, Eth- giving.). [130]</p> <p>You are relying on a lot of things (Pis- trust), [131]</p> <p>You end up relying on too many things having to work (Pis-trust) [132]</p> <p>They are not prepared to wait (Pis- good morale).[133]</p> <p>They can press the button and it's there (Pis-trust,).[134]</p> <p>Because they are so used to ta ta ta (demonstrating: typing, swiping) texts, typing on there (L- typing, P-devoted). [135]</p> <p>Technology won't have that (Pis) .[136]</p> <p>The more you use them the better you get (Pis),[137]</p> <p>I do think it's a lot to do with the future generation (Pist)[138]</p> <p>Because if you are brought up with an iPad from that age then you will be so good with it (Pis),[139]</p> <p>I still don't trust it completely (Pis). [140]</p> <p>I don't know who's watching (Pis)- [141]</p>	

			<p>I don't entirely trust it (Pis), [142]</p> <p>Maybe never will until I'm proved wrong (pis). [143]</p>	
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V4

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		
Spatial		
Kinematic		
Physical		<p>Actually do they realise that a book is not a screen (Physical, Analy-distinction)- [001]</p> <p>You know when you are reading a book you sort of know where you are up to because you've got the thickness there (Physical),[002]</p>
Biotic		<p>Whereas younger Teachers their first thought is right- what do I do on the white board (Ling, Bio). [003]</p> <p>I don't know about, they are messaging each other and it causes all sorts of problems because they are not old enough (Ling, Eth, Bio) [004]</p> <p>They are too young to understand the risks (Anal,Bio) [005]</p> <p>You hear them saying- didn't sleep (Bio), I was up playing Black Ops (IING),[006]</p> <p>It affects them if they are either tired or they have been up all night playing or have been having nightmares because of what they have watched (Aesth, Psych, Bio) [007]</p>
Psychic/ Sensitive		<p>And start doing that (demonstrates) because they have never seen a book (Psyc, [008]</p> <p>Or something which is a bit sad at three (Psyc, [009]</p> <p>I think she hated somebody because of this and that and the other but if she said it in the playground, it's one person, its dormant, you can deal with it (Psyc, Soc), [010]</p> <p>And they are tired and sometimes they say they have had nightmares because they have watched horror things (Aesth, Psyc). [011]</p> <p>It's a shame I know (Psyc), [012]</p> <p>They are like kept in all the time because the parents think it's not safe out (Juri, eth, Psyc,) [013]</p> <p>Which to be honest it's not very safe around here [014]</p> <p>They are not happy to read a book all the time are they? (Psy, ling) [015]</p> <p>It affects them if they are either tired or they have been up all night playing or have been having nightmares because of what they have watched (Aesth, Psych, Bio) [016]</p>
Analytic	It's just knowing what you are covering so you can talk through the topic really (Anal),	<p>So you have to sort of prepare to have backup (Anal), 'if it cuts out, I will do this'. [017]</p> <p>I would automatically think what other ways (Anal)... [018]</p> <p>Actually do they realise that a book is not a screen (Physical, Analy-distinction)-[019]</p> <p>He previously had a job in IT so does know what he's doing (Analy-)[020]</p> <p>One thing I have noticed and I just think is absolutely ridiculous (Anal) [021]</p> <p>They are too young to understand the risks (Anal,Bio) [022]</p> <p>It's very hard for children to understand why it's dangerous (Pist, Anal)[023]</p> <p>Because you don't want them to know that's the thing going on out there really (aNAL)[024]</p> <p>I think it affects their attention span as well (Anal),[025]</p> <p>And some of them find it quite hard to sort of concentrate for a while (Anal) [026]</p>
Formative		<p>And I think it's the same when you are teaching (Ling) because the white board might not be working properly (form). [027]</p> <p>They are used to a screen, used to an iPad (F) [028]</p>

		<p>But in kindle no idea really whether you are half way through, at the end or... you know what I mean it's different experience really (F, Ling). [029]</p> <p>Some don't and quite a lot of them have something in their bedroom, they might have a tablet in bed with you (Juri, for) – [030]</p>
Lingual	I don't use much post now (Ling)	<p>We had to ring and then someone would come (Ling, social).[031]</p> <p>Because little niggling things that are on the list, so he just goes through the list (Ling).[032]</p> <p>I was in the secretariat, we had to write everything in long hand (Lin).[033]</p> <p>I don't know about, they are messaging each other and it causes all sorts of problems because they are not old enough (Ling, Eth, Bio) [034]</p> <p>But we know at home they are on Facebook and all these other things (Soc, Ling) [035]</p> <p>We had an instance where one little girl had sent a text on all these chats sites (Lin,)[036]</p> <p>We know some of them in the past have put things on You Tube (Ling).[037]</p> <p>On Monday we had a parent saying it and it just becomes a really big issue- (Juri, Ling)[038]</p> <p>But when you are 9-10, you don't really understand do you so they film themselves in their bedrooms and put it on You Tube (Ling)[039]</p> <p>And you don't really want to have to explain to them exactly why it's so dangerous (Eth, Ling) [040]</p> <p>You hear them saying- "I didn't sleep (Bio), I was up playing Black Ops (IING), [041]</p> <p>Because if you talk to Salford council they say they don't put children in flats (Juri, ling)[042]</p> <p>They are not happy to read a book all the time are they? (Psy, ling)[043]</p> <p>They communicate with each other a lot more on screen outside school (Soc, Ling) [044]</p> <p>So they might have been texting each other, or on a game where you can talk to somebody through a game (Aesth, Ling). [045]</p>
Social		<p>You know because they sit at home watching a screen (Social, Aesth), [046]</p> <p>We had to ring and then someone would come (Ling, social).[047]</p> <p>Getting people to maintain equipment is probably the hardest (Soc) [048]</p> <p>We are trying to get somebody else (Soc)- [049]</p> <p>It's quite a big job keeping on top of all the IT and managing it really (soc). [050]</p> <p>But we know at home they are on Facebook and all these other things (Soc, Ling)[051]</p> <p>I think she hated somebody because of this and that and the other but if she said it in the playground, it's one person, its dormant, you can deal with it (Psys, Soc).[052]</p> <p>But the parents can't stop them from doing it (Juri, Social)[053]</p> <p>So that obviously doesn't help the next day in school (Soc) [054]</p> <p>Some families keep close range on what the children are doing (Soc, Juri), [055]</p> <p>And their parents have no idea about what they are doing or what they are on (Eth, Soc).[056]</p> <p>They communicate with each other a lot more on screen outside school (Soc, Ling) [057]</p> <p>They have sort of been in touch over the weekend not face-to-face (Soc), [058]</p> <p>On a whole, I would say probably negative, as far as children are concerned. That might be me being old fashioned.(Pis, Soc) [059]</p> <p>They are not easy to handle in the class, they are certainly not, as good as they could be. (Eth, Soc Juri,) [060]</p>
Economic		<p>Wwe are having trouble at the moment because our projector needs attention in the hall (Eco- technical limitations), [061] it cuts out after about 20 minutes (Eco.), [062]</p> <p>Although I got all the training (Ling), I didn't use it regularly enough to feel absolutely confident with the white board (Eco, Pist),[063]</p> <p>We have been waiting for the company to come now for about two months (Eco- resources)-[064]</p>

		<p>Wwe have got two projectors which don't work (Eco) [065]</p> <p>They have quoted for new ones (Eco- budget), [066]</p> <p>But it's time, it's always the problem isn't it (Eco).[067]</p> <p>But wasted lots of time (Eco) [068]</p> <p>And the ones that stay inside they are a lot of the time watching telly or on a computer or that sort of thing (Aesth, Eco).[069]</p>
Aesthetic	rather than watch a film (Aesth).	<p>You know because they sit at home watching the screen (Social, Aesth),[070]</p> <p>So little niggling things you didn't bother with (Aesth),[071]</p> <p>But whereas once its sort of out there and they are forwarding it to each other (Eth, Aesth)[072]</p> <p>So it's quite hard (Aesth). [073]</p> <p>And they are tired and sometimes they say they have had nightmares because they have watched horror things (Aesth, Psysc). [074]</p> <p>Ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth), [075]</p> <p>And the ones that stay inside they are a lot of the time watching telly or on a computer or that sort of thing (Aesth, Eco).[076]</p> <p>So they might have been texting each other, or on a game where you can talk to somebody through a game (Aesth, Ling).[077]</p> <p>It affects them if they are either tired or they have been up all night playing or been having nightmares because of what they have watched (Aesth, Psych, Bio) [078]</p> <p>They are used to everything beeing fast and exciting (Pis, Aesth) [079]</p>
Juridical	unless it's for something like contract where you need a signature (Juri)-	<p>So Mr X is the IT coordinator, he gets lumbered with all these (Juri, Ethi),[080]</p> <p>So if you then show them a book on a screen, you are not actually modelling reading are you in a right way we really think of reading (Juri, Ethic). [081]</p> <p>Isn't it, so rather than teaching them IT, we are teaching them to use books (Eth, Juri), [082]</p> <p>Instead of going round in a circle (Juri). [083]</p> <p>Then now and again we experience cut-outs and when the internet cuts out, we have no phone because it's all connected (J, eth)[084]</p> <p>Yyou know, we just want them to come and replace them (Jur-due), [085]</p> <p>They think they are being grown up when they go on these sites and they don't understand why they are not really allowed, why they need to be 13 (Pis, Juri),[086]</p> <p>On Monday we had a parent saying it and it just becomes a really big issue- (Juri, Ling)[087]</p> <p>Children say all the time anyway (they fall out) the next day they are best friends again but once` it's sort of out there, it's there forever isn't it, you can't get it back again (Pis, Juri)[088]</p> <p>But the parents can't stop them from doing it (Juri, Social)[089]</p> <p>But you don't really want to go into detail (Eth, Juri),[090]</p> <p>The boys particularly usually play on 18 games, you know very violent games (Black Ops, all sort of...) (Eth, Juri).[091]</p> <p>Some families keep close range on what the children are doing (Soc, Juri),[092]</p> <p>Some don't and quite a lot of them have something in their bedroom, they might have a tablet in bed with you (Juri, for) –[093]</p> <p>They are like kept in all the time because the parents think it's not safe out (Juri, eth, Psysc,) [094]</p> <p>which to be honest it's not very safe around here [095]</p> <p>Ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth), [096]</p> <p>What you want is an happy medium isn't it (Juri).[097]</p> <p>Because if you talk to Salford council they say they don't put children in flats (Juri, ling) [098]</p> <p>They are not easy to handle in the class, they are certainly not as good as they could be. (Eth, Soc Juri,)[099]</p>
Ethical		<p>There are some songs that can do without the words, so we have to revert with the ones they know without the words up on screen (Ethi, Spatial). [100]</p>

		<p>Obviously, there's nobody in a small primary school whose job it is permanently to be doing that (ETH),[101]</p> <p>So Mr X is the IT coordinator, he gets lumbered with all these (Juri, Eth), [102]</p> <p>But actually he's a full time Teacher as well (Eth),[103]</p> <p>So if you then show them a book on a screen, you are not actually modelling reading are you in a right way we really think of reading? (Juri, Ethic). [104]</p> <p>Isn't it. So rather than teaching them IT, we are teaching them to use books (Eth, Juri), [105]</p> <p>Then now and again we experience cut-outs and when the internet cuts out, we have no phone because it's all connected (J, eth)[106]</p> <p>But you couldn't say it out at first because it was putting the typist out of work (Eth)[107]</p> <p>That did actually come in quite quickly, the typists were put out of work (ETH) [108]</p> <p>and everybody began to do their own typing.</p> <p>Downside in the school I suppose is the children going on things that they shouldn't (Eth) [109]</p> <p>I don't know about, they are messaging each other and it causes all sorts of problems because they are not old enough (Ling, Eth, Bio) [110]</p> <p>But whereas once it's sort of out there and they are forwarding it to each other (Eth, Aesth)[111]</p> <p>...it can be very dangerous which everybody knows don't they? (Pist, Eth)[112]</p> <p>And you don't really want to have to explain to them exactly why it's so dangerous (Eth, Ling) [113]</p> <p>But you don't really want to go into detail (Eth, Juri),[114]</p> <p>The boys particularly usually play on 18 games, you know very, violent games (Black Ops, all sorts of...) (Eth, Juri).[115]</p> <p>And their parents have no idea about what they are doing or what they are on (Eth, Soc).[116]</p> <p>We find the children around here tend to be one extreme or the other (Eth, pis),[117]</p> <p>They are like kept in all the time because the parents think it's not safe out (Juri, eth, Psyc.) [118] which to be honest it's not very safe around here.</p> <p>Or they just want them off out of the house, which neither is great (eTH)[119]</p> <p>Ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth), [120]</p> <p>But they do. So I do think it has changed childhood, I don't know it's difficult (Eth, Pis)[121]</p> <p>They are not easy to handle in the class, they are certainly not as good as it could be. (Eth, Soc Juri,)[122]</p>
Pistic	IT is not always reliable (Pis) is t?	<p>I think it needs to get clean (Pis),[123]</p> <p>But again it's high up, so it's when things like that happen you realise you've come to depend on it (Pist) [124]</p> <p>It does make your life simple in some ways (Pist), [125] but over complicates it in others (Pist),[126]</p> <p>Doesn't it you have to have plan A and plan B when technology is involved (Pist, For). [127]</p> <p>Although I got all the training (Ling), I didn't use it regularly enough to feel absolutely confident with the white board (Eco, Pist),[128]</p> <p>I can use one, if I do teach, my instinct is not to use it (Pist), [129]</p> <p>He said he feels he does rely too much on his whiteboard (Pistic)[130]</p> <p>He feels he's become a bit dependant on it (Pist). [131]</p> <p>We've said yes (Pist-commitment)- [132]</p> <p>It's hard work getting them to come (Pis- comitmnt).[133]</p> <p>So just being over reliant on it really can be a problem (Pist).[134]</p> <p>They think they are being grown up when they go on these sites and they don't understand why they are not really allowed, why they need to be 13 (Pis, Juri,)[135]</p> <p>Children say all the time anyway (they fall out) the next day they are best friends again but once' it's sort of out there, it's there forever isn't it, you can't get it back again (Pis, Juri)[136]</p>

		<p>...it can be very dangerous which everybody knows, don't they? (Pist, Eth)[137]</p> <p>It's very hard for children to understand why it's dangerous (Pist, Anal)[138]</p> <p>We find the children around here tend to be one extreme or the other (Eth, pis),[139]</p> <p>But they do. So I do think it has changed childhood, I don't know it's difficult (Eth, Pis)[140]</p> <p>On a whole, I would say probably negative, as far as children are concerned. That might be me being old fashioned.(Pis, Soc) [141]</p> <p>They are used to everything being fast and exciting (Pis, Aesth)[142]</p>
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V5

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		
Spatial		
Kinematic	Because it is this little .formative motive....motive skills and unless they can do this (demonstrates) and move the whole arm, they are not going to learn how to write properly (Kine).	Unless children go out and have that experience shopping element (Kine- go out, Psyc- experience),[001]
Physical		So they can operate a play station remote but they can't hold a pencil (Form- operate; Phys- hold a pencil). [002]
Biotic	You watch them come through the door, at age 3, and they don't know how to play (Biotic- age 3; Aesth- how to play).	
Psychic/ Sensitive	A lot of them come in and they don't recognise farm animals (Psyc- recognition), This is why computers, phones and things are so annoying (Psyc), They don't recognise things like that because they don't have that experience (Psyc- recognition; Soc- life experience).	<p>And it's because they spend a lot of time watching telly (Eco- time; Psy- watching telly) [003]</p> <p>We did a story and we read it in a book and we had 33 of them on the carpet screaming all day(Ling- story, read, book; Psy- screaming).[004]</p> <p>A lot of them are so used to just being plugged to the front of the telly (Psyc- front of telly)[005]</p> <p>It's frightening, the amount of them that can only operate technology at the age of three (Psyc- frightening) , [006]</p> <p>They don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me (Soc- to talk to anybody; Ling- communicating online; Psyc- scares me).[007]</p> <p>Then at no point do they get that sense of risk or that taking part (Psyc- sense of risk; Soc- taking part). [008]</p> <p>The child has not learnt anything from that experience (Anal- learnt; Psych- experience) [009]</p> <p>Unless children go out and have that experience shopping element (Kine- go out, Psyc- experience), [010]</p> <p>They do not have that life experience which is why when they get to now doing college work and things they are now doing (which sounds bizarre) life experience classes because they don't know how to do it anymore because everything is done for them (Psyc- life experience;).[011]</p> <p>They can't take it in (Psyc- take it in). [012]</p>
Analytic	An amount of them can operate an iPad, holding a dummy in one hand and still wearing a nappy but have got no concept of pencils and things (Anal- concept of pencil). And it's like anything, you learn better through actually physically doing it (Anal; phys). I think the problem is until you have taught nursery coming in at that entry level, you don't realise the impact (Anal).	<p>And they spend so much time focusing on the TV (Eco- spending time; Anal- focus), [013]</p> <p>When you make them sit down to read a story book they are not as engaged because that bright flashing screen isn't coming (Anal- engaged; Aesth- bright flashing screen) [014]</p> <p>You didn't have the screen and you had to completely rethink how you did things (Form- screen, computers; Anal- rethink, conceptualise). [015]</p> <p>You as a Teacher become stale, you are not coming up with anything new, you are not coming up with anything different and you've relied on stuff before (Anal) [016]</p> <p>The child has not learnt anything from that experience (Anal- learnt; Psych- experience) [017]</p>

		<p>That whole research purpose we had or I had when I was in school is gone because Google does it for you (Anal- research; Ling- Google; Form- does it for you- achievement). [018]</p> <p>That research skill of skimming and scanning element it's got (Anal- research), [019]</p> <p>It's amazing because we focus so much on what we call primary learning which is their communication (Anal- focus; Ling- communication), [020]</p> <p>It doesn't matter what you are teaching them (Anal- teach), [021]</p> <p>It doesn't matter if you are reading maths, IT or whatever, if they've not got the basics they can't do anything else (Anal- basics),[022]</p>
Formative	<p>The amount of homes that do not have picture books or colouring things and pencils because they have got an iPad or tablets (Ling- picture book; form- iPads)</p> <p>They don't take risks and they don't do all the things we did as kids because they can do that by sitting down with a nice remote control that can do it for them (Form- technology).</p> <p>Unfortunately it hinders growth motive skills in children (Form).</p>	<p>It's only when you've not had it that you find other creative ways to doing things (Form- creativity). [023]</p> <p>So they can operate a play station remote but they can't hold a pencil (Form- operate; Phys- hold a pencil). [024]</p> <p>If they spend their whole life engaged in ICT and computers (Eco- spend whole life; Soc- enagaged; Form- ICT, computers) [025]</p> <p>You didn't have the screen and you had to completely rethink how you did things (Form- screen, computers; Anal- rethink, conceptualise).[026]</p> <p>When Ofsted was in the building for that computer not to be working (Juri- OFSTEAD-Authority body; Form- computer not working) [027]</p> <p>The day Ofsted were coming our internet was down (Juri- OFSTEAD-Authority body; Form- internet not working) [028]</p> <p>And I had this whole lesson that relied on that smart board and the internet wasn't working (Pist- relied; Form- internet not working). [029]</p> <p>That whole research purpose we had, or I had when I was in school, is gone because Google does it for you (Anal- research; Ling- Google; Form- does it for you- achievement). [030]</p> <p>They won't be used to doing anything for themselves because everything would be done for them and it soundsbizarre (Form- laziness) [031]</p> <p>There was no Wi-Fi (forma), [032]</p>
Lingual	<p>The amount of homes that do not have picture books or colouring things and pencils because they have got an iPad or tablets (Ling- picture book; form- iPads)</p> <p>A lot of them can't speak (Ling- can't speak)</p> <p>Everything they are used to seeing has been on the screen (Ling- programs)</p> <p>There's so much information out there about growth most skills and computers (Ling)</p>	<p>We find in Early Years the draw back has been a lot of our children coming at three with speech and language delay (Ling- speech and language delay) [033]</p> <p>So that speech isn't there because they are not used to interacting (Ling- speech; Soc- interacting) [034]</p> <p>We did a story and we read it in a book and we had 33 of them on the carpet screaming all day(Ling- story, read, book; Psy- screaming), [035]</p> <p>They don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me (Soc- to talk to anybody; Ling- communicating online; Psyc- scares me). [036]</p> <p>They are sat there and they are playing the game (Soc- playing the game; Ling- game), [037]</p> <p>And I think Teachers today are so used to having their best friend Google where they can type in what they want and it all comes up (Ling- Google website). [038]</p> <p>That whole research purpose we had, or I had, when I was in school is gone because Google does it for you (Anal- research; Ling- Google; Form- does it for you- achievement). [039]</p> <p>Kids today do not know how they are....really, but it also affects things to do with their spelling (Ling- spelling). [040]</p> <p>They are not used to writing out proper words (Ling- writing; Juri- proper words) [041]</p> <p>In school the whole communication thing just gets slimmed down because of ICT (Soc- interaction, school; Ling- communication). [042]</p> <p>It's amazing because we focus so much on what we call primary learning which is their communication (Anal- focus; Ling- communication), [043]</p> <p>And they come in very low with poor speech, poor physical, poor locomotive skills, not toilet trained all those kind of things (Ling- low speech; Juri- below expectation). [044]</p> <p>So getting them to sit on the carpet and to listen to a story from a book is so important than sat down in front of Peppa Pig (Aesth- sit to listen; Ling- book) [045]</p>

Social	A lot of them can't share (Soc- can't share), They don't even have that conversation with the professional (Soc- don't have conversation), Our kids nowadays their life experience is through computers (Soc). They don't go out and actually play (Soc). They don't recognise things like that because they don't have that experience (Psysc- recognition; Soc- life experience).	So that speech isn't there because they are not used to interacting (Ling- speech; Soc- interacting) [046] As soon as we put the same story on the TV, they didn't move ...and that's because they are so used to that non-engagement (Soc- non-engagement), [047] And again it's back to that non-engagement (Soc- non-engagement) [048] They are sat there and they are playing the game (Soc- playing the game; Ling- game), [049] They don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me (Soc- to talk to anybody; Ling- communicating online; Psysc- scares me). [050] If they spend their whole life engaged in ICT and computers (Eco- spend whole life; Soc- engaged; Form- ICT, computers) [051] Then at no point do they get that sense of risk or that taking part (Psysc- sense of risk; Soc- taking part). [052] In school the whole communication thing just gets slimmed down because of ICT (Soc- interaction, school; Ling- communication). [053] They've not got that life experience (Social- societal influence), [054]
Economic		And it's because they spend a lot of time watching telly (Eco- time; Psy- watching telly) [055] And they spend so much time focusing on the TV (Eco- spending time; Anal- focus), [056] If they spend their whole life engaged in ICT and computers (Eco- spend whole life; Soc- engaged; Form- ICT, computers) [057]
Aesthetic	You watch them come through the door at three and they don't know how to play (Biotic- age three; Aesth- how to play), they don't go out on bike rides (Aesth- sport),	Because they are so used to being put in front of the TV (Aesth- fun) [058] When you make them sit down to read a story book they are not as engaged because that bright flashing screen isn't coming (Anal- engaged; Aesth- bright flashing screen) [059] And they don't get to go outdoors, they don't get to do messy play and everything else (Aesth- outdoor, play, fun), [060] So getting them to sit on the carpet and to listen to a story from a book is so important than sat down in front of Peppa Pig (Aesth- sit to listen; Ling- book) [061] But if a child is used to being plugged in front of TV, they are going to be used to sitting in front of the screen all that kind of thing (Aesth). [062]
Juridical		And we've got children who are playing games like Call of Duty, Black Ops for 18 year olds at the age of 3 (Juri- inappropriateness) [063]. When Ofsted was in the building for that computer not to be working (Juri- OFSTEAD-Authority body; Form- computer not working) [064] The day Ofsted were coming our internet was down (Juri- OFSTEAD-Authority body; Form- internet not working) [065] They are not used to writing out proper words (Ling- writing; Juri- proper words) [066] And they come in very low with poor speech, poor physical, poor locomotive skills, not toilet trained all those kind of things (Ling- low speech; Juri- below expectation). [067] So when they do get older, they are going to be constantly on a catch up (Juridical-on a catch up, emancipation). [068]
Ethical		
Pistic		Some people get over-reliant on it (Pistic- reliant), [069] And I had this whole lesson relied on that smart board and the internet wasn't working (Pist- relied; Form- internet not working). [070] People have just become too reliant on it (Pistic) [071]

Aspects	Answers	Reason	EIV	Reasons
Quantitative				
Spatial				
Kinematic			Trying to login [001] ...There's a full room of children playing on the computers rather than playing outside it's like, "no you should be outside, kicking a football or running around or... you shouldn't be sat at a computer". [002]	Movement of fingers to press keys Playing and movement
Physical			Recognising the keyboard [003]	Fingers on keyboard
Biotic			...I don't think I would enjoy growing up now with all the computers. [004] ... use their brain properly [005]	Growing up of life functions
Psychic			... you don't get child friendly ones [006] ... it's just the Teachers who are left behind. [007] ...if you just use a computer, you are not going to use the library, you will just forget about books and I think that would be terrible, [008] ...if children didn't have that joy of getting a book, going and sitting. [009] I ... but I still like to hold a real book. [010] ... it would be a pain if I had done everything and got tired and want to throw the laptop out of the window, [011] ... some Teachers worried that their computer isn't on [012] ... I believe some people have that fear [013] ...the fear is you become so reliant on computers that you forget how to do stuff, [014] ...there might be that fear of I should be teaching them how to use, especially being a new curriculum as well... [015]	How Teachers feel The negative emotion portrayed The joy and fun derived from the process The pleasure derived from holding a real book Emotion, feeling i.e. Pain is a negative emotion Emotion - worry is a state of mind which is a negative emotion Emotion - the fear computers command Emotions, feeling Emotion
Analytic	I wouldn't say I am an expert with computers but I know what I am doing	Clarity and logicity of instructions, of goals, of vision "... but I know what I am doing..."	A lot of my teaching in getting the children that initial grab of their attention, is always done on the computer [016] if you don't learn all the skills [017] Learn how to use a pen properly [018] ...if you are using a computer all the time, you are not going to bother learning how to do simple mathematics arithmetic because the computer would do it for you all the time. The same with everything else. [019] ...I think there's more important things to teach them than teaching them how to program a computer. Picking up programming. [020] ... I think it's more important to teach children to read properly [021] ...but I think young children need to be able to use the computer in their head first [022]	Clarity and logicity, getting the attention. Clarity To learn needs clarity and conceptualisation Hinders learning (proper learning) Clarity on what children should learn Knowing what's most important conceptualising
Formative	A lot of my resources I do Get the children sat at a computer and they could do their work You know it will be easier if all the children had a computer in front of them Done so much trainings with computers ... I see it as a tool and it helps me do what I want. on the computer if I was designing a portal which I don't really think it's a skill they need to	What she does with her resources. Technology Its ease of use is the core interest Trainings Achieving Designing, technology	You have planned the whole lesson , [023] ... I think you will lose that little thing I think the children need that kind of, uhm, being able to, how to use pencil and paper or being able to play around. [024] ... computers make it too sterile [025] ...really think they get lazy if they go on the computers too much. [026] ...if you don't learn all the skills [027] ...it's a tool just to help you move along... [028] ... they are not using it because of OFSTEAD [029] ... they think they should be using it all the time [030] ... can start thinking of using a computer [031]	The issue bores down to the plan of the whole lesson on technology -planning, shaping The process of learning how to use pencil and paper Creating Laziness Skills Technology as a tool To shape, achieve when you make use of something, shaping Technology

	learn,	forming, skill	<p>...teach them common sense and then show them how to use a computer. [032]</p> <p>...train them but know how to use your brain first, know how to write, add up and have a little bit of common sense which if they rely on the computer too much, they are not going to have it. [033]</p> <p>Instead of having the computer running?' [034]</p>	Shaping
Lingual	<p>...I like using pencil in drawing, but I can write it all out</p> <p>I can get all these pictures</p>	<p>Symbolic signification</p> <p>Pictures</p>	<p>...so it's having that understanding and knowing how to look after the equipment. [035]</p> <p>Communication [036]</p> <p>... for your handwriting, [040]</p> <p>... you had to read a book to find a piece of information [041]</p> <p>...hold a real book [042]</p> <p>I ... 'like that little man there' I just drew it [043]</p> <p>... because the computers are this big [044]</p> <p>I stuck pictures all over the smart board [045]</p> <p>... write with a pen and get their letters shaped properly, [046]</p>	<p>Understanding and knowing is a concern in this context</p> <p>Communication</p> <p>Symbolic, signification symbolic</p> <p>Of symbolic signification (Holding a book)</p> <p>Symbolic signification</p> <p>Trademark- the command computers command</p> <p>Pictures</p> <p>Symbolic significance</p>
Social			<p>I think you would lose something if you did do that - communication [047]</p> <p>... I think you will lose that little thing I think the children need that kind of - uhm, being able to - how to use a pencil and paper or being able to play around. [048]</p> <p>...You need to be able to actually go outside and play, run around rather than sit in front of a computer [049]</p>	<p>Social interaction, relationships</p> <p>The interaction and relationship built when they play around</p>
Economic	... if I am spending all the time teaching them how to turn the iPad on	frugality	<p>Unless you pay a lot [050]</p> <p>... because I didn't have time to look for the shape [051]</p> <p>... you don't sit in front of a computer all day long. I think that idea of timing itself [052]</p>	<p>Lack of resources, budgets</p> <p>Frugality</p> <p>Frugality of resources</p> <p>Managing your time</p>
Aesthetic			<p>But that is quite a laborious activity [053]</p> <p>... I think you will lose that little thing I think the children need that kind of - uhm, being able to - how to use a pencil and paper or being able to play around. [054]</p> <p>...if children didn't have that joy of getting a book, going and sitting. [055]</p> <p>... I am bored, so I just drew it and I photocopied it. [056]</p>	<p>This process is not fun but strenuous and backbreaking</p> <p>The fun derived from playing</p> <p>The joy and fun derived from the process</p> <p>Fun, boredom</p>
Juridical			<p>Then you are not going to use a computer properly [057]</p> <p>How to use a pen properly [058]</p> <p>... they are not using it because of OFSTEAD [059]</p> <p>...subconsciously, I might go oh, I need to have this on my computer because someone is coming in to watch. [060]</p> <p>...if a computer can do all of adding up all of its own, so why teach the children to add up, what's the point - a computer can do it, so I don't need to teach them anymore, so no don't think that's a good idea. [061]</p> <p>...subconsciously, I might go 'oh, I need to have this on my computer because someone is coming in to watch'. [062]</p> <p>...when someone came in to watch and they saw that I stuck pictures all over the smart board, which I have done now they would go 'why have you got pictures on your smart board?' Instead of having the computer running?' [063]</p>	<p>Justice</p> <p>Not just learning how to use a pen, but learning its use properly</p> <p>As board of authority</p> <p>Due</p>
Ethical			<p>They don't always do what you want [064]</p> <p>...it would be an inconvenient [070]</p> <p>...I don't think it's a priority to teach a child to use a computer just because another country is doing it and they are ahead in their computing, [065]</p>	<p>Not giving what's due , responsibilities</p> <p>Self-giving - the unwanted extra effort (inconvenient)</p> <p>Competition</p>

			...if a computer can do all of adding up all of its own, so why teach the children to add up, what's the point- a computer can do it, so I don't need to teach them anymore, so no don't think that's a good idea. [066]	Sacrifice
Pistic			... computers make it too sterile [067] ...I think some people become too reliant on computers [068] ...if we are all relying on the computer [069]	he process helps no creativity. When you rely on computer you give it your trust trust

V7

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Quantitative				
Spatial				
Kinematic			... and slow as well and if you want the speed of a lesson to go at a certain pace, [001]	flow in movement
Physical			... there's often issues with them just being charged properly, [002] ... so they haven't been charged or something has gone wrong with them, [003] whereas with a book, you can control it a bit more, [004] a book that's suitable and one that you know you can find answers, [005]	physical knowing, electric charge book a physical book
Biotic				
Psychic	There are certain things you've discern happening	instinct, recognition of a pattern	...obviously the age of technology makes a difference to them as well, [006] ... we have to use older laptops which don't work as well and that can be a bit frustrating [007] Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. [008] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [009] it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. [010] ...so that's the biggest stress when things go wrong like that [011] ... you've always got to be aware that things might go wrong, [012] ... obviously you get annoyed and frustrated but that doesn't help, [0113] and I think it is quite frustrating more than anything [014] where you see things very good	feelings, emotions: It affects their mentality and feelings emotions: negative emotions disappointment frustration, negative emotions feeling emotions negative emotions negative emotions
Analytic	I used an alternative, I just did something else. when you've planned round the iPads it sort of influence how you are going to think or the decisions that you make. They obviously give us quite a lot of excuse,	clear thinking	... and slow as well and if you want the speed of a lesson to go at a certain pace, [015] got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [016] had a clear idea of what I was going to do with the children. [017] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [018] it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything. [019] ... but it wasn't the same learning objective and didn't meet the expectations, [020] ... but it wasn't what I wanted to do, it was an alternative really [021] a book that's suitable and one that you know you can find answers, [022] It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school. [023] so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to [024] we have told them all the so many things we want to do, [025]	logicality of goals, clarity distinction, clarity- thinking up another option distinction, clarity on what to do suitability and answers requires clarity and distinction clarity to prioritize conceptualisation clarity
Formative	Sometimes things don't work it's a lot of issues connecting to the internet ... it won't connect to the internet. I used an alternative, I just did something else.	shaping, achievement technology technology planning	...obviously the age of technology makes a difference to them as well, [026] ... we have to use older laptops which don't work as well and that can be a bit frustrating [027] ... sometimes you waste time a lot around something to work [028] ... technology can fail from time to time [029] ... it doesn't work as you want it to do, [030] ... I spent a long time planning what we are going to do, [031] got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [032] Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. [033] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [034]	technology is what makes the difference shaping, technology: making use (shaping). laptops (technology) shaping, achievement, technology technology, achievement shaping, achievement, planning

	<p>when you've planned round the iPads it sort of influence how you are going to think or the decisions that you make.</p> <p>We obviously don't have an ICT Suite, only the trolley which is good, so you can use it in the classroom,</p> <p>where you are sat at a traditional desktop, just having that range.</p>	<p>formative</p> <p>formative</p>	<p>It doesn't work when you want it to work, that's the biggest issue really [035]</p> <p>... I think that's just the way the technology is, [036]</p> <p>... either children or members of staff haven't put them back correctly, [037]</p> <p>... where you have got to adapt your lesson and people just share things. [038]</p> <p>... having an awareness that something could go wrong [039]</p> <p>you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information. [040]</p> <p>the problem of connecting to the Wifi connection because sometimes you can't access it, [041]</p> <p>we have had a few technical issues on the ware, [042]</p> <p>were certain things have been lost so for that reason obviously affect our ability to use them as well as we would like [043]</p> <p>...we have all been trained but because of tech issues it hasn't worked as it should. [044]</p> <p>so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to [045]</p> <p>... But it isn't just down to not wanting to use it, but so many issues have gotten into the way [046]</p> <p>So again if you planned using them in your class, [047]</p> <p>the rope to the back has been disconnected [048]</p> <p>and nobody has been given the chance to go to the back of it and reconnect it. [049]</p> <p>Too often the machines are updating and a couple of hours still on updates, you can't get on. [050]</p> <p>Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection. [051]</p> <p>It's an issue with the wireless connection not working as it should, [052]</p> <p>but it just doesn't work. [053]</p> <p>some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on. [054]</p> <p>we have told them all the so many things we want to do, [055]</p> <p>It just hasn't quite worked as it should, [056]</p> <p>So in an ideal world different technology, go out and try different things you could use. [057]</p> <p>I am an ICT coordinator, so I have been on trainings [058]</p>	<p>shaping, achievement</p> <p>shaping- to make it work or not</p> <p>technology</p> <p>shaping</p> <p>creativity, achievement</p> <p>knowing something, knowledgeable</p> <p>making use of the internet is shaping and technology</p> <p>technology</p> <p>training</p> <p>shaping</p> <p>planning, shaping</p> <p>technology</p> <p>technology- reconnection</p> <p>can't achieve</p>
Lingual	1.		<p>... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site, [059]</p> <p>but children have to be aware of what's appropriate what's the best information, [060]</p> <p>because sometimes you can end up on the wrong website or wrong information [061]</p> <p>whereas with a book, you can control it a bit more, [062]</p> <p>a book that's suitable and one that you know you can find answers, [063]</p> <p>Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection. [064]</p>	<p>web site</p> <p>information</p> <p>website, information</p> <p>documentation</p>
Social			<p>... children have to share if there's not quite enough to go round. [065]</p> <p>... so you have to work together which not everyone can do successfully [066]</p> <p>... where you have got to adapt your lesson and people just share things. [067]</p>	<p>social interaction, relationship, team building</p> <p>team building</p> <p>social interaction, sharing</p>
Economic	<p>we have spent quite a lot of money</p> <p>I think it's probably down to money and budget. In an ideal world you have more money, more laptops, more desktops.</p>	frugality, budget	<p>... sometimes you waste time a lot around something to work [068]</p> <p>... I spent a long time planning what we are going to do, [069]</p> <p>got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [070]</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [071]</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [072]</p> <p>... when you might not have enough of what you need, [073]</p> <p>It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school. [074]</p> <p>for whatever reason from time to time they get wiped, they have reset themselves. [075]</p> <p>you get the iPads out and children can't access what you want them to access on it. [076]</p> <p>Too often the machines are updating and a couple of hours still on updates, you can't get on. [077]</p> <p>and again, the school has spent a lot of money, [078]</p> <p>it's very limited to the amount of computers you can put on at one time. [079]</p> <p>obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school [080]</p> <p>and when you come back to school we really can't afford to do that as much as we'd love to. [081]</p> <p>so you don't get value for money that way. [082]</p> <p>... sometimes you find that some sites are blocked when you want to go on them. [083]</p> <p>sometimes problems where some of the apps sometimes get wiped off. [084]</p>	<p>Frugality</p> <p>frugality of resources</p> <p>scarcity, frugality</p> <p>money, budget</p> <p>Non availability of resources</p>
Aesthetic	but sometimes it's nice to go into a room and use it.		<p>... and slow as well and if you want the speed of a lesson to go at a certain pace, [085]</p> <p>... so you have to work together which not everyone can do successfully [086]</p>	<p>harmony of organisation</p> <p>harmony, fun</p>
Juridical	and at the end of the day, they haven't delivered what they said they would.		<p>... but it wasn't the same learning objective and didn't meet the expectations, [087]</p> <p>...you've got to accept that it's not always going to work perfectly or things are going to go wrong. [088]</p> <p>you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information. [089]</p> <p>and nobody has been given the chance to go to the back of it and reconnect it. [090]</p>	<p>not giving what is due</p> <p>not giving what is due</p> <p>what do you measure right or wrong by, when you get what is due</p> <p>authority</p>

			It's an issue with the wireless connection not working as it should. [091] sometimes they can be good but not get used. [092]	
Ethical			... children have to share if there's not quite enough to go round. [093] ... that can sort of hold you back [094] ... but there wasn't a reason why it would be blocked because it wasn't an inappropriate web site [095]	self-giving, care, generosity self-giving appropriate
Pistic	1.		... you've got to accept that it's not always going to work perfectly or things are going to go wrong. [096] ... you've always got to be aware that things might go wrong. [097] ... having an awareness that something could go wrong [098] so they promised we will be able to do them.	prejudice- opinion formed beforehand prejudice prejudice commitment

V8

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Quantitative			you can't monitor 30 children at the same time and they are often in tangent, [001]	of discrete amount
Spatial			you can't monitor 30 children at the same time and they are often in tangent, [002]	of continuous extension
Kinematic	it just affects the pace of the lesson	speed of movement	it becomes slower as the day goes on. [003]	flowing movement
Physical	technology that's perhaps 3-4 years old or older.	physical knowing the persistent change	and then also preparations beforehand to make sure that everything is charged. [004] or one computer/laptop that's not charged to the right [005] there have been issues with either laptops running down or, [006]	chemical reaction as in charged chemical reaction chemical reactions
Biotic				
Psychic			you can't monitor 30 children at the same time and they are often in tangent, [007] and failure of ICT in your lesson can be a ...pain [008] it becomes slower as the day goes on. [009]	aspect of sense negative emotions feeling
Analytic	a matter of bringing the children's attention back in		but really, it's the log in procedure that has been an issue. [010] because sometimes we are entertained as opposed to be actively involved in the learning. [011] you can have one password forgotten [012] also, it's sometimes difficult when you have asked the children to search for particular thing, [013] they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [014] it's actually not about finding what we need, it's about getting rid of the stuff we don't need to find the most relevant. [015] an idea in your head of what am I going to do if this goes wrong.[016] their concentrations are broken [017]	sets of instructions to follow, clarity conceptualisation non clarity clarity clarity and logicity of instructions clarity, conceptualising
Formative			we've got new technology which is not as simple to use as the older technology was. [018] I am quite confident using ICT anyway. [019] that doesn't necessarily mean that they will achieve more or learn more [020] but when I try to play back from the apple software, it doesn't allow me to play back at the moment. [021] it's often difficult to manage the computer system if the children are using the laptops [022] ... so they can mess up the whole queue of your lesson, as oppose to pen and paper, then at the end of the day you can't go flat in the middle of the lesson or if you use it for an extended period, it doesn't need recharging at the end of the day. [023] they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [024] if you rely entirely on ICT and if they don't work, you have to have a backup. [025] I know the limitations of this technology so I know what's going to work and what's not going to work. [026] but actually it can affect the pace of things in the afternoon. [027]	skills, knowing how to achieve things shaping achievement achievement to achieve with difficulty planning skills technology technology
Lingual			that actually I would rather just use a flip chart in the first place and say' 'look at this'... [028] so using a video clip, they will just be enjoying it because it's a video clip as oppose to the actual learning that's depended on the video clip. [029] Also, an advantage of using a flip chart as oppose to using that is they see me modelling, [030] actually the physical process of writing, while I am physically writing [031] ..here...say for example, I am doing a multiplication and I am using a method, I might use it on another....drawing it for example, but there's something more realistic about seeing me writing it on a paper that would then mirror what they will have to do, [032] the only thing I have tried that was a little successful was I was trying to record myself doing calculations from my perspective using an iPad so they I can play the video back to the children for them to see what it looks like through my eyes, [033] but when I try to play back from the apple software, it doesn't allow me to play back at the moment. [034] also, it's sometimes difficult when you have asked the children to search for particular thing, [035]	symbolic form symbolic symbolic symbolic signification, symbol symbol symbol the art of researching understanding

			they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [036] of instructions [037] if they are switching from multiple windows or going from one program to another [038]	
Social			and generally, it's either a case of children would have to pair up and then you would continue or you would have to revert back to an alternative method of teaching [039] If it goes wrong, it has an effect on behaviour [040]	social interaction interaction
Economic	reminding them that sometimes we have to wait for a few more minutes		In fact the process of getting all that running is so time consuming [041]	frugality of resources
Aesthetic	only because it's incompatible with some of the older technology,	harmony	this is supposed to link quite nicely on iPads but it never happens. [042] because sometimes we are entertained as opposed to be actively involved in the learning. [043] so using a video clip, they will just be enjoying it because it's a video clip as oppose to the actual learning that's depended on the video clip. [044] It's not often surprising if it doesn't work, [045]	Harmony fun fun surprise
Juridical				
Ethical				
Pistic			I am quite confident using ICT anyway, [046]	believe

V9

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Quantitative				
Spatial				
Kinematic				
Physical			I think they should make it a big bigger [001] everything is sort of like getting smaller and they don't think of those getting blind [002] I know you can make the words bigger, but sometimes the screen itself is a strain on you [003]	
Biotic			When you look at the screen after while [004] getting blind and breaking [010] everything is sort of like getting smaller and they don't think of those getting blind [011]	
Psychic	... that's a pain		also, fear of deleting- [012] I know you can make the words bigger, but sometimes the screen itself is a strain on you [013] all you have all day is stuck looking at computers [014]	
Analytic	... I don't know why		you never learn enough [015] and why do they say, they don't know what the problem are [016] They said we were going to be paperless, but I think it has generated more paper [017]	
Formative	... stuck to do anything		... the whole system went down so we couldn't do anything, [018] if it closes down or system failure you can't do it [019] and everything sort of comes from the machine. [020] Technology aren't that good [021] when it does break down [022] if technology is that advanced now, why is it not fixed straight away [023] and you think sometimes technology aren't really that good [024]	
Lingual			... because everything is updating all the time- everyday there's something new. [025] I think the communication ways [026] the communication breaks down [027] it does break that communication, [028]	
Social			you've got to sit facing the screen, you are not sat faced with somebody, [029] the communication breaks down [030] you are not facing real humans, [031] it does break that communication, [032] it does break community down, [033] you don't see children playing outside [034]	

Economic			... you will never know enough about a computer- [035] there's not enough time- [036] you never learn enough [037] you don't get enough time to learn about it. [038] sometimes you think it doubles your work as well [039]	
Aesthetic			I know you can make the words bigger, but sometimes the screen itself is a strain on you [040] you don't see children playing outside [041]	
Juridical	but you still have to put them onto the system because of laws			
Ethical			Technology aren't that good [042] and you think sometimes technology aren't really that good [043]	
Pistic			sometimes I think u don't trust the technology [044] They said we were going to be paperless, but I think it has generated more paper [045]	vision for project

V10

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
Quantitative			a class of 30 children normally share in partners [001] we only have 5 of them so again it's sort of resources and equipment. [002] but when you've got 30 children and telling them to work from like 5 roomers, [003]	number of children, number of equipments number of children
Spatial	it was difficult, yea, it was tricky, so i just kind of patrolled. i had a TA (teaching assistant) with me so i left the TA, she was in the classroom with some group of the children and then i just had to walk up and down the corridor and patrolling	spatial layout	check that they are plugged in rather than letting the children doing it and there are wires everywhere. [004]	wires everywhere,
Kinematic	the network can be quite slow,	flow in movement	and when you've got them all trying to log on to the same thing it can be a little bit slow [005] erm, so that can be a bit slow, [006] i have to go round and check that they are bin plugged in and things like that, [007] network was so slow [008]	flow in movement flow in movement movement of flowing movement
Physical	Batteries run out they don't get plugged in	Batteries not plugged	they work on batteries... you know if the batteries run out, [009] have got no batteries left in them. [010] i have to go round and check that they are bin plugged in and things like that, [011] we don't tend to get them out often because of batteries [012]	batteries batteries plugs batteries
Biotic				
Psychic	so that was a bit of a pain buzz i had to get them all done over it was difficult, yea, it was tricky, so i just kind of patrolled. i had a TA (teaching assistant) with me so i left the TA, she was in the classroom with some group of the children and then i just had to walk up and down the corridor and patrolling	Pain tricky	and i get really frustrated because i am in charge of the subject, but I'm not a technician. [013]so that can even be a pain cuz obviously the children can be all over the place and they are arguing over who is taking what turn and who is having a go and things like that [014] so sort of general things like that happen regularly in lessons which is again a bit frustrating [015] i try to encourage the Teachers to put the laptops away [016] that was a bit frustrating so we couldn't print anything off, we had that for a couple of weeks where we couldn't get any work printed out for photos and things like that that we needed so we had somebody come back and fix that . [017] so i wasn't able to keep my eye on them at all times but they were all outside different classrooms where there were Teachers in there anyway. Yea, so that was quite a tricky thing to manage. [018] ...bin the ICT Coordinator in school it just gets frustrating [019]	Frustrated pain Frustrating encourage frustration-how one feels, feeling, emotion) psychic-frustrating one feels
Analytic	I find a lot of them having sort of iPads and tablets at home, so a lot of them already know how to get around different things like that. So i guess within schools we kind of not really teaching them that skills because a lot of them know how to use them.	conceptualisation	then that's sort of affects lessons so obviously you can't rely on that, [020] children forget their passwords to get onto the computers [021] Okay, when we have done any writing and they are using some of the words like spell words or things like that - obviously a lot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing.[022] I guess they can become too reliant on them at the end, you know, on the iPads we have calculators so i guess they could go on there and use those,	lessons forgetfulness distinction, clarity) conceptualisation

			different games, things like that erm, apps which they can use these days to calculate for you. Yea, i think it's finding the balance using that to help as well as kind of knowing the basic skills in themselves. [023] so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much. [024]	clarity
Formative	<p>I had a while ago i was half way through in my lessons and the bulb in my projector just blew,</p> <p>erm, i don't know. We had a problem when the printer wasn't working, things like that... the network can be quite slow,</p> <p>I find a lot of them having sort of iPads and tablets at home, so a lot of them already know how to get around different things like that. So i guess within schools we kind of not really teaching them that skills because a lot of them know how to use them.</p> <p>Yea, i guess so. I guess now- do we use tech all the time? we don't even realise how much that we do use it,</p> <p>Okay, like socially- children social skills and things like that, conversations. Yea, people become reliant on using tech, myself these days i will pick up a phone to try and work out some things instead of using my head to do it, so i guess children are the same. They rely on it rather than...</p>	<p>Technology</p> <p>Shaping</p> <p>technology skills</p> <p>Technology, shaping</p> <p>technology</p>	<p>it's quite difficult to show their work on a big board, [025] you've to kind of do it in group work and it doesn't always work. [026] you can't really save [027] check that they are plugged in rather than letting the children doing it and there are wires everywhere. [028] so they've found the clip at home, they have played and you try to play it in school and its bin fuzzy or something like that happening. [029] that was a bit frustrating so we couldn't print anything off, we had that for a couple of weeks where we couldn't get any work printed out for photos and things like that that we needed so we had somebody come back and fix that . [030] network was so slow [031] when they were all trying to log on to it in one classroom, it wasn't working [032] Okay, when we have done any writing and they are using some of the words like spell words or things like that- obviously a lot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing. [033] I guess they can become too reliant on them at the end. you know, on the iPads we have calculators so i guess they could go on there and use those, different games, things like that erm, apps which they can use these days to calculate for you. yea, i think it's finding the balance using that to help as well as kind of knowing the basic skills in themselves. [034] When i was at school, technology was around, we used tech quite a lot anyways, but i can say we did play out a lot more and played games with each other socially with friends rather than stucked, glued to an iPad or an Xbox or things like that. [035] i guess putting on things like the iPad has a lot of apps that we could use, it's just having that time to put some apps on the iPads for the children to use and sort of bin the ICT coordinator, i don't always get the time to do those sort of things as well as teaching and all of that. erm, and some of the cameras that we've got- the old camera that we use for filming, we don't tend to get them out often because of batteries and collating them is not as tidy as the things we've got- like the iPads are better at filming. So a lot of the old equipment, we don't use them as much anymore. The iPads we tend to use them for a lot of things. (Lingual-symbol, formative- shaping, economic- frugality, limited resources, economic- limited resources, physical-batteries,) [036] it's just having that time to put some apps on the iPads for the children to use When people want you to fix things and you can't fix them. yea, that's it [037]</p>	<p>shaping</p> <p>shaping, creativity</p> <p>technology</p> <p>shaping</p> <p>shaping</p> <p>technology</p> <p>technology</p> <p>shaping</p> <p>technology</p> <p>shaping</p> <p>technology</p> <p>shaping</p> <p>technology</p> <p>shaping</p> <p>shaping</p>
Lingual	i have had problems with the you tube working in the classroom,	symbol, you tube	<p>and when you've got them all trying to log on to the same thing it can be a little bit slow [038] it's quite difficult to show their work on a big board [039] sort of go round and that's quite sort of difficult thing to get into showing each other's work. [040] children forget their passwords to get onto the computers, [041] if you are trying to write on them, you write one place and its right at the other place [042] so i couldn't show bigger images or have things on the boards, [043] I just find it easier having everything typed out on my smart board for my lessons rather having to spend the time handwriting things on the white board. [044] so they've found the clip at home, they have played and you try to play it in school and its bin fuzzy or something like that happening. [045] when they were all trying to log on to it in one classroom, it wasn't working [046] I guess they can become too reliant on them at the end. you know, on the iPads we have calculators so i guess they could go on there and use those, different games, things like that erm, apps which they can use these days to calculate for you. yea, i think it's finding the balance using that to help as well as kind of knowing the basic skills in themselves. [047] When i was at school, technology was around, we used tech quite a lot anyways, but i can say we did play out a lot more and played games with each other socially with friends rather than stucked, glued to an iPad or an Xbox or things like that. [048] Okay, when we have done any writing and they are using some of the words like spell words or things like that- obviously a lot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing. [049] so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much. [050] i guess putting on things like the iPad has a lot of apps [051]</p>	<p>to log on</p> <p>on a big board</p> <p>their work</p> <p>passwords</p> <p>write</p> <p>images</p> <p>typed out</p> <p>symbol</p> <p>log on</p> <p>symbol</p> <p>symbol, games</p> <p>writing, records</p> <p>symbol</p> <p>symbol</p>
Social	it was difficult, yea, it was tricky, so i just kind of patrolled. I had a TA (teaching assistant) with me so i left the TA, she was	group of children	<p>a class of 30 children normally share in partners [052] sort of go round and that's quite sort of difficult thing to get into showing each other's work. [053] you've to kind of do it in group work and it doesn't always work. [054]</p>	<p>sharing among the children</p> <p>relationship</p> <p>group work</p> <p>social interaction</p>

	<p>in the classroom with some group of the children and then i just had to walk up and down the corridor and patrolling.</p> <p>I find a lot of them having sort of iPads and tablets at home, so a lot of them already know how to get around different things like that. So i guess within schools we kind of not really teaching them that skills because a lot of them know how to use them.</p> <p>okay, like socially- children social skills and things like that, conversations. yea, people become reliant on using tech, myself these days i will pick up a phone to try and work out some things instead of using my head to do it, so i guess children are the same. they rely on it rather than...</p>	<p>institution</p> <p>relationships</p>	<p>so i wasn't able to keep my eye on them at all times but they were all outside different classrooms where there were Teachers in there anyway. yea, so that was quite a tricky thing to manage. [055]</p> <p>When i was at school, technology was around, we used tech quite a lot anyways. But i can say we did play out a lot more and played games with each other socially with friends rather than stucked, glued to an iPad or an Xbox or things like that. [056]</p>	<p>institution, relationships</p>
Economic			<p>we only have 5 of them so again it's sort of resources and equipment.[057]</p> <p>if we have more, it would be better.[058]</p> <p>but when you've got 30 children and telling them to work from like 5 roomers, [059]</p> <p>I just find it easier having everything typed out on my smart board for my lessons rather having to spend the time handwriting things on the white board. [060]</p> <p>that was a bit frustrating so we couldn't print anything off, we had that for a couple of weeks where we couldn't get any work printed out for photos and things like that that we needed so we had somebody come back and fix that . [061]</p> <p>helped us cut back on the use of paper and the ink. [062]</p> <p>it's just having that time to put some apps on the iPads for the children to use [063]</p> <p>I don't always get the time to do those sort of things as well as teaching and all of that. [064]</p>	<p>limited resources</p> <p>limited resources</p> <p>limited resources, spend time</p> <p>Inefficiency</p> <p>frugality</p> <p>frugality, limited resources</p> <p>limited resources,</p>
Aesthetic			<p>sort of go round and that's quite sort of difficult thing to get into showing each other's work. [065]</p> <p>I know that some Teachers don't use them as much because it's more trouble than it's worth sometimes. [066]</p> <p>so that can even be a pain cuz obviously the children can be all over the place and they are arguing over who is taking what turn and who is having a go and things like that [067]</p> <p>When i was at school, technology was around, we used tech quite a lot anyways. But i can say we did play out a lot more and played games with each other socially with friends rather than stucked, glued to an iPad or an Xbox or things like that. [068]</p>	<p>it's not fun</p> <p>not fun, more trouble</p> <p>argue</p> <p>fun</p>
Juridical			<p>i have to go round and check that they are bin plugged in and things like that, , [069]</p>	<p>do justice</p>
Ethical			<p>I know that some Teachers don't use them as much because it's more trouble than it's worth sometimes. [070]</p>	<p>not ready to sacrifice</p>
Pistic	<p>okay, like socially- children social skills and things like that, conversations. yea, people become reliant on using tech, myself these days i will pick up a phone to try and work out some things instead of using my head to do it, so i guess children are the same. they rely on it rather than...</p>	<p>believe</p>	<p>then that's sort of affects lessons so obviously you can't rely on that, [071]</p> <p>I guess they can become too reliant on them at the end. You know, on the iPads we have calculators so i guess they could go on there and use those, different games, things like that erm, apps which they can use these days to calculate for you. yea, i think it's finding the balance using that to help as well as kind of knowing the basic skills in themselves. [072]</p> <p>so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much. [073]</p>	<p>not reliable</p> <p>believe</p> <p>believe, rely</p>

V11

Aspect	Phrases from Answer	Reason	Phrases from EIV	Reason
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Quantitative		cuz they have done it so many times again they will be bored so it does has its pros and cons. (quantitative-amount,aesthetic-boredom,) [001]	
Spatial				
Kinematic			: you find problems for example board not working, it takes a bit long time for it to load, so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .so many different things open at the bottom, you've got to click as well. yea in terms - you can have the internet not working, and you have planned the whole session and then you find out you can't actually do it cuz the website is down. we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down and you think- oh, you are stocked, so definitely it's still a bit of a risk in terms of the internet connection. (formative- technology, economic-limited resources, lingual-symbol, lingual-symbol-PowerPoint, analytic-switch attention, kinematic-movement-to click, formative-technology, lingual- symbol-phonics programs, lingual-symbols,passwords, formative-technology-internet connections) [002]	
Physical	Again, it's one of those where you try and you keep pressing the fresh button, things like that and some other times it means you singing to yourselves and things like that as well. (physical- finger force of keyboard, Aesthetic-harmony, singing,)		esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards, but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. (physical-to press, formative- technology, analytic-conceptualisation, lingual-symbol,worksheet, ethical-cheats) [003]	
Biotic				
Psychic	Yea, I understand, I think it's hard because you will see it (Psychic-feeling)		I like to use the ipads, but I am a bit nervous about having them independently on the table. psychic-ones feeling,nervous, [004] but there are moments when you are just sat there waiting for the printer to come on. so we want everything instantly nowadays. so it's just getting that up to speed. and when the internet crashes, you are upset (formative-technology, psychic-ones feeling,upset) [005] : I think at the same time they do still love their paper and pens and doing things and they can look into their file of work and look back into their books an go- oh, I have done that. whereas, in ICT a lot of the time, it's there one minute and the end product is gone. (psychic-love, lingual-symbolic signification, formative-technology,lingual-symbolic signification) [006]	
Analytic	it can disorient (analytic- confuse, no clarity)		: you find problems for example board not working, it takes a bit long time for it to load, so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .so many different things open at the bottom, you've got to click as well. yea in terms - you can have the internet not working, and you have planned the whole session and then you find out you can't actually do it cuz the website is down. we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down and you think- oh, you are stocked, so definitely its still a bit of a risk in terms of the internet connection. (formative- technology, economic-limited resources, lingual-symbol, lingual-symbol-powerpoint, analytic-switch attention, kinematic-movement-to click, formative-technology, lingual- symbol-phonics programs, lingual-symbols,passwords, formative-technology-internet connections) [007] esp. if you have got children of age 4/5, if I kind of move or turn my back or kind, you can have the ones that could loose their attention and things like that. so yea, it can have a negative impact. (analytic-attention,) [008] esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards, but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. (physical-to press, formative- technology, analytic-conceptualisation, lingual-symbol,worksheet, ethical-cheats) [009] sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they are not- you just don't know. it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation) [010]	
Formative			so I do use quite a lot of different things as much as they can get a hold of it really. in literacy I put my story onto the computer- like I'd scan them in, sometimes it takes time, [011] : you find problems for example board not working, it takes a bit long time for it to load, so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .so many different things open at the bottom, you've got to click as well. yea in terms - you can have the internet not working, and you have planned the whole session and then you find out you can't actually do it cuz the website is down. we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down and you think- oh, you are stocked, so definitely its still a bit of a risk in terms of the internet connection. (formative- technology, economic-limited resources, lingual-symbol, lingual-symbol-powerpoint, analytic-switch attention, kinematic-movement-to click, formative-technology, lingual- symbol-phonics programs, lingual-	technology

			<p>symbols,passwords, formative-technology-internet connections) [012]</p> <p>esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards. but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. (physical-to press, formative- technology, analytic-conceptualisation, lingual-symbol,worksheet, ethical-cheats) [013]</p> <p>we've got laptops, but I don't use those yet with my children just purely because we've only got the mouse on the actually pad on the computers, formative-technology, [014]</p> <p>but there are moments when you are just sat there waiting for the printer to come on. so we want everything instantly nowadays. so it's just getting that up to speed. and when the internet crashes, you are upset (formative-technology, psychic-ones feeling,upset) [015]</p> <p>: I think at the same time they do still love their paper and pens and doing things and they can look into their file of work and look back into their books an go- oh, I have done that. whereas, in ICT a lot of the time, it's there one minute and the end product is gone. (psychic-love, lingual-symbolic signification, formative-technology,lingual-symbolic signification) [016]</p>	
Lingual	<p>: Yea sometimes, because it's the same thing you put on and its the same program. for example we do quite a lot of number songs on you tube, (lingual-symbol,aesthetic-harmony)</p>		<p>so I do use quite a lot of different things as much as they can get a hold of it really. in literacy I put my story onto the computer- like I'd scan them in, sometimes it takes time, [017]</p> <p>: you find problems for example board not working, it takes a bit long time for it to load, so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .so many different things open at the bottom, you've got to click as well. yea in terms - you can have the internet not working, and you have planned the whole session and then you find out you can't actually do it cuz the website is down. we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down and you think- oh, you are stocked, so definitely its still a bit of a risk in terms of the internet connection. (formative- technology, economic-limited resources, lingual-symbol, lingual-symbol-powerpoint, analytic-switch attention, kinematic-movement-to click, formative-technology, lingual- symbol-phonics programs, lingual-symbols,passwords, formative-technology-internet connections) [018]</p> <p>esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards. but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. (physical-to press, formative- technology, analytic-conceptualisation, lingual-symbol,worksheet, ethical-cheats) [019]</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting I think that is the massive disadvantages. The pen pal app costs a fortune and it only has 20 exercises. (lingual-writing,aesthetic-exciting, fun, economic-cost, economic-limited exercises) [020]</p> <p>sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they are not- you just don't know. it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation) [021]</p> <p>. I was in the class once and I typed in 'daddy bear' cuz I wanted the story from the three bear and it was an image that should never be on there and it was like an image that should never be on there. we have our RM security and that website has not actually bin flagged up (lingual-image, juridical-what is due) [022]</p> <p>: I think at the same time they do still love their paper and pens and doing things and they can look into their file of work and look back into their books an go- oh, I have done that. whereas, in ICT a lot of the time, it's there one minute and the end product is gone. (psychic-love, lingual-symbolic signification, formative-technology,lingual-symbolic signification) [023]</p>	symbol
Social	<p>You know with all these programs, there's only so many to go round the class and it leads to behaviour management (economic-limited resources, social-behaviour,)</p>		<p>I don't really like them using them independently, even though they can use them independently if they were at a table, I am worried that they might drop them. (asethic- not fun, social-institution [024]</p>	
Economic	<p>we sometimes use the ipads, but I'm only in the reception(nurseries) so it sometimes varies because they are quite young. Basically, we just had to keep waiting. (economic-</p> <p>You know with all these programs, there's only so many to go round the</p>	<p>unskilled use of limited resources)</p>	<p>so I do use quite a lot of different things as much as they can get a hold of it really. in literacy I put my story onto the computer- like I'd scan them in, sometimes it takes time</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting I think that is the massive disadvantages. The pen pal app costs a fortune and it only has 20 exercises. (lingual-writing,aesthetic-exciting, fun, economic-cost, economic-limited exercises) [025]</p> <p>you find problems for example board not working, it takes a bit long time for it to load, so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .so many different things open at the bottom, you've got to click as well. yea in terms - you can have the internet not working, and you have planned the whole session and then you find out you can't actually do it cuz</p>	limited resources

	<p>class and it leads to behaviour management (economic-limited resources, social-behaviour,)</p> <p>There is quite a lot and then there isn't. there's an amount for the software but they would cost you a lot of money. also, children seeing the same kind of thing again and again gets them bored. (economic-cost, aesthetic-boredom)</p>		<p>the website is down. we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down and you think- oh, you are stocked, so definitely its still a bit of a risk in terms of the internet connection. (formative- technology, economic-limited resources, lingual-symbol, lingual-symbol-powerpoint, analytic-switch attention, kinematic-movement-to click, formative-technology, lingual- symbol-phonics programs, lingual-symbols,passwords, formative-technology-internet connections) [026]</p> <p>but again the disadvantage is the cost. (.economic-cost) [027]</p>	
Aesthetic	<p>Again, its one of those where you try and you keep pressing the fresh button, things like that and some other times it means you singing to yourselves and things like that as well. (physical- finger force of keyboard, Aesthetic-harmony, singing,)</p> <p>There is quite a lot and then there isn't. there's an amount for the software but they would cost you a lot of money. also, children seeing the same kind of thing again and again gets them bored. (economic-cost, aesthetic-boredom) Yea sometimes, because it's the same thing you put on and its the same program. for example we do quite a lot of number songs on you tube, (lingual-symbol,aesthetic-harmony)</p>		<p>I don't really like them using them independently, even though they can use them independently if they were at a table, I am worried that they might drop them. (asethic- not fun, social-institution [028]</p> <p>.....cuz they have done it so many times again they will be bored so it does has its pros and cons. (quantitative-amount,aesthetic-boredom,) [029]</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting I think that is the massive disadvantages. The pen pal app costs a fortune and it only has 20 exercises. (lingual-writing,aesthetic-exciting, fun, economic-cost, economic-limited exercises) [030]</p> <p>sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they are not- you just don't know. it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation) [031]</p> <p>so it's hard for them to use. aesthetic-hard to use [032]</p>	
Juridical			<p>I was in the class once and I typed in 'daddy bear' cuz I wanted the story from the three bear and it was an image that should never be on there and it was like an image that should never be on there. we have our RM security and that website has not actually bin flagged up (lingual-image, juridical-what is due) [033]</p>	
Ethical			<p>esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards. but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. (physical-to press, formative- technology, analytic-conceptualisation, lingual-symbol,worksheet, ethical-cheats) [034]</p>	
Pistic				

V12

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		there is only one per the whole school and that depends on when they are available (Quan, Eco)[001]
Spatial		
Kinematic		then you've to restart it, pull the cable out, put it back in, restart it pull it out, put it back in (Form- tech; Kine- movement)[002]
Physical		it had the success one day and the next day it was something to do with the settings and the browser settings or something and every time you went into it you have to go onto the internet settings, go on advance and type a certain ip address or a web address in or something you would allow the safety off and that stopped working (Eco- echn limitations,Physical, [003]

		I have to take it in and out (Physical),[004]
Biotic		
Psychic/ Sensitive	it affects my stress levels (Psy- stress level)	<p>sometimes you think when you come to plan a lesson you watch a video clip I'm always very cautious (Psyc), [005] came to use the same technology next day and it didn't work at all so it was just an absolute nightmare (psych, pis) [006]</p> <p>it's an absolute nightmare (psyc). [007] so wow nothing to use. So that was a bit of a nightmare (Aesth, psych). [008] Definitely a nightmare (Aesth, psych) [009]</p> <p>forgetting where they saved things (Psyc- forgetting), [010] and be able to remember where they saved things (Psy- able to remember) [011] because they just feel it's not quite important because I am not doing it on my own (Psyc- feel; Soc- on my own), [012] and then obviously their enthusiasm goes down (psych- enthusiasm).[013] it was just a pain because it was constantly- it's not working, right (Psychic- pain, Form- not working) [014] I had a bad experience with it (psyc- bad experience) [015] so for children who struggle with their vision and their sight and rely on more sounds (psyc- vision and sight), [016] in and out, before it works, but it's so sad cuz the children know that now (psyc- sad)- [017]</p>
Analytic		<p>we've then have to go through and delete things (Anal) [018] and I don't want to be rushed in deleting things (Anal) [019] we've got 2 year 3 classes we might save something in them and both classes connect its self so that becomes difficult and that is full as well. (Anal, Eco) [020]</p> <p>they weren't sure how to save (Anal- weren't sure) [021] They just saved it and then its lost then (Anal-lost), [022] it so it was lost but they couldn't do anything with it (Anal- lost). [023] that was quite difficult as well rather than them be able to print and learning the skill of printing (Anal- learn; Form-skill of printing). [024] and I don't know what I am going to do (Anal- clear thinking) [025] children with English as their additional language they don't pickup on their vocabulary (Ling- language; Anal- pickup), [026]</p>
Formative	Network issues on a day to day basis (For)	<p>with no disk space so we have to keep enlarging the disk space and that is a bit of a problem (Eco, Form,) [027]</p> <p>it's just general kind of day to day technical issues (For), [028]</p> <p>it's difficult setting it up, the setup is the hardest part of the lesson (For), [029]</p> <p>getting the laptops all out getting them set up and getting them logged on (Form, Ling), [030]</p> <p>and it needs to download first (For,) [031]</p> <p>I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access (form, Eco) [032] Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would done if they had the ICT available. (Form,Eco) [033] saving things in the wrong places and not being able to access it again (Form- saving things in the wrong place; Eco- access). [034]</p>

		<p>created the picture on paint (Form- created; Ling- picture) [035]</p> <p>didn't have a printer installed on their computer (Form- printer installed), [036]</p> <p>that was quite difficult as well rather than them be able to print and learning the skill of printing (Anal- learn; Form-skill of printing). [037]</p> <p>so they lost out on that skill of being able to print themselves so yeah that was quite difficult (Eth- lost out; Form- skill; Soc- themselves) [038]</p> <p>when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there (Eco- technical limitation; Form- restart).[039]</p> <p>so is it not worth restarting all the computers in the middle of a lesson (Aesth- middle of a lesson), losing what they have done already (Form- destroying) [040]</p> <p>it was just a pain because it was constantly- it's not working, right (Psychic- pain, Form- not working) [041]</p> <p>we quite often find that the internet isn't working (Form- technology) [042]</p> <p>ended up putting everything through one printer which was a bit of a night mare cuz obviously everybody needed things and needed them urgently (Form- technical overload),[043]</p> <p>the HDMI cable that links my laptop to my computer just whenever I want to have sound on (form- tech), [044]</p> <p>then you've to restart it, pull the cable out, put it back in, restart it pull it out, put it back in (Form- tech; Kine- movement) [045]</p>
Lingual	we've got too many document or pictures hmmm, laptops, it will automatically like then we've run out of space (Ling, Eco)	<p>It will take like an hour and half for children to just log on (Eco, Ling).[046]</p> <p>getting the laptops all out getting them set up and getting them logged on (Form, Ling), [047]</p> <p>when it does not work cos it's just becomes a talking and writing lesson rather than an ICT session (Eco, ling).. [048]</p> <p>because have they had that, they will be able to look back I think the language what they would have used would be been enriched (Eco, ling) [049]</p> <p>having the children have their own log in for the computer (ling,). [050]</p> <p>that proves quite difficult when they didn't have any log on (Ling- log on).[051]</p> <p>they couldn't go back to where they had written the document on (Eco- access; Ling-written the document on), [052]</p> <p>created the picture on paint (Form- created; Ling- picture) [053]</p> <p>We have had a couple of occasions when pictures come up, maybe a bit violent or things like that (Eth;Ling- pictures); [054]</p> <p>they obviously don't pickup on those (Ling- articulate)[055]</p> <p>children with English as their additional language they don't pickup on their vocabulary (Ling- language; Anal- pickup), [056]</p>
Social		<p>so we share one amongst us when they are available (Soc, Eco). [057]</p> <p>so they lost out on that skill of being able to print themselves so yeah that was quite difficult (Eth- lost out; Form- skill; Soc- themselves) [058]</p> <p>because they just feel it's not quite important because I am not doing it on my own (Psync- feel; Soc- on my own), [059]</p> <p>I am doing it on my friend's (Soc- friend's) [060]</p>

Economic	<p>we've got too many document or pictures hmmm, laptops, it will automatically like then we've run out of space (Ling, Eco)</p> <p>can become full we have also a shared drive where we save anything (Eco)</p> <p>you lose a lot of time in the lesson (Eco- lose a lot of time),</p> <p>you've wasted time (Eco-wasted time)</p>	<p>there is only one per the whole school and that depends on when they are available (Quan, Eco) [061]</p> <p>so we share one amongst us when they are available (Soc, Eco).[062]</p> <p>we can't access the network so I can't access my shared drive or my network on the computers which means I can't access document I have prepared and things like that. (Eco- techn limitations) [063]</p> <p>we sometimes have the same problem with the internet and when you can't access the internet, things that we planned in advance are very difficult (Eco). [064]</p> <p>space on the shared drive and on our own drives like space for document, we often run out of space (Eco), [065]</p> <p>with no disk space so we have to keep enlarging the disk space and that is a bit of a problem (Eco, Form,) [066]</p> <p>It will take like an hour and half for children to just log on (Eco, Ling). [067]</p> <p>it's completely pointless because by the time you have started your lesson, you have got 10mins and the lesson is over (Eco). [068]</p> <p>you need to watch every minutes of the everything before you then teach it which makes it quite time consuming (Eco).[069]</p> <p>because if you've got to watch half an hour episode to check there is no swearing, that is half an hour that could have taking and making up result or something like that (Juri, Eco). [070]</p> <p>past I've had problems where I've wanted to download something and I can't even access it because there is not enough space to even save the document (Eco) [071]</p> <p>which you think I'm pushed for time (Eco) [072]</p> <p>you need your space - making it bigger and we do that, like when we have the RM people but it takes a while (Eco), [073]</p> <p>we've got 2 year 3 classes we might save something in them and both classes connect its self so that becomes difficult and that is full as well. (Anal, Eco) [074]</p> <p>it had the success one day and the next day it was something to do with the settings and the browser settings or something and every time you went into it you have to go onto the internet settings, go on advance and type a certain ip address or a web address in or something you would allow the safety off and that stopped working (Eco- echn limitations,Physical,) [075]</p> <p>just none of us could access it and its being like that since we can't access it (Eco,Juri). [076]</p> <p>then my lesson was all planned and I couldn't use the software that I had planned to use (Eco, pis,). [077]</p> <p>they had it all up there on the board came to use it next day and it's all gone (Juri, eco), [078]</p> <p>when it does not work cos it's just becomes a talking and writing lesson rather than an ICT session (Eco, ling)..[079]</p> <p>I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access (form, Eco) [080]</p> <p>Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would done if they had the ICT available. (Form,Eco) [081]</p> <p>saving things in the wrong places and not being able to access it again (Form- saving things in the wrong place; Eco- access). [082]</p> <p>because have they had that, they will be able to look back I think the language what they would have used would be been enriched (Eco, ling) [083]</p> <p>it was becoming full very quickly and they couldn't access it (Eco- full quickly, couldn't access it). [084]</p> <p>they can't go back in it and access it again (Eco- access it) [085]</p> <p>it was really difficult to access the computers (Eco- to access the computers) [086]</p> <p>or something like that and they couldn't go back and access (Eco-access) [087]</p> <p>and re-access the work that they have done (Eco- re-access) [088]</p> <p>they couldn't go back to where they had written the document on (Eco- access; Ling-written the document on), [089]</p> <p>when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there (Eco- technical limitation; Form- restart). [090]</p> <p>If they have not got access on their own thing (Eco- no access), [091]</p> <p>we place the importance on how they are expensive (Eco- expensive) [092]</p> <p>I wouldn't do that if it was just me in the classroom (Eco-limited staff). [093]</p> <p>we quite often come in to find that we can't access something we've saved previously (Eco- technical limitation). [094]</p> <p>we did have a big melt down because we had OFSTED coming to observe and no printers were working (Juri- OFSTED; Eco- tech limitation) [095]</p> <p>there was one printer in the school working and obviously with the amount of staff and children that we have and the amount of people that were relying on it (Eco- limited resources) [096]</p> <p>she ended up having to teach a lesson with no sound on the clip (eco-tech limi- no sound)- [097]</p> <p>so they are like - sound cable, oh, sound cable so that just adds time (Eco- time), [098]</p> <p>when you are in the middle of a lesson and you are like - right, I'm ready to show this clip now and then it plays with no sound (Eco- technical limitation), [099]</p>
Aesthetic	<p>bcus its time when u are doing something you aimed for the children to do (Aesth)</p>	<p>so that causes quite a lot of problems (Aesth), [100]</p> <p>so wow nothing to use. So that was a bit of a nightmare (Aesth, psych). [101]</p> <p>Definitely a nightmare (Aesth, psych) [102]</p> <p>it just lost the excitement for the children they were so excited the day before (Aesth), [103]</p> <p>so is it not worth restarting all the computers in the middle of a lesson (Aesth- middle of a lesson), losing what they have done already (Form- destroying) [104]</p> <p>so it kind of affects their motivation (Aesth- motivation) [105]</p> <p>and then you think my lesson is going to part (Aesth)[106]</p> <p>... that's quite a challenge (Aesth- challenging).[107]</p> <p>then it's not enriched so that's quite tricky(Eth- enriched; Aesth- tricky).[108]</p>

Juridical	<p>so they suffer because they do not learn how to print it (Juridical-knowledge on printing)</p> <p>bcus that was the skill they intended to do was to be able to make this picture and print but they have already done half of the skill we have made it but they can't print it (Juri-Inadequate implementation).</p>	<p>Obviously we have the natural safety issues (Juri, Eth). internet, safeguarding the children (Eth, Juri.), [109] you obviously can't control what comes out of the suggested video after that (Juri, Eth)[110] other Teachers have had issues where things come up and isn't particular appropriate for the children of our age (Eth, juri),[111] got internet safety issues (Juri, Eth) [112] so I' would say that quite a challenge as well making sure that everything is appropriate especially working with such young children (Juri, eth). [113] because if you've got to watch half an hour episode to check there is no swearing, that is half an hour that could have taking and making up result or something like that (Juri, Eco). [114] you watch the 1st 5mins and you think brilliant sorted got it and then you might find out that in the 7th or 8th minutes they might use a swear word or something like that and then you think hmmm I shouldn't have used that one (Juri.),[115] just none of us could access it and its being like that since we can't access it (Eco,Juri). [116] they had it all up there on the board came to use it next day and it's all gone (Juri, eco), [117] they aren't particularly nice for the children to see(Juri- inappropriate),[118] we did have a big melt down because we had OFSTED coming to observe and no printers were working (Juri- OFSTED; Eco- tech limitation)[119]</p>
Ethical	<p>am frantically having to go around and make sure everything is saved and printed it (Ethical-),</p>	<p>Obviously we have the natural safety issues (Juri, Eth). [120] internet, safeguarding the children (Eth, Juri.),[121] you obviously can't control what comes out of the suggested video after that (Juri, Eth)[122] other Teachers have had issues where things come up and isn't particular appropriate for the children of our age (Eth, juri),[123] got internet safety issues (Juri, Eth) [124] so I' would say that quite a challenge as well making sure that everything is appropriate especially working with such young children (Juri, eth).[125] so they lost out on that skill of being able to print themselves so yeah that was quite difficult (Eth- lost out; Form- skill; Soc- themselves)[126] I'm not going to have it anyway (Eth) [127] you just don't know what's going to be on the internet these days (Eth), [128] you just don't know what you might find (Eth, Pis).[129] We have had a couple of occasions when pictures come up, maybe a bit violent or things like that (Eth;Ling- pictures); [130] and they need to be looked after and the other (Eth).[131] I wouldn't use the ipads unless I had another adult (Eth-) [132] if it was again internet research, probably have another adult, so I stay away from that unless I have got the adult (Eth).[133] then it's not enriched so that's quite tricky(Eth- enriched; Aesth- tricky).[134]</p>
Pistic		<p>things being slow or crashing.The laptops we did have cos we' got new laptops now cos we use to have old ones and they were just useless (Pis),[134] just generally really useless (Pis). [135] and I'm might delete something important (Pis) [136] a problem not necessary to save thing cos I mean at the end of the day you can just discard things that you don't need even from saving documents from the internet, I find it difficult to do that (Pis) [137] came to use the same technology next day and it didn't work at all so it was just an absolute nightmare (psych, pis)[138] then my lesson was all planned and I couldn't use the software that I had planned to use (Eco, pis.). [139] but you have to overcome it by not using any ict which was a shame really (Pis.), [140] I think their work loses some importance (Pistic- loses some importance) [141] they are very independent - then they feel it doesn't really matter (Pistic-doesn't really matter) [142] ;and how proud they are of their work (Pist- proud). [143] it doesn't always come up with things you expect (Pis) [144] cuz you just can't predict what might popup at the end of it really (pist-trust).[145] you just don't know what you might find (Eth, Pis).[146]</p>

V13

ASPECTS	Phrase from Answer	Reason	Phrase from EIV	Reason
Quantitative			how many children are going home reading a book [001]	how many

			but how many people [002]	
Spatial			there will be inappropriate pictures on the screen at the same time [003] we risk getting swear words upon the screen, inappropriate adverts at the end [004]	screen screen
Kinematic				
Physical				
Biotic				
Sensitive/Psychic			you are doing that research adhoc where the kids are just there, that would back fire [005] the worry is they are just going on random websites that are not suitable [006] that's the worry for us [007] waste for an hour or seeing things that shouldn't be [008]	backfire worry - seeing
Analytic			subject knowledge and to teaching knowledge [009] we using certain apps to develop learning understanding of the children [010] they don't know the potentials [011] at the snap of your finger, you want to be able to find the answer [012] a new skill to teach people [013] and I think it's all changing all the time- of course it is, so what we learnt today will be non-existence in two years time, [098]	knowledge learning understanding; know the potential find the answer teach
Formative			how often do the kids actually get up and use the interactive white board element of it [014] what we are using for our lessons [015] we using certain apps to develop learning understanding of the children (Anal- learning understanding; Form- apps, to develop-shaping) [016] the children are not always using this (Form)- [017] of certain programs or programming or ipad apps (Form- technology)- [018] the down side of technology for me is that I suppose all them conversation skills (Form- technology; Soc- conversation skills) [019] a new skill to teach people (Form- skill; Anal- teach) [020] something I'm not going to waste time doing (Eco- waste time; form- doing),[021] you just don't want to waste your time with technology really (Eco- waste time; Form- technology), [022] it's just bin prepared, be organised and know how to use something effectively that's for every resources (Form- organised, how to use-shaping; Eco-effectively, resources).[023] and I think it's all changing all the time- of course it is, so what we learnt today will be non-existence in two years time, [097] technology is only getting better and we are getting more lazy, more reliant on computers (Pist- getting better; Form- laziness; Pist- more reliant).[098]	white board element- technology tools
Lingual			there will be inappropriate pictures on the screen at the same time (Juri-inappropriateness; Ling- pictures; Spatial-screen). [024]	

			<p>how many children are going home reading a book (Quanti- how many; Soc- children going home; Ling- a book) [025] they don't know how to use a book or a dictionary or thesaurus for example (Ling- book, dictionary, thesaurus).[026] lack of skills like reading (Ling- reading), [027] bin able to use a book (Ling- book) [028]</p> <p>if you ask them to do research and stuff, they will copy off things (ling-research; Juri- copy off things) [029]</p> <p>the worry is they are just going on random websites that are not suitable (Psys- worry; Ling- random websites; Aesth- not suitable) [030]</p> <p>they come back with rubbish or something they've no idea of what they read about (Aesth- rubbish;Anal- no idea of; Ling- read about). [031]</p> <p>and people copy off websites (Juri- copy off; Lin- websites), [032]</p> <p>like wikipedia....giving them false information (Ling-false information), [033]</p> <p>it's not general facts (ling), [034]</p> <p>but opinions (Ling), [035]</p> <p>isn't it- getting the wrong information (Ling), [036]</p> <p>there's all kinds on the internet really (Ling- information), [037]</p> <p>even in a dictionary app we had the other day, a swear word was in there (Ling- dictionary app, swear word). [038]</p> <p>we risk getting swear words upon the screen, inappropriate adverts at the end (Pist- risk; Ling- swear words; Spatial- screen; Juri- inappropriate; Ling-adverts), [039]</p>	
Social			<p>how often do the kids actually get up and use the interactive white board element of it (Soc- kids; Eco- program efficiency; Form- white board element- technology), [040]</p> <p>we are just using them for playing (Soc- social interaction, playing) [041]</p> <p>you are doing that research adhoc where the kids are just there, that would back fire (Juri- adhoc; Soc- kids; Psych- backfire). [042]</p> <p>how many children are going home reading a book (Quanti- how many; Soc- children going home; Ling- a book) [043] are they just relying on playing computer games because everything again is so easy (Pist- relying; Soc- playing; Ling- games; Pist- everything again is so easy)[044] the down side of technology for me is that I suppose all them conversation skills (Form- technology; Soc- conversation skills) [045] so the interaction- [046] lack of social skills (Soc- social skills) [047]</p>	
Economic			<p>but use them quite a bit depends on the subject specifically really (Eco- frequency; Aesth- depends on the subject). [048]</p> <p>if the computers are going really slow (Eco-technical limitation, going really slow). [049]</p> <p>it's not always ready (Eco- technical limitation).[050]</p> <p>very little to be honest (Eco- very little), [051]</p> <p>how often do the kids actually get up and use the interactive white board element of it (Soc- kids; Eco- program efficiency; Form- white board element- technology), [052] people just think convenience (Eco- convenience)- [053] at the snap of your finger, you want to be able to find the answer (Eco- quickly; Anal- find the answer), [054] you are wasting your time (Eco-wasting time) [055]</p>	

			<p>something I'm not going to waste time doing (Eco- waste time; form- doing),[056]</p> <p>what's going to be effective really (Eco- effective), [057]</p> <p>it gets a bit outdated or wasting time (Eco- outdated. Wasting time) [058]</p> <p>it has just become a waste of time (Eco- waste of time), [059]</p> <p>is it effective in teaching (Eco-effective) [060]</p> <p>or is it going to make my life easier (Eco- make life easier-convenient). [061]</p> <p>you just don't want to waste your time with technology really (Eco- waste time; Form- technology), [062]</p> <p>waste for an hour or seeing things that shouldn't be (Eco- waste an hour; Eth- seeing things that shouldn't; Psych- seeing). [063]</p> <p>it's just bin prepared, be organised and know how to use something effectively that's for every resources (Form- organised, how to use-shaping; Eco-effectively, resources). [064]</p>	
Aesthetic			<p>but use them quite a bit depends on the subject specifically really (Eco- frequency; Aesth- depends on the subject). [065]</p> <p>its not used interactively at all (Aesth) [066]</p> <p>if you are not prepared really (Aesth- prepared)- [067]</p> <p>not to work when you are expecting it to work (Aesth- expectation). [068]</p> <p>the worry is they are just going on random websites that are not suitable (Psyc- worry; Ling- random websites; Aesth- not suitable) [069]</p> <p>they come back with rubbish or something they've no idea of what they read about (Aesth- rubbish;Anal- no idea of; Ling- read about). [070]</p>	
Juridical			<p>use them quite regularly probably not to their full potential (Juri- not to their full potential) [071]</p> <p>if you don't use it to its full potential (Juri- full potential) [072]</p> <p>you are doing that research adhoc where the kids are just there, that would back fire (Juri- adhoc; Soc- kids; Psych- backfire). [073]</p> <p>not using the ipads to their full potentials (Juri-do justice to-full potential), [074]</p> <p>the internet would show us false answers (Juri-quality) [075]</p> <p>you will not get the right video (Juri- quality) [076]</p> <p>there will be inappropriate pictures on the screen at the same time (Juri-inappropriateness; Ling- pictures; Spatial- screen). [077]</p> <p>if you ask them to do research and stuff, they will copy off things (ling-research; Juri- copy off things) [078]</p> <p>how educated are the people who do the videos (Jurid)? [079]</p> <p>know the wrong method for something (Juri) [080]</p> <p>and people copy off websites (Juri- copy off; Lin- websites), [081]</p> <p>keeping it suitable content (Juri, Eth).[082]</p> <p>and such inappropriate things (Juri- inappropriate), [083]</p>	

			we risk getting swear words upon the screen, inappropriate adverts at the end (Pist- risk; Ling- swear words; Spatial- screen; Juri- inappropriate; Ling-adverts), [084]	
Ethical			you get all kinds of rubbish (Ethical- rubbish), [085] keeping it suitable content (Juri, Eth).[086] or seeing things that they shouldn't be seeing (Eth)..... [094]	
Pistic			don't rely only on them (pistic-rely), [087] not rely on finding a video or the snappy things (Pistic- not relying; Ling- video) [088] so quickly to type in the search and find the answers straight away (Pist- believe; Eco- quickly), [089] are they just relying on playing computer games because everything again is so easy (Pist- relying; Soc- playing; Ling- games; Pist- everything again is so easy)[090] don't rely on computers for everything (Pist- rely), [091] most are reliant on their computers (Pistic- trust), [092] technology is only getting better and we are getting more lazy, more reliant on computers (Pist- getting better; Form- laziness; Pist- more reliant).[093] waste for an hour or seeing things that shouldn't be (Eco- waste an hour; Eth- seeing things that shouldn't; Psych- seeing). [095] we risk getting swear words upon the screen, inappropriate adverts at the end (Pist- risk; Ling- swear words; Spatial- screen; Juri- inappropriate; Ling-adverts), [096]	

V14

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		you've got thirty hands up (Quanti- 30 hands up)... [001] we just have so many things to do (Quan- many; Form-to do).[002] I have got 90 books to mark and so many lessons (Quan-90 books; Anal- mark, lessons)..its never there any time (Eco- time). [003] and I have got a lot of challenging children in this class (Quanti). [004] if too many children log in at once (Quanti- many), [005] because they are only 30 (Quan), [006] so you might have out of 30 laptops (Quan), 6 don't work (Quan) [007] if too many people log on once (Quant;Ling), [008] if you've tried to get 30 people on the internet at one time, they can't get on (Quan, eco)[009]
Spatial	they are just really small laptops (Spa- size),	
Kinematic		sometimes their batteries aren't charged (Physical- batteries ;Kinematic- charged) [010] They have done a piece of work (Form), they don't know how to save their work (Anal), work not saved (Form), the battery dies and its gone (Kine- fluid dynamics;). [011] so they are just sat there waiting for a page to load (Kin- load, Eco- wastage of time) [012]
Physical		sometimes their batteries aren't charged (Physical- batteries ;Kinematic- charged) [013] so when we come to get them batteries are dead (Phy) [014] you have sent to the wrong printer (Phy;), just making sure that the laptops are charged (Phy- electrical conductance, charged), [015]

		really bad battery life (Phy) and [016] then the life is not there (Phy), [017]
Biotic		
Psychic/ Sensitive		<p>which is a bit annoying(psych-annoying)....[018] it always ends up really stressful as a Teacher (Psyc- stressful) [019] because of the stress I know it brings me (Psyc- stress it brings),[020] I know I need to do it but it makes me really stressed (Psych- really stressed). [021] we haven't seen anyone of them since (Psyc- seen)... [022] and that's annoying (Psych- annoying).[023] I don't want that in the middle of a lesson that's a worry(Anal- in the middle of a lesson; psych-worry). [024] The additional stress (Psy- stress) [025] It's just the additional stress of what it brings (Psy- stress).[026] reminding myself how to do it will take me a few hours (Psyc-reminding; Eco- few hours) [027] was so stressful (Psyc- stressful) [028] it was just so stressful (Psyc). [029] I think children do feel you are kind of stressed sometimes (Psyc), [030] the more the stress level goes up (Psyc), [031] I do shout more (Psyc) [031] and I am stressed with at correlation (Psyc) [032] it's not working what's Miss going to do (Psyc- worried, Anal-conceptualizing).[033] when they get to touch the interactive white board which I rarely let them do because it always goes wrong (Psych-touch; Form-Tech, goes wrong). [034] you know, the filters are blocked, i'm worried (Psyc),[035] i'm bored, [036] it's frustrating (Psyc) [037] things like that are frustrating (Pscy).[038] so its just forcing ourselves and make sure we do it and go over the stresses (Juri- make sure; Psyc- stress),[039] they have log ins and every time the forget their passwords (Ling- log ins; Psyc- forget),[040] they can't remember their logins (psyc- remb), [041] which they are not happy about (Psy- sad), [042] so you have got all these work and their types so can't recognise their handwritings (Psy- recognition; Ling). [043] I have hear of a Teacher (Psy)...[044] I think I just heard the rumours round school about how rubbish these laptops were (Psy, Pis)[045] cuz they are just sat there looking at blank screens waiting for something to load (Eco, Psy- looking, waiting) [046] ICT, we are looking on a blank computer, can't say go onto (Psy)[047]</p>
Analytic	They laptops are rubbish (Anal),	<p>because I don't know how to put free apps on all the children's ipads (Anal- don't know;).[048] Ms, I can't do this... Ms, I can't do this" on the simple things they didn't know how to do that (Anal- didn't know how). [049] so simple things I think (whispers) "This is dead easy"... they don't know how to do (Anal-don't know how) [050] again if all the children can play this on their ipads, I don't know how to do that (Soc- children, play; Anal- know how).[051] I can't teach them if I don't know how to use power point (Anal-teach, don't know how; Ling- powerpoint). [052] because they look for the use of ICT and I have tried to do it (Anal- clarity) [053] I don't want that in the middle of a lesson that's a worry(Anal- in the middle of a lesson; psych-worry). [054] don't really know how to use it, so (Anal- know how; Form- use-shaping)....[055] it's not working what's Miss going to do (Psyc- worried, Anal-conceptualizing). [056] I have got 90 books to mark and so many lessons (Quan-90 books; Anal- mark, lessons)..its never there any time (Eco- time). [057] what am I going to do (Anal), was there thinking on my feet (Anal), [058] i found this for them and if it worked it would have been a great learning tool for them (Anal, form.) [059] and it would have been that part of a lesson for them so it was a shame it didn't work (Anal, Aest).[060] all the children that I haven't taught through and I have to set the expectations out that you do not leave our seat (Anal, Juri),[061] you ask your partner for help because they don't think these things through first (Soc- partner, Eth- help; Anal- think through). [062] so you have to be really clear (Anal- clarity) [063] I take for granted a lot of these children know things that in my childhood (Pistic- take for granted; Social-Children, institution; Anal- know things, awareness) [064] the batteries would just die anyway half through lesson (Anal- lesson, Pis- beleiev).[065] They have done a piece of work (Form), they don't know how to save their work (Anal), work not saved (Form), the battery dies and its gone (Kine- fluid dynamics;). [066] they don't know how to print (Anal, Ling).[067] trying to actually get their work with their names on it (Anal; ling), [068]</p>

		<p>trying to work out whose work is whose and things (Anal). [069]</p> <p>children coming to us is very low (Anal).[070]</p> <p>I knew the laptops were rubbish (Anal) [071]</p> <p>but they don't know how to check their works so like spacing (Anal), new paragraphs (Aest), [072]</p> <p>so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to (Juri, Eco, Anal) [073]</p>
Formative		<p>it doesn't work (Form). [074]</p> <p>it's just more of my own competences that have to be raised (Form- competences).[075]</p> <p>I don't think anybody else has used it (Soc- anybody else; Form-used it). [076]</p> <p>gone back and come back .. things were freezing (Form- freezing) [077]</p> <p>and the screen froze (Form) [078]</p> <p>there's no connection between the amazing equipment we have got (Form- connection, Aesth), [079]</p> <p>don't really know how to use it, so (Anal- know how; Form- use-shaping)....[080]</p> <p>we just have so many things to do (Quan- many; Form-to do).[081]</p> <p>when they get to touch the interactive white board which I rarely let them do because it always goes wrong (Psych-touch; Form-Tech, goes wrong). [082]</p> <p>it wasn't working (Form- not working) [083]</p> <p>what am I going to do (Anal), was there [084] thinking on my feet (Anal), [085]</p> <p>i found this for them and if it worked it would have been a great learning tool for them (Anal, form.) [086]</p> <p>and it would have been that part of a lesson for them so it was a shame it didn't work (Anal, Aest).[087]</p> <p>I have to deal with children standing up, walking around, its just my nightmare ...someone is going to knock, laptop is going to be flying (Form) [088]</p> <p>so they can't even actually login into their computers (Ling- log on; Form).[089]</p> <p>even actually getting onto the computer is an issue (Form- tech).[090]</p> <p>They have done a piece of work (Form), [091] they don't know how to save their work (Anal), work not saved (Form), [092] the battery dies and its gone (Kine- fluid dynamics;).</p> <p>I think it's just hard in school where data is very low (Form), [093]</p>
Lingual		<p>I can't teach them if I don't know how to use power point (Anal-teach, don't know how; Ling- powerpoint), [094]</p> <p>we should have had more trainings (Eco- more (were insufficient); Ling- trainings), [095]</p> <p>I kind of wish we had a bit more training on it (Eco- more; Ling- training) [096]</p> <p>I have got children who don't speak in English (Ling), [097]</p> <p>I don't know what they have logged onto (Ling; Pis), [098]</p> <p>and I think, if they don't know how to use it now, when they get into high school and they still don't now how to write something in word and they have homework on it (Juri- denial of what is due; Ling- write). [099]</p> <p>and they can't log in (Ling- log in). [100]</p> <p>they have log ins and every time the forget their passwords (Ling- log ins; Psyc- forget).[101]</p> <p>so they can't even actually login into their computers (Ling- log on; Form). [102]</p> <p>they don't know how to print (Anal, Ling). [103]</p> <p>trying to actually get their work with their names on it (Anal; ling), [104]</p> <p>so you have got all these work and their types so can't recognise their handwritings (Psy- recognition; Ling). [105]</p> <p>it would just say system is too busy or something, so you couldn't log the children on (Eco- tech limitation; Ling- log on) [106]</p> <p>if too many people log on once (Quant;Ling), [107]</p>
Social		<p>again if all the children can play this on their ipads, I don't know how to do that (Soc- children, play; Anal- know how).[108]</p> <p>I don't think anybody else has used it (Soc- anybody else; Form-used it). [109]</p> <p>you ask your partner for help because they don't think these things through first (Soc- partner, Eth- help; Anal- think through). [110]</p> <p>I take for granted a lot of these children know things that in my childhood (Pistic- take for granted; Social-Children, institution; Anal- know things, awareness) [111]</p> <p>children have got to share one (Soc- share) [112]</p> <p>they don't want to share (Soc- don't want to share), [113]</p> <p>no one might put them so they can charge (Soc- no one, role) [114]</p>
Economic	its just more on the internet... finding things, resources (Eco- resources)	<p>they are really expensive(eco-expensive) [115]</p> <p>you are the only one as the Teacher (Eco- only one), [116]</p> <p>and these cost like(Eco-cost).... [117]</p> <p>they were really expensive (Eco- expensive). [118]</p> <p>we should have had more trainings (Eco- more (were insufficient); Ling- trainings), [119]</p> <p>I kind of wish we had a bit more training on it (Eco- more; Ling- training) [120]</p> <p>and its the time (Eco-time) [121]</p> <p>reminding myself how to do it will take me a few hours (Psyc-reminding; Eco- few hours)[122]</p>

		<p>I have got 90 books to mark and so many lessons (Quan-90 books; Anal- mark, lessons)..its never there any time (Eco- time). [123]</p> <p>tried if they are suitable for the lesson (Anal) and I am spending time (Eco- time) [124]</p> <p>I spent time the whole last night finding it (Eco- spent time; Anal- finding it), checking it (Juri), playing it (Aesth) [125]</p> <p>and now this part of my lesson that's meant to be 10-15 min long (Eco- length of time), [126]</p> <p>the system crashes (Eco- technical limitation) [127]</p> <p>they want their own one (Eco). [128]</p> <p>and you have got 10min worth of battery before they die (Eco). [129]</p> <p>getting them out takes time (Eco- takes time), [130]</p> <p>but even just getting the laptops out onto their tables that can take up to 10 minutes and putting them away (Eco), [131]</p> <p>you haven't actually got a lot of time (Eco). [132]</p> <p>so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to (Juri, Eco, Anal) [133]</p> <p>I won't waste my time (Eco).[134]</p> <p>.after spending an hour (Eco), [135]</p> <p>they haven't done anything in an hour (Eco), [136]</p> <p>they hadn't even logged on (Eco), [137]</p> <p>the system stops other people log on (Eco- technical limitation). [138]</p> <p>couldn't get on the internet cuz sometimes they have little life button if they switch (Eco- tech limi), [139]</p> <p>our wifi wasn't very good (Eco) [140]</p> <p>it would just say system is too busy or something, so you couldn't log the children on (Eco- tech limitation; Ling- log on) [141]</p> <p>if you've tried to get 30 people on the internet at one time, they can't get on (Quan, eco)[142]</p> <p>so they are just sat there waiting for a page to load (Kin- load, Eco- wastage of time) [143]</p> <p>cuz they are just sat there looking at blank screens waiting for something to load (Eco, Psy- looking, waiting) [144]</p>
Aesthetic		<p>but its really draining as the Teacher (Aesth- draining) [145]</p> <p>because the children are all at different stages on what they can do and the laptop in front of them (Aesth- different stages).. [146]</p> <p>so I am reluctant to get the ipad out (Aesth-Reluctant) [147]</p> <p>but we didn't get the chance to play with it (Aesth-chance to play with it), [148]</p> <p>and you know that brings panic there (Aesth the- panic)... [149]</p> <p>I am playing all the games (Aesth), [150]</p> <p>it's just a shame really (Aest).[151]</p> <p>I spent time the whole last night finding it (Eco- spent time; Anal- finding it), checking it (Juri), playing it (Aesth) [152]</p> <p>what am I going to do (Anal), was there thinking on my feet (Anal), [153]</p> <p>i found this for them and if it worked it would have been a great learning tool for them (Anal, form,) and it would have been that part of a lesson for them so it was a shame it didn't work (Anal, Aest).[154]</p> <p>but they don't know how to check their works so like spacing (Anal), new paragraphs (Aest), [155]</p> <p>I think that's hard (Aesth), [156]</p> <p>that's when they start messing, chatting because they are bored (Aesth- bored) [157]</p>
Juridical		<p>capable of doing so much more and it's not fulfilling its potential at all (Juri-inadequate implementation). [158]</p> <p>is a shame because I know they need to do it (Juri) [159]</p> <p>when you are being observed that throws you (Juri- observed). [160]</p> <p>because there is no one pushing us to use it (Juri) [161]</p> <p>I spent time the whole last night finding it (Eco- spent time; Anal- finding it), checking it (Juri), playing it (Aesth) [162]</p> <p>I haven't managed the situation well enough (Juri).[163]</p> <p>I have to deal with these children (Juri) [164]</p> <p>and that's where the problem arise, if don't set out the expectation (Juri)[165]</p> <p>children with special needs problems (Juri). [166]</p> <p>all the children that I haven't taught through and I have to set the expectations out that you do not leave our seat (Anal, Juri), [167]</p> <p>so its just forcing ourselves and make sure we do it and go over the stresses (Juri- make sure; Psyc- stress),[168]</p> <p>and I think, if they don't know how to use it now, when they get into high school and they still don't now how to write something in word and they have homework on it (Juri- denial of what is due; Ling- write). [169]</p>

		<p>it's trying to place a priority in school (Juri).</p> <p>like behind their age expectation (Juri). [170]</p> <p>so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to (Juri, Eco, Anal) [171]</p>
Ethical		<p>won't be a good Teacher if I can't use it by myself (Eth- won't be a good Teacher).[172]</p> <p>you ask your partner for help because they don't think these things through first (Soc- partner, Eth- help; Anal- think through). [173]</p> <p>a lot of children are not getting that (Eth- giving), [174]</p>
Pistic		<p>I don't know what they have logged onto (Ling; Pis), [175]</p> <p>I take for granted a lot of these children know things that in my childhood (Pistic- take for granted; Social-Children, institution; Anal- know things, awareness) [176]</p> <p>the batteries would just die anyway half through lesson (Anal- lesson, Pis- beleiev).[177]</p> <p>but I have never touched them because I just wouldn't even bother with (Pist- prejudice).. [178]</p> <p>I wouldn't touch them (Pist). [179]</p> <p>I think I just heard the rumours round school about how rubbish these laptops were (Psy, Pis) [180]</p> <p>and so when I started, I remember everyone saying, the laptops are rubbish...don't even try it, they are rubbish and that put me off cuz whenever Teachers who have been here for longer tell you these laptops are rubbish, don't touch them (Pis), [181]</p>

V15

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		
Spatial		
Kinematic		even as adults you need to keep up with the pace of it (Kine-pace)[001]
Physical		
Biotic		And because these children are so young (Biotic), [002]
Psychic/ Sensitive		<p>because obviously touching the interactive board (Psyc) [003]</p> <p>my personal fear (Psy), [004]</p>
Analytic		<p>just from my knowledge of certain children from my class I do know that some are on the computer straight after school (Soc, Anal,) [005]</p> <p>I think it's important, but I suppose as well, I think it will be a shame that it took over completely (Anal). [006]</p> <p>you need to have a good knowledge yourself (Anal) [007]</p>
Formative		<p>if something is broken or not working (Form)- [008]</p> <p>so that independent in you using and fixing things. so I think because their ICT skills are so basic, so if you bring the laptops down- they are temperamental- they don't always work (Form, Aesth), [009]</p> <p>with this.....board...as soon as you touch them, it flicks on (Psy- touch; Form- tech) [010]</p> <p>and that flicks through the laptop (Form)- [011]</p> <p>bin able to teach the children good computing skills (Form), [012]</p>
Lingual		<p>a lot of children in my year group are quite below in reading and writing (Ling- reading, writing; Juri- quality)- [013]</p> <p>and some of those children very rarely read at home (Ling- read) [014]</p>

		and the children at this age come up with very poor reading and writing skills (Juri- very poor, quality; Ling- reading and writing) [015]
Social		just from my knowledge of certain children from my class I do know that some are on the computer straight after school (Soc, Anal.) [016] but only a few children actually came back and had the support from the family to do that (Soc, Eth). [017] in such a deprived area, ermm, children's social interactions, interactions with peers and things like (Juri, Soc)- [018]
Economic		it seems a bit too much challenge at the minute (Aesth) to.....the children to use individual laptops (Eco), [019] and ...I believe that should be the main focus especially at home a lot of them do access computers (Pis-believe, commitment to this focus; Eco- a lot, access)- [020] their experiences are quite limited (Eco- limit), [021]
Aesthetic		it seems a bit too much challenge at the minute (Aesth) to.....the children to use individual laptops (Eco), [022] you have the problems with them not working (Aesth- not working) [023] with your.....as soon as you bring them down, they don't work (Aest), [024] but its bin able to manage it within this classroom (Aest)- [025] it can almost turn your lesson into chaos if stuffs re not working (Aest) [026] its a bit of difficulty (Aesth) [027] so that independent in you using and fixing things. so I think because their ICT skills are so basic, so if you bring the laptops down- they are temperamental- they don't always work (Form, Aesth), [028] that a lot of children sit in front of the TV or the computer screen a lot (Aesth- entertainment), [029] I think mainly it should be about balance (Aesth)..[030]
Juridical		a lot of children in my year group are quite below in reading and writing (Ling- reading, writing; Juri- quality)- [031] and they are below where they should be reading (Juri). [032] but I do believe myself as a Teacher who works in such a deprived area where standards are very low (Pis- believe, Ethi- deprived; Juri- standards) [033] and the children at this age come up with very poor reading and writing skills (Juri- very poor, quality; Ling- reading and writing) [034] a lot of them come in as 1-2 year olds in terms of the speech and their language (Juri- standards), [035] so I don't think it should replace it (Juri). [036] so we have such a big catch up job to do to be able to give them the literate skills for life really (Eth, Juri). [037] in such a deprived area, ermm, children's social interactions, interactions with peers and things like (Juri, Soc)- [038]
Ethical		they need you to come over to sort it out (Ethical-self-giving)- [039] but only a few children actually came back and had the support from the family to do that (Soc, Eth). [040] but I do believe myself as a Teacher who works in such a deprived area where standards are very low (Pis- believe, Ethi- deprived; Juri- standards) [041] so we have such a big catch up job to do to be able to give them the literate skills for life really (Eth, Juri). [042]
Pistic		and sometimes if you've planned a lesson around using those laptops (pistic-uncertainty) [043] 'I am going to have a way not to include them' because they can be temperamental with them working (pistic- unreliable). [044]

		<p>with this.....board...as soon as you touch them, it flicks on (Psy- touch; Form- tech) [045]</p> <p>but I do believe myself as a Teacher who works in such a deprived area where standards are very low (Pis- believe, Ethi- deprived; Juri- standards) [046]</p> <p>and ...I believe that should be the main focus especially at home a lot of them do access computers (Pis-believe, commitment to this focus; Eco- a lot, access)- [047]</p> <p>I think that's the priority really (Pist), [048]</p> <p>and I suppose in some aspects, I might not be as confident in others but (Pist).... [049]</p>
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V16

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		<p>Getting all 30 children all logged on to the computer with their unique username and password, it will take me the best part of my time (Quanti- number; eco-limited resources- time). [001]</p> <p>terrifies me if I get 30 children on the computer (Psync- emotions, Quati- numbers,) [002]</p> <p>but the thought of 30 of them at the desk, especially if they are pulling them off each other or bashing at them (Quant- 30; Social- each other; Physical- bashing at them).[003]</p> <p>I don't want to book out thirty computers (Juri- to book out, Quan- 30) [004]</p> <p>and then block them everyday so that I can use six (Juri- block them everyday; Quan- six). [005]</p> <p>I have to book 30 laptops out (Juri- book 30 laptops out; Quant- 30 laptops), [006]</p>
Spatial		<p>it has to do with the signal interference in this room (Spatial- spatial layout, Form- signal) [007]</p> <p>I just couldn't find the right series of clicks to get to it (Analy-no clarity; Spat- right series of clicks) [008]</p>
Kinematic		
Physical		<p>but the thought of 30 of them at the desk, especially if they are pulling them off each other or bashing at them (Quant- 30; Social- each other; Physical- bashing at them).[009]</p> <p>I feel if you bash on the keys (Physical- bash on the keys),[010]</p> <p>you are not going to break a laptop (Physical- break),[011]</p> <p>you start bashing on the screen of an ipad (Physical- bashing; form- destroying),[012]</p> <p>you start worrying that they might hit it too hard (Psych- worrying; Physical- hit it too hard (force)) [013]</p> <p>they don't get plugged back in (physical- plugged back in), [014]</p> <p>they don't get charged up (physical- charged up). [015]</p> <p>getting them out and finding that they are flat when you turned them on was one of those problems (Phy-getting them out, batteries flat-electric conductance) [016]</p> <p>have children who struggle to hold a pencil well (Aesth- struggle; Physical- hold a pencil well) [017]</p>

Biotic		but as a grown up (Biotic- grown up), I wouldn't know where to start with it if I was to (Anal- wuldn't know)[018]
Psychic/ Sensitive	I am literally scared of the ipads if i'm honest (psych-fear, pistic- honesty)	<p>it can be really frustrating (Psych- feeling) [019]</p> <p>yea, it's quite frustrating (psyc- emotions). [020]</p> <p>terrifies me if I get 30 children on the computer (Psyc- emotions, Quati- numbers,) [021]</p> <p>and they haven't got covers, they are not protected and i'm just terrified of them just having 30 ipads broken at the end of the lesson (psych- fear; Juri-appropriate protection).[022]</p> <p>and not be scared to pick one up (Psyc- scared) [023]</p> <p>is just the thought of all broken screens (Psyc- thought), [024]</p> <p>for the first time I will be anxious (Psyc- anxious), [025]</p> <p>you start worrying that they might hit it too hard (Psych- worrying; Physical- hit it too hard (force)) [026]</p> <p>So it's a process, that worries me (Form- process; Psyc- worries), [027]</p> <p>it was a bit disappointing (Psyc- disappointing) [028]</p> <p>scared of getting it wrong (Psych- Scared; Pistic- getting it wrong) [029]</p> <p>it's a worrying thought (Psych- worrying thought)[030]</p>
Analytic	I just don't know enough about it (Analy- awareness, Eco- limited knowledge)	<p>there is going to be the problem of you have to start at the very beginning with the very basic (Anal- clear thinking, basics) [031]</p> <p>A lot of them don't know how to find the internet, what icon to click, what an icon is, a lot of language and vocabulary which is a kind of thing we are modelling now (Anal-Clarity) [032]</p> <p>if you ve got something small then sometimes maybe just miss it out and then come back to it (Eco- limited resources; Analy-clarity). [033]</p> <p>so sometimes you kind of loose the point you want to make, you have to shift the activity to a different focus (Anal-clarity;Aesth-activity). [034]</p> <p>I can't find it, I have looked everywhere, there must be somewhere you can borrow resources, will check council if they have got an ICT library, if they have got all those resources you can lend (Analy-awareness; Ling- library; Eco-saving of resources.). [035]</p> <p>because i'm not as familiar with the ipads (Analy- not as familiar), [036]</p> <p>it needs me familiarising myself with those things (Anal-familiarising, clarity). [037]</p> <p>it's having time to look for new ideas (Eco- having time; Analy- ideas), [038]</p> <p>in it trying to find the pathway back into the activity (Anal- to find;) [039]</p> <p>I just couldn't find the right series of clicks to get to it (Analy-no clarity; Spat- right series of clicks) [040]</p> <p>you have thought of a different idea on a standby (Anal- idea) [041]</p> <p>but as a grown up (Biotic- grown up), I wouldn't know where to start with it if I was to (Anal- wuldn't know) [042]</p> <p>so right now I need to get them focused on their writing (Anal- focused; Ling-writing),[043]</p> <p>the angle of things you need to teach them grows every year (Anal- of vision; Eco- grows every year). [044]</p>
Formative		<p>but at the moment when it doesn't work and I have got it lined up (Form- plans, doesn't work) [045]</p> <p>it has to do with the signal interference in this room (Spatial- spatial layout, Form- signal) [046]</p> <p>I'm not sure how to do that yet with the ipads (Form- how to do, shaping), [047]</p>

		<p>you start bashing on the screen of an ipad (Physical- bashing; form- destroying), [048]</p> <p>So it's a process, that worries me (Form- process; Psyc- worries), [049]</p> <p>I could be doing something better and at the end I just had to drop the activity (Form- drop the activity). [050]</p> <p>whereas if you are going to have to start from the whole internet and you search and the first few things you click on you don't find anything useful (Form- internet; Eco- access to infor; Anal- useful) [051]</p> <p>having children on computers a lot is not good for them (Social- children; Form- computers; Eco- a lot). [052]</p> <p>I am just lazy (Form- lazy), [053]</p> <p>sometimes, I just wished it always worked (Form- always worked) [054]</p>
Lingual		<p>A lot of them couldn't write their own surnames and their user name is their names (Ling-write). [055]</p> <p>we have got to learn to spell our names before we can learn to log on to the computer. that's why it takes a long time (Ling- to spell our names; Eco- takes a long time). [056]</p> <p>when the children are sitting and waiting and nothing happens (Lingual- deceit) and they say- 'where is it, you said we are going to do something really exciting thing today'. [057]</p> <p>how safe is it to pick the right website they can go on which is what I wanted to look at.(pistic- trust, ling-website,) [058]</p> <p>I can't find it, I have looked everywhere, there must be somewhere you can borrow resources, will check council if they have got an ICT library, if they have got all those resources you can lend (Analy-awareness; Ling- library; Eco-saving of resources,). [059]</p> <p>they are quite rough with the books and we had to spend a long time learning how to look after a book (Aesth- rough; Eco- spend a long time, Ling- book),[060]</p> <p>but sometimes finding the right thing the first time and if you click to go back on a link and it's changed slightly and it comes up as 'this is no longer recognised' or 'this web page no longer exists' (Aesth- changed slightly; Jurid- comes up as 'this is no longer recognised'; Ling- web page). [061]</p> <p>but because they want them to stay together all the time (Ling- stay together) [062]</p> <p>so right now I need to get them focused on their writing (Anal- focused; Ling-writing),[063]</p>
Social		<p>a little bit shut down from everybody else (Soc- relationships). [064]</p> <p>and they can't share (Social- relationship), [065]</p> <p>I'm not sure how that's going to work when it's time to get the children on there and I've got the whole 30 saying 'Ms, I can't find it' (Social- obtaining support). [066]</p> <p>they can't share drive because the network is gone (Eco-technical limitation, Soc- team building limitation), so [067]</p> <p>having children on computers a lot is not good for them (Social- children; Form- computers; Eco- a lot). [068]</p> <p>but I wouldn't want to leave the children playing on the computer outside a closed sort of protected environment (Soc- children playing; Ethi- protected environment). [069]</p>
Economic	<p>I just don't know enough about it (Analy- awareness, Eco- limited knowledge)</p> <p>we have put in a lot of money having them, so we need to get them out and used them, which I do agree with (Eco-</p>	<p>Getting all 30 children all logged on to the computer with their unique username and password, it will take me the best part of my time (Quanti- number; eco-limited resources- time).[070]</p> <p>we have got to learn to spell our names before we can learn to log on to the computer. that's why it takes a long time (Ling- to spell our names; Eco- takes a long time). [071]</p> <p>we are not wasting all that time (Eco- waste), [072]</p>

	cost),	<p>the laptop I have got has internet, so sometimes it works, sometimes it doesn't, (Eco- technical limitations) [073]</p> <p>it doesn't work anymore because the internet is patchy on that computer (Eco- technical limitations) [074]</p> <p>the problem is that if we have 30, I think they will become very focused on their own computer (Eco- limited resources) [075]</p> <p>if the tablets are left out, that will give me the ability to assess if that child has only managed to get to level two in ten minutes, (Eco- Accessibility of resources) [076]</p> <p>and then the internet connection went and it just wouldn't cooperate anymore (Eco- technical limitations), [077]</p> <p>they can't share drive because the network is gone (Eco-technical limitation, Soc- team building limitation), so [078]</p> <p>if you've got something small then sometimes maybe just miss it out and then come back to it (Eco- limited resources; Analy-clarity). [079]</p> <p>I can't find it, I have looked everywhere, there must be somewhere you can borrow resources, will check council if they have got an ICT library, if they have got all those resources you can lend (Analy-awareness; Ling- library; Eco-saving of resources.). [080]</p> <p>they are quite rough with the books and we had to spend a long time learning how to look after a book (Aesth- rough; Eco- spend a long time, Ling- book), [081]</p> <p>it's having time to look for new ideas (Eco- having time; Analy- ideas),[082]</p> <p>having time without it eating your weekend up (Eco- time; Ethical- eating your weekend up).[083]</p> <p>and I must have spent like 40 minutes (Eco- spent) [084]</p> <p>and at the end I thought I am wasting time (Eco- wasting time)', [085]</p> <p>we don't really have these apps in school anymore because it's very expensive (Eco- limited resources, expensive), [086]</p> <p>if the internet doesn't work (Eco- technical limitations), [087]</p> <p>so it can be time consuming (Eco- time consuming), [088]</p> <p>it just takes time (Eco – takes time), [089]</p> <p>and that feels very wasteful then (Eco- wasteful), [090]</p> <p>otherwise sometimes they go missing (Eco-lacking), [091]</p> <p>whereas if you are going to have to start from the whole internet and you search and the first few things you click on you don't find anything useful (Form-internet; Eco- access to infor; Anal- useful) [092]</p> <p>having children on computers a lot is not good for them (Social- children; Form- computers; Eco- a lot). [093]</p> <p>I don't want to buy them all and find that they are not useful (Eco- buy; Aesth- not useful) [094]</p> <p>it's that time it consumes (Eco- time it consumes). [095]</p> <p>the angle of things you need to teach them grows every year (Anal- of vision; Eco- grows every year). [096]</p>
Aesthetic		<p>so sometimes you kind of lose the point you want to make, you have to shift the activity to a different focus (Anal-clarity;Aesth-activity). [097]</p> <p>I tend to use my own digital camera rather than the ipads, because of the issue of getting the information from one onto the other (Aesth- compatibility), [098]</p> <p>they are quite rough with the books and we had to spend a long time learning how to look after a book (Aesth- rough; Eco- spend a long time, Ling-book),[099]</p> <p>but sometimes finding the right thing the first time and if you click to go back on a link and it's changed slightly and it comes up as 'this is no longer recognised' or 'this web page no longer exists' (Aesth- changed slightly; Jurid- comes up as 'this is no longer recognised'; Ling- web page).[100]</p> <p>I don't want to buy them all and find that they are not useful (Eco- buy; Aesth- not useful) [101]</p>

		<p>because the pressure is all about you (Aesth- pressure) [102]</p> <p>have children who struggle to hold a pencil well (Aesth- struggle; Physical- hold a pencil well) [103]</p> <p>if you have got children where they have never seen one and children who use them at home it's quite hard to bring that together (Aesth- bring together). [104]</p> <p>in the future it's terrifying (Aesth- terrifying), [105]</p>
Juridical		<p>if we had to get them all logged on to use the computers with the unique user names and passwords, we simply wouldn't get any computing done (Juri-denial of what is due; Ethical- sacrifice) [106]</p> <p>as long as there's sort of like feedback I can get from it, like education city where it gives you percentage or something that moves you forward where I can see where it has moved to, then it's useful. if they are just playing a game not so much (Juri- inadequate implementation). [107]</p> <p>and they haven't got covers, they are not protected and i'm just terrified of them just having 30 ipads broken at the end of the lesson (psych- fear; Juri- appropriate protection).[108]</p> <p>I don't want to book out thirty computers (Juri- to book out, Quan- 30) [109]</p> <p>and then block them everyday so that I can use six (Juri- block them everyday; Quan- six). [110]</p> <p>but sometimes finding the right thing the first time and if you click to go back on a link and it's changed slightly and it comes up as 'this is no longer recognised' or 'this web page no longer exists' (Aesth- changed slightly; Jurid- comes up as 'this is no longer recognised'; Ling- web page). [111]</p> <p>I have to book 30 laptops out (Juri- book 30 laptops out; Quant- 30 laptops), [112]</p> <p>Finding the right balance between invading their privacy and keeping them safe (Juri- right balance, invading their privacy; Ethic- keeping them safe). [113]</p> <p>so it's trying to teach that to them without showing them anything they shouldn't be seeing (Juri- appropriateness). [114]</p>
Ethical		<p>if we had to get them all logged on to use the computers with the unique user names and passwords, we simply wouldn't get any computing done (Juri-denial of what is due; Ethical- sacrifice) [115]</p> <p>even get on to using the internet safely (Ethical- ethicality of safety). [116]</p> <p>but I don't want to put more on his plate cuz I know he's already busy (Ethical- don't want to put more on his plate), [117]</p> <p>having time without it eating your weekend up (Eco- time; Ethical- eating your weekend up). [118]</p> <p>so nobody else can use the 24 (Ethi- Nobody else can use;) [119]</p> <p>Finding the right balance between invading their privacy and keeping them safe (Juri- right balance, invading their privacy; Ethic- keeping them safe). [120]</p> <p>but I wouldn't want to leave the children playing on the computer outside a closed sort of protected environment (Soc- children playing; Ethi- protected environment).[121]</p>
Pistic	I am literally scared of the ipads if i'm honest (psych-fear, pistic- honesty)	<p>how safe is it to pick the right website they can go on which is what I wanted to look at.(pistic- trust, ling-website,) [122]</p> <p>a different system perhaps will be better (Pistic- a different system will be better) ,[123]</p> <p>they disagree with them on principle (Pistic- disagree with them on principle), [124]</p> <p>and they buy very much into toxic childhood (pistic- buy very much; biotic- toxic childhood) – [125]</p> <p>I need to be brave with the ipads (Pist- to be brave), [126]</p> <p>scared of getting it wrong (Psych- Scared; Pistic- getting it wrong) [127]</p>

V17

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		
Spatial		
Kinematic		
Physical		you know you can be pulling and pushing things rather than just being on the screen (Phy).[001]
Biotic		Teachers tend to use it alot, these interactive white board, but it seems to be the only the younger Teachers (Biotic- Younger). [002] and to introduce it at a very young age (Biotic- young age) [003]
Psychic/ Sensitive		
Analytic		but i don't know how to use it- cuz i'm of the older generations(Anal- know how; Soc- generation). [004] but i'm afraid children now prefer to use an ipad (Anal- prefer). [005]
Formative		if it works, which doesn't in so many classes (Form). [006] I do say we should use alot more skills in the Early Years (Form) [007] it's very good if you can use it (Form). [008] i can't use a smart board (Form) [009] class room haven't got projectors that works (Form) [010] because they just want to go on the computers (Form- tech). [011] the children knew how to use an ipad better than how to use a pencil (Form). [012]
Lingual		especially when we have Early Years, like paintings (Ling- painting) [013] and things like that to develop their movement in the hands and wrist to write (Ling), [014] because they don't communicate with one another, you know it's all texting (Ling- commu) [015] but i still think they need to use the library definitely (Ling), [016] we all went to the library a lot (Ling- library) [017]

		<p>i do think it's very important to use books (Ling- books) [018]</p> <p>do they- they just send a text, an email (Ling- text, email). [019]</p> <p>because you tend to loose that interest with books (Aesth- interest, Ling- books)- [020]</p>
Social		<p>but i don't know how to use it- cuz i'm of the older generations(Anal- know how; Soc- generation). [021]</p> <p>...they are not in school and they know how to use ipads but they don't know how to talk to one another(soc)- [022]</p> <p>and then communicated more with each other because children don't talk face to face now a lot (Soc- interaction) [023]</p> <p>and because we share the ipads throughout the school, they don't have them in (Soc- share, school) [024]</p>
Economic	I just don't have the knowledge (Eco- limited).	very often you don't have the resources to buy a copy of a book for everybody (Eco – limited resources)[025]
Aesthetic		<p>but there do need to be a balance as well (Aesth- balance). [026]</p> <p>because you tend to loose that interest with books (Aesth- interest, Ling- books)- [027]</p> <p>ermmm, so they need a balance of both really (Aesth- balance).[028]</p> <p>Technology is the future but everything needs to be put into perspectives (Pist; Aesth). [029]</p>
Juridical		<p>but our children unfortunately do not get it (Juri- what is due).[030]</p> <p>alot of it is down to the parents before they come to school (Juri- respon). [031]</p> <p>Like in year 4 we don't have the same opportunity (Juri), [032]</p>
Ethical		
Pistic		Technology is the future but everything needs to be put into perspectives (Pist; Aesth).....

V18

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		because we are Teachers with smaller groups (individuals) (Quant- small). [001]
Spatial		
Kinematic		purely from a case of me and a child and a book can move anywhere and sit anywhere and its easy done that way.` (Kine- movement; Aesth- simplicity) [002]
Physical		
Biotic		

Psychic/ Sensitive		<p>a very great annoyance that you can't get through (psych- annoyance).[003]</p> <p>i wouldn't take on doing something unless I'm confident i knew how to operate the equipment (Psyc- confidence, form- forming).[004]</p> <p>you don't know until they have done the work and there are about to save (Psyc- deprivation; Ling- archives). [005]</p> <p>i was very confident using (Psyc- confid). [006]</p>
Analytic		<p>i like to make sure that i know what I'm doing with the equipment before i would try teaching with them (Analy- clear thinking).[007]</p> <p>otherwise the work is lost (Ling- records; Analy- disoriented). [008]</p> <p>to be marked by a computer rather than a person (Analy- to be marked). [009]</p> <p>i suppose if the children don't exactly do- they've got to be very precise, (Analytic- clarity; Soci- the children)[010]</p> <p>In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong (Analy-doesn't know how clear; Form- technology; Juri-Appropriateness).[011]</p>
Formative		<p>we can sometimes get a block on them that's one problem (Form- technology)[012]</p> <p>things that don't work (form- destroying, tech).[013]</p> <p>or the screen doesn't work or things are not connected correctly (For- tech). [014]</p> <p>main computer room projector wasn't working and the computer when you are trying to get it to work and someone has done something with it (form- tech, shaping)[015]</p> <p>what you are trying to get up there to use as a class isn't working (Form- tech not working). [016]</p> <p>i wouldn't take on doing something unless I'm confident i knew how to operate the equipment (Psyc- confidence, form- forming).[017]</p> <p>I just wished everything worked all the time (Form- worked all the time).[018]</p> <p>They will be scanned and marked by the computer, so its new to me (Form- technology).[019]</p> <p>In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong (Analy-doesn't know how clear; Form- technology; Juri-Appropriateness).[020]</p>
Lingual		<p>particularly if there's a part of the word that maybe-- for instance looking up the word sexton which is to do with a church caretaker but because it's got 'sex' in the beginning of it, that will filter and that would stop (Ling-inaccurate information).[021]</p> <p>if what you are trying to show on the computer won't come on (Ling- expression), [022]</p> <p>they can save it on their own folder on the computers but sometimes these are full (Ling- archives; Eco- limited resources)[023]</p> <p>otherwise the work is lost (Ling- records; Analy- disoriented). [024]</p> <p>you don't know until they have done the work and there are about to save (Psyc- deprivation; Ling- archives). [025]</p> <p>if it's only partially finished, that means they are not retrieving it the next time they have a session because it's in print (Ling-records).[026]</p> <p>I don't necessarily have the programs that we have on here (Ling- programs), [027]</p>
Social		<p>but again- for me to be using certain method is again dictated to by the work i am given or what's going on in class (Juri- dictated to, Social-institution).[028]</p> <p>i suppose if the children don't exactly do- they've got to be very precise, (Analytic- clarity; Soci- the children)[029]</p>
Economic	he has everything there on his stick which is currently	<p>not got the right equipment working (Eco- tech limitation), [030]</p> <p>if they have done it in a particular program, it might not wish to save (Eco- technical limitations).[031]</p>

	gone missing (Eco-missing).	<p>we also have the problem that these computers don't have dvd or we can't play everything we want to play through the smart board (Eco- technical limitations, Aesth- incompatibility). [032]</p> <p>they can save it on their own folder on the computers but sometimes these are full (Ling- archives; Eco- limited resources) [033]</p> <p>when the memory is full and they weren't able to save their works, (eco- technical limitation)[034]</p> <p>At the moment, there's no alternative to a pen drive if they were to continue the following week (Eco- limited resources). [035]</p> <p>I work with a small group at the back of the classroom, so the facility isn't there to do it (Eco- access to facilities). [036]</p>
Aesthetic		<p>maybe there's a fraction of the word or a slight meaning that Salford has decided is not acceptable, and therefore something we are trying to look at is very harmless to the word we are trying to get to (Juri- appropriateness; Aesth- misfit).[037]</p> <p>we also have the problem that these computers don't have dvd or we can't play everything we want to play through the smart board (Eco- technical limitations, Aesth- incompatibility). [038]</p> <p>if things go wrong in the mean time you either have to put up with it (Aesth- chaotic) [039]</p> <p>it's just that it doesn't necessarily fit in with what our role is (Aesth- misfit, no integration), [040]</p> <p>but i would say that it's from my point of view more difficult to do what i need to do if i had to use the ipad or computer (Pistic- point of view; Aesthetic-difficulty).[041]</p> <p>purely from a case of me and a child and a book can move anywhere and sit anywhere and its easy done that way.` (Kine- movement; Aesth- simplicity) [042]</p>
Juridical		<p>maybe there's a fraction of the word or a slight meaning that Salford has decided is not acceptable, and therefore something we are trying to look at is very harmless to the word we are trying to get to (Juri- appropriateness; Aesth- misfit). [043]</p> <p>but again- for me to be using certain method is again dictated to by the work i am given or what's going on in class (Juri- dictated to, Social-institution).[044]</p> <p>it's generally not my choice (Juri- not my choice).[045]</p> <p>In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong (Analy-doesn't know how clear; Form- technology; Juri-Appropriateness).[046]</p>
Ethical		but it wouldn't be that convenient to do that (ethical- sacrifice).[047]
Pistic		<p>but i would say that it's from my point of view more difficult to do what i need to do if i had to use the ipad or computer (Pistic- point of view; Aesthetic-difficulty), [048]</p> <p>So sometimes, the person is better but not always (Pist- the person is better).[049]</p>

V19

Aspects	Phrase from Answers	Phrase from EIV
Quantitative		<p>If the sound or light goes, it can't be used at all you can't get 30 children round this (shows an ipad). it's not good enough is it? (Eco, quanti, Juri) [001]</p> <p>and it was 6 children to a table (Quant; Soc- sharing), [002]</p>
Spatial		
Kinematic	-so it really slows them	

	down (Kine).	
Physical		
Biotic		
Psychic/ Sensitive		<p>aggressive as well (psych), [003]</p> <p>if the tab is not coming on, they go on banging (psyc- anger) – [004]</p> <p>getting quite aggressive, on the game console (psych) [005]</p> <p>like if they are on computers all day (at school, at home) i don't think it will do any good mentally (Pscy-mentally) [006]</p> <p>and they do, some of the older ones do- till midnight. and they tell us 'i was awake till midnight' (Psy), [007]</p> <p>it's like you've not had a proper sleep becuz your mind is still (Psy) [008]</p> <p>it's like when you've bin watching telly your mind still doesn't stop (Ling, Psy), [009]</p> <p>you are not relaxing (Psy) [010]</p> <p>it would tell in your eyes when u're mentally on the computer watching the screen (Psy), [011]</p> <p>it's scary (Psy).[012]</p> <p>it's actually a scary side (Psy).[013]</p>
Analytic	log in problems if the children don't know their log in (Ling- log in; Anal- don't know)-	
Formative		<p>you are tend to going lazy with it (Form). [014]</p> <p>if it's not working, broke (Form) [015]</p> <p>try and stop ruining the social side of it (Soc,Form-destroying).[016]</p>
Lingual	log in problems if the children don't know their log in (Ling- log in; Anal- don't know)-	<p>bcuz it was an independent program, we had to do it with the sounds (Ling), [017]</p> <p>you still need your handwriting skills (ling). [018]</p> <p>i think every child deserves to know how to write and not just tap (Ling- to write, Juri-what is due).[019]</p> <p>it's like when you've bin watching telly your mind still doesn't stop (Ling, Psy), [020]</p> <p>on who they can speak to, who they are actually speaking to (Ling-communication).[021]</p>
Social		<p>and it was 6 children to a table (Quant; Soc- sharing), [022]</p> <p>the social aspects definitely (Soc). [023]</p> <p>and social aspect of it (soc)- [024]</p> <p>try and stop ruining the social side of it (Soc,Form-destroying).[025]</p>
Economic	sound problems (Eco-technical limitation), too many people using	<p>we had no sound at all (Eco-technical limi)[026]</p> <p>we couldn't just get any sound up from the laptops (Eco), [027]</p> <p>but there were no sounds so it couldn't be done (Eco- tech limi), [028]</p>

	<p>the internet at the same time (Eco- size limit)</p> <p>many people using the servers (Eco- size limit).</p> <p>we couldn't get any sound off it (eco- tech limi).</p>	<p>the smart boards like - if the bulb goes, it can't be used, if the sound goes, it can't be used (Eco). [029]</p> <p>If the sound or light goes, it can't be used at all you can't get 30 children round this (shows an ipad). it's not good enough is it? (Eco, quanti, Juri)[030]</p>
Aesthetic		<p>so it just knocked the whole afternoon off (Asthe) cuz we couldn't do it, [031]</p> <p>because the children will struggle (Aesth), [032]</p> <p>so you can be playing on your xbox or play station all night (Aesth). [033]</p>
Juridical		<p>If the sound or light goes, it can't be used at all you can't get 30 children round this (shows an ipad). it's not good enough is it? (Eco, quanti, Juri)[034]</p> <p>i think every child deserves to know how to write and not just tap (Ling- to write, Juri-what is due).[035]</p> <p>be alot more firmer with security to go on the computers (Juri- legal matters)[036]</p> <p>I do think the security side needs to be sorted out more (Juri). [037]</p> <p>imagine these young ones bin exposed (Juri- inappropriateness) [038].</p> <p>if its bin used properly (Juri), [039]</p>
Ethical		taking turns (Eth). [040]
Pistic		<p>Chasing the patience away (Pist), [041]</p> <p>it's specially the generation now that will suffer more (Pis)..[042]</p>

V20

ASPECTS	Phrase from Answer	Reason	Phrase from EIV	Reason
Quantitative			you've got 3/4 children round a laptop and then they are not learning enough and not as focus cuz it's too many of them round it, (Quantit- 3-4 children, too many; Soc- round a laptop (sharing); Anal- not learning enough) [001]	
Spatial				
Kinematic			sometimes, the internet can be a bit slow- [002]	(Form- internet; Kine- a bit slow)
Physical	They all die within a few minute	physcial- battery		

Biotic				
Sensitive/Psychic			<p>my board goes a bit scary (Psych- scary) [003]</p> <p>can be a bit annoying sometimes (Psych- annoying) [004]</p> <p>which i was quite frustrating (Psych- frustrating).[005]</p> <p>Yea, so I do think this has affected them quite a lot. (Psync- affected them) [006]</p> <p>I think their enthusiasm to participate in sporty kind of things (Psync- enthusiasm). [007]</p> <p>probably affecting them quite a lot. (Psync- affecting them; Eco- a lot) [008]</p> <p>i think their reaction side of things are a lot quicker than possibly used to their patient level (Psych- reaction side; Pistic- patience level- of good morale). [009]</p> <p>they react very quickly and they shout back very quickly (Psych- react & shout back).[010]</p> <p>it scary (Psync- scary) [011]</p> <p>but you weren't as worried about them as exploring this days (Psy- worried; Analy- exploring), [012]</p> <p>i just think its a bit more frightening (Psync- frightening).[013]</p> <p>and won't be able to recite information from it (Psync- recite; Ling information). [014]</p>	
Analytic			<p>child error/technology error- because children can never remb their own passwords [015]</p> <p>they can't remb them [016]</p> <p>you've got 3/4 children round a laptop and then they are not learning enough and not as focus cuz it's too many of them round it, (Quantit- 3-4 children, too many; Soc- round a laptop (sharing); Anal- not learning enough) [017]</p> <p>they are not all getting a go, they are not all focusing on it and it just causes disruption around the classroom really (Juri- not all getting a go; Analy- not all focusing; Aesth- causes disruption). [018]</p> <p>so it just disappeared so I had to start. (Anal- disappeared, start) [019]</p> <p>some of it can take away from them their imagination (Anal- imagination) [020]</p> <p>they are not exploring in the same way (Anal- exploring)- [021]</p> <p>so they are not really using their imagination to get those experiences, (Analy- use of imagination) [022]</p> <p>they can't think of playing on their own, (Anal- think; soc- playing on their own) [023]</p> <p>but you weren't as worried about them as exploring this days (Psy- worried; Analy- exploring), [024]</p> <p>when children don't really know what they are going onto (Analy- don't really know), [025]</p> <p>or whether they just can't process it the same way with a book (Anal-can't process it; Ling- book). [026]</p> <p>Their research skills (Analy- research skills) [027]</p> <p>and not really take in the same way they do in a proper book (Anal-take in), [028]</p>	<p>remember</p> <p>can't remb them</p>
Formative			<p>sometimes, the internet can be a bit slow- [029]</p> <p>gets a bit stuck, (Form- technical malfunction) [030]</p>	<p>(Form- internet; Kine- a bit slow)</p>

			<p>I have been in the middle of teaching and the system got frozen so I couldn't teach anymore (Form- system froze; Juri- denial of what's due), [031]</p> <p>the laptops just wouldn't load up properly (Form- technology) [032]</p> <p>and you need a flash player, so sometimes those won't play on the ipads, you've got to find specific ones that are adaptable to the tablets really (Form- technology) [033]</p> <p>then my laptop died, completely died and I couldn't complete my work or save it or anything like that (Format- technology, shaping), [034]</p> <p>my laptop got completely crashed and died (Form- technology) [035]</p> <p>aren't so good esp on laptops (Form- laptops), [036]</p>	
Lingual			<p>so i think that's down to learning basic skills- they are not putting the passwords right [037]</p> <p>that causes a lot of disruption in getting the lessons started [038]</p> <p>you will be writing on it and it's writing up there (Ling- writing) [039]</p> <p>not bin able to get on to the program (Eco- not being able to get on; Ling- program) [040]</p> <p>so i hadn't saved my work and I had to start all over again, (Ling- save) [041]</p> <p>- it's just information bin thrown at them at times (Ling- information), [042]</p> <p>who they are speaking to (Ling- speaking, communication; Soc- interactions) [043]</p> <p>or whether they just can't process it the same way with a book (Anal-can't process it; Ling- book). [044]</p> <p>They just read the words (Ling- Superficial knowledge (just read the words) [045]</p> <p>so they won't picking information (Ling- information) [046]</p> <p>They won't be able to tell a lot from what they've read (Ling- tell; Eco- alot), [047]</p> <p>and won't be able to recite information from it (Psyc- recite; Ling information). [048]</p>	<p>Ling- inaccurate password input</p> <p>(Aesth- disruption,Lingu- lessons) .</p>
Social			<p>children get impatient (Soci- children; Pist- impatient) [049]</p> <p>you've got 3/4 children round a laptop and then they are not learning enough and not as focus cuz it's too many of them round it, (Quantit- 3-4 children, too many; Soc- round a laptop (sharing); Anal- not learning enough) [050]</p> <p>so in the playground you find a lot the younger children specifically don't really know how to play unless you give them something (Soc- playground, younger children, play). [051]</p> <p>they can't think of playing on their own, (Anal- think; soc- playing on their own) [052]</p> <p>they don't know how to play (Soc- to play), [053]</p> <p>you learned to play together (Soc- play together). [054]</p> <p>you learn how to cooperate with people (Soc- team building), [055]</p> <p>be patient even though you get into arguments (Pist- patient; Soc- argument), [056]</p> <p>you still learn those social skills (Soc- social skills), [057]</p> <p>whereas on the games they don't have the same social interactions (Soc- social interactions)- [058]</p>	

			who they are speaking to (Ling- speaking, communication; Soc- interactions) [059]	
Economic	i do think the old laptops are quite different laptops but they run out of batteries really quickly	run out of batteries	<p>it takes a lot of time to load up [060]</p> <p>haven't got enough knowledge and ability (Eco- enough knowledge and ability) [061]</p> <p>played by no sound (Eco- techn limitations). [061]</p> <p>not bin able to get on to the program (Eco- not being able to get on; Ling- program) [062]</p> <p>but with some of the programs not bin compatible with their use, you are a bit restricted sometimes. (Aesth- not being compatible; Eco- a bit restricted-limited) [063]</p> <p>probably affecting them quite a lot. (Psys- affecting them; Eco- a lot) [064]</p> <p>if you didn't have all that (Eco- didn't have all that-limited access to games), [065]</p> <p>whether they are faced with too much (eco- too much) [066]</p> <p>They won't be able to tell a lot from what they've read (Ling- tell; Eco- alot), [067]</p>	takes a lot of time
Aesthetic	it can break down can disturb your whole lesson	can breakdown disturb	<p>it kind of cause disruption in the class [068]</p> <p>that causes a lot of disruption in getting the lessons started [069]</p> <p>that can kind of disrupt the lesson (Aesth- disrupts) [070]</p> <p>that did disrupt the lesson (Aest- disrupt the lesson) [071]</p> <p>they are not all getting a go, they are not all focusing on it and it just causes disruption around the classroom really (Juri- not all getting a go; Analy- not all focusing; Aesth- causes disruption). [072]</p> <p>some of the programs if it's got videos or games, they are not compatible (Aest-not compatible) [073]</p> <p>but with some of the programs not bin compatible with their use, you are a bit restricted sometimes. (Aesth- not being compatible; Eco- a bit restricted-limited) [074]</p> <p>it's a bit boring isn't it when we've not got those things- (Aesth- boring) [075]</p> <p>they haven't got outside activity interest (Aesth- activity interest). [076]</p> <p>it could get quite boring (Aesth- boring), [077]</p> <p>they are so focused on these games that they don't have anything outside, (Aesth- games) [078]</p> <p>it seems to work differently (Aesth- work differently)- [079]</p> <p>i don't think their minds will work on it the same way of thinking the same way as they do (Aesth- harmony). [080]</p> <p>i think they are just into the games (Aesth- games) [081]</p>	Aesth- disruption; (Aesth- disruption, Lingu- lessons) .
Juridical			<p>i don't think it is a skill you will use unless you are interested in computing and that's what you want to go into [082]</p> <p>I have been in the middle of teaching and the system got frozen so I couldn't teach anymore (Form- system froze; Juri- denial of what's due), [083]</p> <p>it was no good to the class (Juri- no good). [084]</p> <p>they are not all getting a go, they are not all focusing on it and it just causes disruption around the</p>	Juridical- inappropriateness

			classroom really (Juri- not all getting a go; Analy- not all focusing; Aesth- causes disruption). [085] if it's not used properly (Juri- properly) [086]	
Ethical			everything is kind of thrown at them, even when they are on computer games and things like that (Eth- something thrown at them, gives beyond what's due) [087] because usually they've got something thrown at them (Eth- something thrown at them, gives beyond what's due). [088] what they are accessing (Eth- accessing), [089]	
Pistic			children get impatient (Soci- children; Pist- impatient) [090] boys haven't got particularly any special patience (Pist- patience- of good morale), [091] i think their reaction side of things are a lot quicker than possibly used to their patient level (Psych- reaction side; Pistic- patience level- of good morale).[092] be patient even though you get into arguments (Pist- patient; Soc- argument), [093] i think it's quite a lot dangerous in that side of it (Pistic- quite a lot dangerous). [094]	

Appendix VII

Gender (Quantitative Analysis)

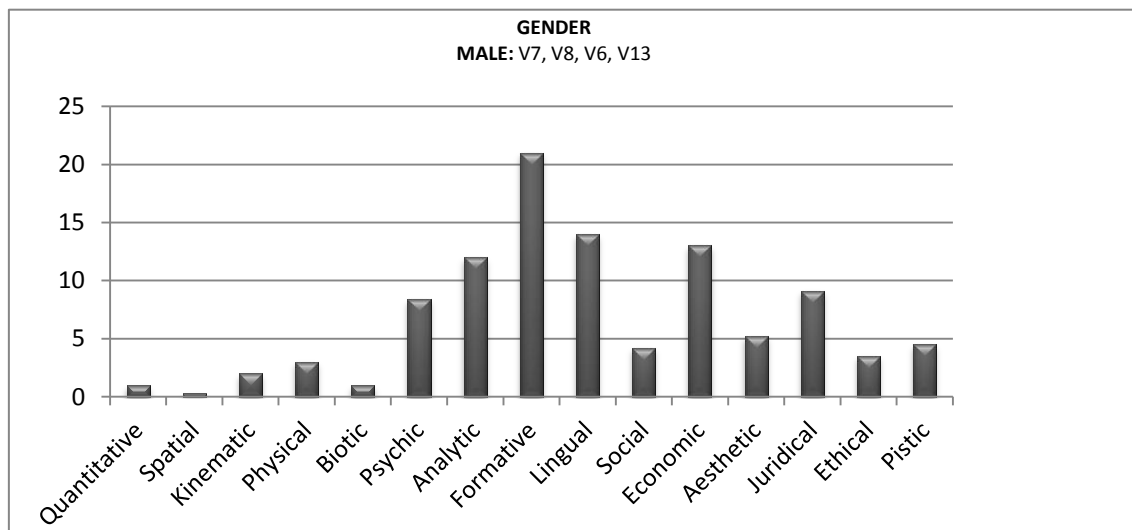
The gender cohort includes only the male and female participants and helps us to understand the kind of issues that is most meaningful to them. The comparison of the male and female gender will allow the Researcher to understand the kind of DTE issues that are peculiar with each gender, and valuable insights can be gained into new topics emerging in the rapidly changing field, such as ICT in education. This section discusses on both the male and female gender.

The voice note code represents the Primary Male Teachers as: male- V7, V8, V6, and V13.

The voice note code represents the Primary Female Teachers as: female- V1, V2, V3, V4, V5, V9, V10, V11, V12, V14, V15, V16, V17, V18, V19, V20

Male Teachers EIV

ASPECTS	Primary Teachers (male)
Quantitative	1
Spatial	0.3
Kinematic	2
Physical	3
Biotic	1
Psychic	8.4
Analytic	12
Formative	21
Lingual	14
Social	4.2
Economic	13
Aesthetic	5.2
Juridical	9.1
Ethical	3.5
Pistic	4.5



Male Teachers Aspectual Profile

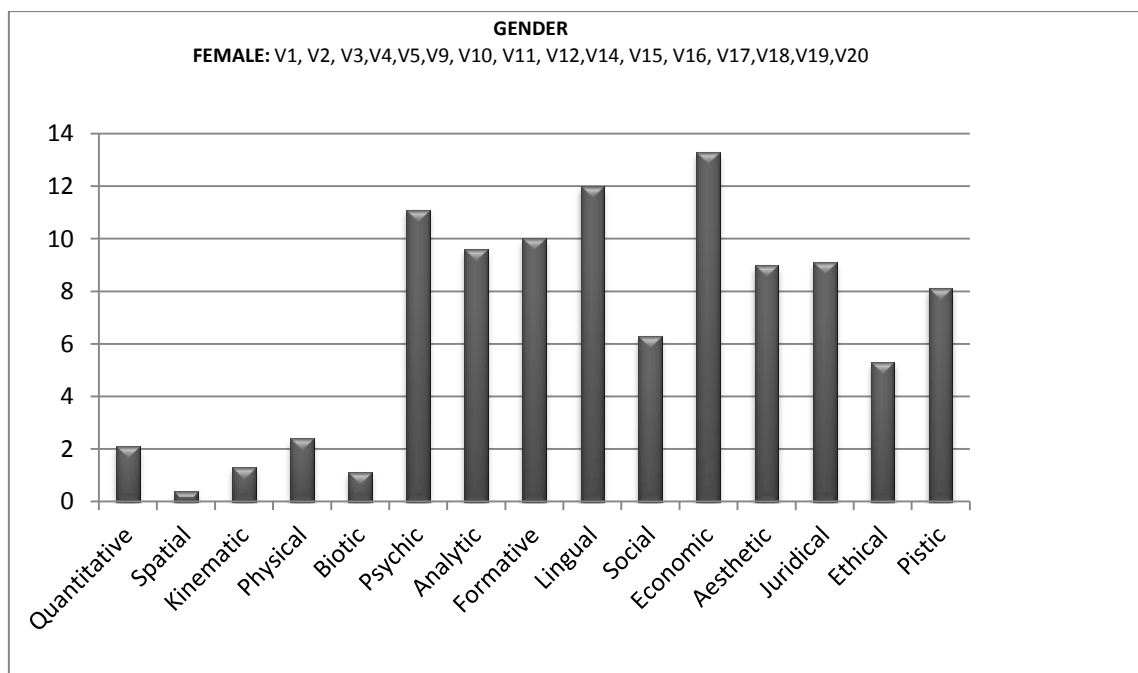
The graph in Figure 7.1 represents the discussion on issues by the Male Primary Teachers. They found issues in the formative aspect most meaningful across other aspects. Another finding is the low interest in both the social and ethical aspects.

The next section focuses on issues the Female Primary Teachers find meaningful in ICT use in the classroom.

Female (Quantitative Analysis)

This section discusses on the female gender. The voice note code represents the Primary Female Teachers as: female: V1, V2, V3, V4, V5, V9, V10, V11, V12, V14, V15, V16, V17, V18, V19, V20

Aspects	Primary Teachers (female)
Quantitative	2.1
Spatial	0.4
Kinematic	1.3
Physical	2.4
Biotic	1.1
Psychic	11.1
Analytic	9.6
Formative	10
Lingual	12
Social	6.3
Economic	13.3
Aesthetic	9
Juridical	9.1
Ethical	5.3
Pistic	8.1



QUALITATIVE ANALYSIS

The gender cohort includes only the male and female participants and helps us to understand the kind of issues that is most meaningful to them. The comparison of the male and female gender will allow the Researcher to understand the kind of DTE issues that are peculiar with each gender, and valuable insights can be gained into new topics emerging in the rapidly changing field, such as ICT in education.

This comprises of both quantitative and qualitative analysis. This is discussed in section 7.2.1 and 7.3
Qualitative Analysis of DTE Issues by Teacher Gender

This section shows the breakdown aspectual analysis of the male and female gender. The qualitative gender data analysis as discussed in section 7.3.1 is done in order to open-up the quantitative aspectual profiles. This gender aspectual analysis will focus on two aspects. Firstly on the formative aspect because the male teachers found it most meaningful and secondly the economic aspect because the female teachers found it most meaningful. Therefore, in order to do a comparative analysis as discussed in section 7.3.1, both the formative and economic aspects of both gender will be discussed.

As discussed in section 5.3 of Data Organising, the 1st order term captures the precise words of the participants while the 2nd order themes represents the meaning of the excerpt of issues in the 1st order terms. The table below focuses on the formative aspect of issues female teachers found meaningful.

FEMALE (Formative Aspect)

S/N	1 st Order Terms	2 nd Order Themes
-----	-----------------------------	------------------------------

1	<p>we had a power cut and everything went [V1-020]</p> <p>we do have power cuts periodically and everything goes wrong [V1-021,061]</p> <p>I think it's just hard in school where data is very low [V14-093]</p>	Deprived Facilities
2	<p>or whatever they show on the big screen and that doesn't work or the sound doesn't work [V3-046]</p> <p>we use words that we have typed in PowerPoint with cd and sometimes it just would not work [V1-023,033]</p> <p>you can't really save [V10-027]</p> <p>when they were all trying to log on to it in one classroom, it wasn't working [V10-046,032]</p> <p>it's quite difficult to show their work on a big board, [V10-025,039]</p> <p>gone back and come back .. things were freezing [V14-77]</p> <p>and the screen froze</p> <p>the HDMI cable that links my laptop to my computer just whenever I want to have sound on [V12-044]</p> <p>I have been in the middle of teaching and the system got frozen so I couldn't teach anymore [V20-083,031]</p> <p>what you are trying to get up there to use as a class isn't working [V18-016]</p>	Technical Malfunction
B	<p>in order to get the projector to work it doesn't tell you when it's run out of paper</p> <p>we have the main frame in the computer room, sometimes if something goes wrong with that, you might not be able to access them programs [V2-015,035]</p> <p>and then it will freeze and then all the laptops are frozen [V3-040]</p> <p>the other week, the projector broke, so you can't show anything- you can have it on there and not on here [V3-043]</p> <p>and I think it's the same when you are teaching, because the white board might not be working properly [V4-27]</p> <p>when Ofsted was in the building for that computer not to be working [V5-027,064]</p> <p>that was a bit frustrating so we couldn't print anything off, we had that for a couple of weeks where we couldn't get any work printed out for photos and things like that that we needed so we had somebody come back and fix that . [V10-017,030,061]</p> <p>the laptops just wouldn't load up properly [V20-032]</p> <p>my laptop got completely crashed and died [V20-035]</p> <p>main computer room projector wasn't working and the computer when you are trying to get it to work and someone has done something with it [V18-015]</p> <p>when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there [V12-039,090]</p> <p>you find problems for example board not working, [V11-002, 007,012,018,026]</p>	Hardware Problems
C	<p>...it's usually to do with the connections- internet connections that we have problems [V3-041]</p> <p>...like we need internet connections [V3-047]</p> <p>...the day OFSTED were coming our internet was down [V5-029,065]</p> <p>...and I had this whole lesson relied on that smart board and the internet wasn't working [V5-029,070]</p> <p>...there was no wifi [V5-032]</p> <p>...network was so slow [V10-031,008]</p> <p>...sometimes, the internet can be a bit slow- [V20-002,029]</p> <p>...it has to do with the signal interference in this room</p> <p>...when you want to do something then it says no connection [V3-039]</p> <p>...we quite often find that the internet isn't working [V12-042]</p> <p>...sometimes you type the password and the site is down [V11-002,007,012,018,026]</p> <p>...you can have the internet not working, [V11-002,007,012,018,026]</p> <p>...so definitely it's still a bit of a risk in terms of the internet connection.</p> <p>...and you have planned the whole session and then you find out you can't actually do it cuz the website is down. [V11-002,007,012,018,026]</p>	Internet Issues
D	<p>so they've found the clip at home, they have played and you try to play it in school and its bin fuzzy or something like that happening. [V10-029,045]</p> <p>and you need a flash player, so sometimes those won't play on the ipads, you've</p>	Program/Software Errors

	got to find specific ones that are adaptable to the tablets really [V20-033] we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, so [V11-002,007,012,018,026]]	
3	so they can't even actually login into their computers [V14-089,102] even actually getting onto the computer is an issue [V14-090] They have done a piece of work (Form), [V14-091,066,011] work not saved (Form), [V14-092,066,011]	Difficulty In Usage
B	I'm not that good with sort of technology, [V2-014] I can't use my phone properly [V2-016] I'm not sort of technically minded [V2-017] but I don't know how to use it [V3-037] don't really know how to use it, so... it's just more of my own competences that have to be raised [V14-075] i can't use a smart board they've had ipads from like 2-3 years old and they just flick through not know how to turn a video clip into full screen aren't so good esp on laptops i wouldn't take on doing something unless I'm confident i knew how to operate the equipment [V18-004,017] it's very good if you can use it [V17-008] I'm not sure how to do that yet with the ipads I don't think anybody else has used it	Incompetency
4	I do say we should use alot more skills in the Early Years I could be doing something better and at the end I just had to drop the activity [V16-050] bin able to teach the children good computing skills [V15-012] i found this for them and if it worked it would have been a great learning tool for them [V14-154.086,059] and it would have been that part of a lesson for them so it was a shame it didn't work [V14-154,087,060] Hindrance in skill formation I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access [V12-032,080] Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would have done if they had the ICT available. [V12-033,081] that was quite difficult as well rather than them be able to print and learning the skill of printing [V12-024,037] so they lost out on that skill of being able to print themselves so yeah that was quite difficult [V12-038,058,126]	Hindrance To Skill Formation
B	it makes you lazier because you just go (type and find it) that whole research purpose we had or I had when I was in school is gone because Google does it for you	Effect On Research Skills
C	Maybe eventually nobody will but you don't know what the future is going to bring but at the moment it's really an important skill that they need to have I know a lot of people text light so they can operate a play station remote but they can't hold a pencil [V5-002,024] the children knew how to use an ipad better than how to use a pencil [V17-012] somebody told me down there, I don't know whether true or not, they went to read a book,a physical book and they were going like this (swiping) because they are so used to swiping on an ipad	Effect On Writing Skills
D	if they spend their whole life engaged in ict and computers [V5-025,051,057] that sounds lazy but the thing is it's practical	Effect On Values
5	a lot of things in the computer they don't have to you've to kind of do it in group work and it doesn't always work. [V10-026,054] gets a bit stuck, [V20-030] so that independent in you using and fixing things. so I think because their ICT skills are so basic, so if you bring the laptops down- they are temperamental-	Limitation Of Technology

	<p>they don't always work [V15-009,028]</p> <p>it's just general kind of day to day technical issues [V12-028] so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. [V11-012,018]</p> <p>then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things . [V11-018,012]</p> <p>ermm, and some of the cameras that we've got- the old camera that we use for filming, we don't tend to get them out often becuz of batteries and collating them is not as tidy as the things we've got- [V10-036]</p>	
B	<p>if that system is down throughout the whole school network the whole system went down so we couldn't do anything, [V9-018] if it closes down or system failure you can't do it when it does break down [V9-019]</p> <p>if it's not working, broke [V12-041,014] if it works, which doesn't in so many classes [V17-006] if something is broken or not working But at the moment when it doesn't work and I have got it lined up [V16-045] things that don't work [V18-013] it wasn't working it doesn't work with this.....board...as soon as you touch them, it flicks on [V15-010,045] and that flicks through the laptop [V15-011] it was just a pain because it was constantly- it's not working, right [V12-014,041]</p>	<i>System Failure</i>
6	<p>also you do have spell-check on computers but you have to make sure it's on English not American [V3-053] but in kindle no idea really whether you are half way through, at the end or... you know what I mean it's different experience really [V4-029] you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards. [V11-003,009,013,034] but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. [V11- 003,009,013,019,034]</p>	<i>Fallible Design Of Technology</i>
7	<p>They will be scanned and marked by the computer, so its new to me [V18-019] because they just want to go on the computers and everything sort of comes from the machine. [V9-020] In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong but there are moments when you are just sat there waiting for the printer to come on. so we want everything instantly nowadays. so it's just getting that up to speed. and when the internet crashes, you are upset (formative-technology, psychic-ones feeling,upset) [V18-011,020,046.]</p>	<i>Technology Dependency</i>
B	<p>You find that as they are coming in (nursery) they are so used to ipads [V3-050] having children on computers a lot is not good for them [V16-052,068,019]</p>	<i>Undue Attachment</i>
C	<p>it's only when you've not had it that you find other creative ways to doing things you didn't have the screen and you had to completely rethink how you did things [V5-015,026] you know, on the ipads we have calculators so i guess they could go on there and use those, different games, things like that ermm, apps which they can use these days to calculate for you. [V10-023,034,047,072]</p>	<i>Effect On Creativity</i>

	<p>created the picture on paint [V12-035,053]</p> <p>Okay, when we have done any writing and they are using some of the words like spell words or things like that- obviously alot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing. [V10-049,033,022]</p>	
D	<p>they won't be used to doing anything for themselves cuz everything would be done for them and it sounds bazaar [V5-031]</p> <p>you are tend to going lazy with it</p> <p>I am just lazy [V16-053]</p>	<i>Laziness</i>
8	<p>they are used to a screen used to an ipad [V4-028]</p> <p>some don't and quite a lot of them have something in their bedroom- might have a tablet in bed with you [V4-030]</p> <p>When i was at school, technology was around, we used tech quite alot anyways. but i can say we did play out alot more and played games with each other socially with friends rather than stucked, glued to an ipad or an xbox or things like that. [V10-068,056,048,035]</p>	Unusual Attachment To Technology
9	<p>Technology aren't that good [V9-021,042]</p> <p>if technology is that advanced now, why is it not fixed straight away [V9-023]</p> <p>and you think sometimes technology aren't really that good [V9-024]</p> <p>I just wished everything worked all the time [V18-018]</p> <p>sometimes, I just wished it always worked [V16-054]</p>	Assumptions Of Technology
10	<p>then my laptop died, completely died and I couldn't complete my work or save it or anything like that [V20-034]</p> <p>there's no connection between the amazing equipment we have got with no disk space so we have to keep enlarging the disk space and that is a bit of a problem</p> <p>didn't have a printer installed on their computer</p> <p>we've got laptops, but I don't use those yet with my children just purely because we've only got the mouse on the actually pad on the computers, formative-technology, [V11-014]</p>	Limited Technical Resource
11	<p>we can sometimes get a block on them that's one problem [V18-012]</p> <p>or the screen doesn't work or things are not connected correctly</p> <p>class room haven't got projectors that works [V17-010]</p> <p>saving things in the wrong places and not being able to access it again [V12-082,034]</p>	Inaccessibility Of Technology
12	<p>when they get to touch the interactive white board which I rarely let them do because it always goes wrong [V14-034,082]</p> <p>So it's a process that worries me</p> <p>whereas if you are going to have to start from the whole internet and you search and the first few things you click on you don't find anything useful [V16-092,052]</p>	Bad Experience On Usage
13	<p>so is it not worth restarting all the computers in the middle of a lesson [V12-040,104]</p> <p>losing what they have done already [V12-040,104]</p> <p>then you've to restart it, pull the cable out, put it back in, restart it pull it out, put it back in [V12,002,045]</p> <p>when people want you to fix things and you can't fix them. [V10-037]</p>	Inconsiderate One-Way Quick Fix
14	<p>...ended up putting everything through one printer which was a bit of a night mare cuz obviously everybody needed things and needed them urgently [V12-043]</p>	Technical Overload
15	<p>it's difficult setting it up, the setup is the hardest part of the lesson [V12-029]</p> <p>getting the laptops all out getting them set up and getting them logged on [V12-</p>	Strenuous Technical Requirement

	030] and it needs to download first	
16	<p>try and stop ruining the social side of it [V19-016,025]</p> <p>you start bashing on the screen of an ipad [V16-012,048]</p> <p>I have to deal with children standing up, walking around, its just my nightmare ...someone is going to knock, laptop is going to be flying [V14-088]</p> <p>I think at the same time they do still love their paper and pens and doing things and they can look into their file of work and look back into their books an go-oh, I have done that. whereas, in ICT a lot of the time, it's there one minute and the end product is gone [V11-023,016,006]</p>	Destruction

Female Gender (Economic Aspect)

This section shows the breakdown of economic aspectual issues of the female gender. The qualitative gender data analysis as discussed in section 7.3.1 is done in order to open-up the quantitative aspectual profiles.

As earlier explained, the 1st order term captures the precise words of the participants while the 2nd order themes represents the meaning of the excerpt of issues in the 1st order terms. The table below focuses on the economic aspect of issues female teachers found meaningful.

S/N	1 st Order Term	2 nd Order Theme
1	<p>a 40seconds delay of the settling down of them trying to be quiet is quite a long time to keep a whole school quiet [V1-043]</p> <p>and it's because they spend a lot of time watching telly [V5-055,003]</p> <p>and they spend so much time focusing on the TV [V5- 013,056]</p> <p>and the ones that stay inside they are a lot of the time watching telly or on a computer or that sort of thing [V4-069,076]</p> <p>it's completely pointless because by the time you have started your lesson, you have got 10mins and the lesson is over [V12-068]</p> <p>so time can be an issue with it, [V1-041]</p> <p>if they spend their whole life engaged in ict and computers [V5-057,051,025]</p>	Inefficient use of time
b	<p>But wasted lots of time [V4-068]</p> <p>I won't waste my time [V14-134]</p> <p>they haven't done anything in an hour [V14-136]</p> <p>so they are just sat there waiting for a page to load cuz they are just sat there looking at blank screens waiting for [V14-144, 046]</p> <p>something to load we are not wasting all that time [V16-072]</p> <p>and at the end I thought I am wasting time</p>	Waste of time
C	<p>we have been waiting for the company to come now for about 2months [V4-064]</p> <p>but it's time- it's always the problem isn't it [V4-067]</p> <p>i just find it easier having everything typed out on my smart board for my lessons rather having to spend the time handwriting things on the white board. [V10-044,060]</p> <p>because if you've got to watch half an hour episode to check there is no swearing, that is half an hour that could have taking and making up result or something like that [V12-070,114]</p> <p>tried if they are suitable for the lesson, and I am spending time I spent time the whole last night finding it, checking it, playing it [V14- 125,162,152]</p> <p>after spending an hour [V14-135]</p> <p>they are quite rough with the books and we had to spend a long time learning how to look after a book [V16-060,081,099]</p>	Time investment
D	<p>is not a 2 minutes job, it's a five minutes job by the time you have worked out where it is, so that's sometimes why people don't use them because they don't want to go through this</p> <p>at first it was like time consuming [V1-013,046,057]</p> <p>it just takes time [V2-025]</p> <p>so I do use quite a lot of different things as much as they can get a hold of it really. in literacy I put my story onto the computer- like I'd scan them in, sometimes it takes time [V11-011,017,025]</p> <p>it takes a bit long time for it to load, [V11-012,016,026]</p> <p>you need to watch every minutes of the everything before you then teach it which makes it quite time consuming [V12-069]</p> <p>reminding myself how to do it will take me a few [V14-027,122]</p>	Time consuming

	<p>getting them out takes time but even just getting the laptops out onto their tables that can take up to 10 minutes and putting them away Getting all 30 children all logged on to the computer with their unique username and password, it will take me the best part of my time [V16-070] we have got to learn to spell our names before we can learn to log on to the computer. that's why it takes a long time [V16-056,071] and I must have spent like 40 minutes so it can be time consuming it's that time it consumes [V16-095] it just takes time [V2-025] it takes a lot of time to load up [V20-060] so it all takes time for the children to get their log in so they can save their own data so it all takes time for the children to get their log in so they can save their own data</p>	
E	<p>you don't seem to have that time [V2-024] you don't get enough time to learn about it. [V9-038] there's not enough time- [V9-036] it's just having that time to put some apps on the ipads for the children to use [V10-036,037,063] i don't always get the time to do those sort of things as well as teaching and all of that. [V10-036,064] which you think I'm pushed for time [V12-072] and its the time (Eco-time) [V14-121] I have got 90 books to mark and so many lessons (Quan-90 books; Anal- mark, lessons)..its never there any time (Eco- time). [V14-123,057,003] it's having time to look for new ideas (Eco- having time; Analy- ideas), [V16-038,082] having time without it eating your weekend up (Eco- time; Ethical- eating your weekend up). [V16-083,118] you haven't actually got a lot of time (Eco). [V14-132]</p>	Lack of time
f	<p>you are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic (E- waste of time, L- reduced access to information). [V1-026,038] on the internet it's the popular ones, you get adverts before it and it's very hard to time it so you don't get the advert (L-advert, E- timing). [V1-045,034] it's sort of like time restrained (E- limited resources;), [V2-022] it cuts out after about 20 minutes (Eco.), [V4-062] and now this part of my lesson that's meant to be 10-15 min long (Eco- length of time), [V14-126] so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to (Juri, Eco, Anal) [V14-073,133,171]</p>	Restrain on time: stop someone from doing something or put under control
2.	<p>so it's my lack of basic knowledge probably (Eco- lack). [V3-080] ... you will never know enough about a computer- [V9-035] you never learn enough [V9-015,037] saving things in the wrong places and not being able to access it again (Form- saving things in the wrong place; Eco- access). [V12-034,082] so many different things opened at the bottom, you've got to click as well. their experiences are quite limited (Eco- limit), [V15-021] haven't got enough knowledge and ability (Eco- enough knowledge and ability) They won't be able to tell a lot from what they've read (Ling- tell; Eco- alot), [V20-067,047]</p>	Limitation of knowledge
3.	<p>so it took me quarter of an hour the other day to try and save everything on the stick (E- waste of time) [V1-040] It will take like an hour and half for children to just log on (Eco, Ling). [V12-046,067] they hadn't even logged on (Eco), [V14,137]</p>	Too long technical instructions
4.	<p>I still only got about 8kids work out of 40 because the others wouldn't let me on (Q- count, E- time). [V1-001,042] It's a practical reason rather than somebody says it takes a lot of this, lot of that (A- logical, E- frugality of resources) , and then you feel the whole lesson is wasted now because we can't get on to what we are supposed to be doing (E- waste, technical limitation). [V3-079]</p>	Inadequate use of limited resources

	<p>helped us cut back on the use of paper and the ink. [V10-062]</p> <p>I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access (form, Eco) [V12-080,032]</p> <p>and you have planned the whole session and then you find out you can't actually do it cuz the website is down. [V11-012,018,026]</p>	
5.	<p>the limits on the memory (E- limit) [V1-044]</p> <p>it doesn't tell you when it's run out of paper (F- tech, E- resources).. [V1-049,025]</p> <p>There are too many things with that could go wrong such as technical problems that can throw you out (E- technical limitation). [V3-082]</p> <p>we get a lot of sound problems, because these interactive white boards for some reasons the sound doesn't work(E- limitation). [V3-084]</p> <p>we are having trouble at the moment because our projector needs attention in the hall (Eco- technical limitations), [V4-061]</p> <p>we have got two projectors which don't work (Eco) [V4-065]</p> <p>it was becoming full very quickly and they couldn't access it (Eco- full quickly, couldn't access it). [V12-084]</p> <p>space on the shared drive and on our own drives like space for document, we often run out of space (Eco), [V12-065]</p> <p>with no disk space so we have to keep enlarging the disk space and that is a bit of a problem (Eco, Form.) [V12-066,027]</p> <p>In the past I've had problems where I've wanted to download something and I can't even access it because there is not enough space to even save the document (Eco)</p> <p>you need your space - making it bigger and we do that, like when we have the RM people but it takes a while (Eco), [V12-073]</p> <p>she ended up having to teach a lesson with no sound on the clip (eco-tech limi- no sound)- [V12-097]</p> <p>so they are like - sound cable, oh, sound cable so that just adds time (Eco- time), [V12-098]</p> <p>when you are in the middle of a lesson and you are like - right, I'm ready to show this clip now and then it plays with no sound (Eco- technical limitation), [V12-099]</p> <p>we've got 2 year 3 classes we might save something in them and both classes connect its self so that becomes difficult and that is full as well. (Anal, Eco) [V12-020,074]</p> <p>and you have got 10min worth of battery before they die (Eco). [V14-129]</p> <p>our wifi wasn't very good (Eco) [V14-140]</p> <p>if you've tried to get 30 people on the internet at one time, they can't get on (Quan, eco) [V14-142,009]</p> <p>not got the right equipment working (Eco- tech limitation), [V18-030]</p> <p>we also have the problem that these computers don't have dvd or we can't play everything we want to play through the smart board (Eco- technical limitations, Aesth- incompatibility). [V18-032,038]</p> <p>they can save it on their own folder on the computers but sometimes these are full (Ling- archives; Eco- limited resources) [V18-023,033]</p> <p>when the memory is full and they weren't able to save their works, (eco- technical limitation) [V18-034]</p> <p>we had no sound at all (Eco-technical limi) [V19-026]</p> <p>we couldn't just get any sound up from the laptops (Eco), [V19-027]</p> <p>but there were no sounds so it couldn't be done (Eco- tech limi), [V19-028]</p> <p>the smart boards like - if the bulb goes, it can't be used, if the sound goes, it can't be used (Eco). [V19-029]</p> <p>If the sound or light goes, it can't be used at all you can't get 30 children round this (shows an ipad). it's not good enough is it? (Eco, quanti, Juri) [V19-001,030,034]</p> <p>played by no sound (Eco- techn limitations). [V20-061]</p> <p>not bin able to get on to the program (Eco- not being able to get on; Ling- program) [V20-062,040]</p> <p>but with some of the programs not bin compatible with their use, you are a bit restricted sometimes. (Aesth- not being compatible; Eco- a bit restricted-limited) [V20-063,074]</p>	Technical resources limitations
6	<p>my use is limited (E- limited), [V2-026]</p> <p>although I got all the training (Ling), I didn't use it regularly enough to feel absolutely confident with the white board (Eco, Pist), [V4-063,128]</p> <p>we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms so that meant for a couple of days, the passwords weren't working, [V11-002,007,012,018,026]</p>	Limited usage

7	<p>don't use too much colouring because it's too expensive.(Aesth- decoration, E-cost) [V1-056,048]</p> <p>they have quoted for new ones (Eco- budget), [V4-066]</p> <p>The pen pal app costs a fortune and it only has 20 exercises. [V11-030,025,020]</p> <p>but again the disadvantage is the cost. (.economic-cost) [V11-027]</p> <p>we place the importance on how they are expensive (Eco- expensive) [V12-092]</p> <p>they are really expensive(eco-expensive) [V14-115]</p> <p>and these cost like (Eco-cost)...</p> <p>they were really expensive (Eco- expensive). [V14-118]</p> <p>we don't really have these apps in school anymore because it's very expensive (Eco- limited resources, expensive), [V16-086]</p> <p>I don't want to buy them all and find that they are not useful (Eco- buy; Aesth-not useful) [V16-094,101]</p> <p>very often you don't have the resources to buy a copy of a book for everybody (Eco – limited resources) [V17-025]</p>	Money
8	<p>for instance writing on that board because I know that the worst thing that can happen to me is the pen will run out and I will just find another one (L-writing, Eco- resources, P-absolute). [V3-127,081,025]</p> <p>we do have filters in school but they don't work well (E- techn limitation). [V3-083]</p> <p>sometimes you think it doubles your work as well [V9-039]</p> <p>when it does not work cos it's just becomes a talking and writing lesson rather than an ICT session (Eco, ling).. [V12-048,079]</p> <p>then my lesson was all planned and I couldn't use the software that I had planned to use (Eco, pis,). [V12-139,077]</p> <p>they had it all up there on the board came to use it next day and it's all gone (Juri, eco), [V12-078,117]</p> <p>when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there (Eco- technical limitation; Form-restart). [V12-039,090]</p> <p>that was a bit frustrating so we couldn't print anything off, we had that for a couple of weeks where we couldn't get any work printed out for photos and things like that that we needed so we had somebody come back and fix that . [V10-017,030,061]</p> <p>so if we are using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), so it's not really smooth. [V11-002,007,012,018,026]</p> <p>then sometimes, you know what you are teaching and you have so many different things- it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things . [V11-002,007,012,018,026]</p> <p>yea in terms - you can have the internet not working, [V11-002,007,012,018,026]</p> <p>it had the success one day and the next day it was something to do with the settings and the browser settings or something and every time you went into it you have to go onto the internet settings, go on advance and type a certain ip address or a web address in or something you would allow the safety off and that stopped working (Eco- echn limitations,Physical,) [V12-003,075]</p> <p>the system crashes (Eco- technical limitation) [V14-127]</p> <p>couldn't get on the internet cuz sometimes they have little life button if they switch (Eco- tech limi), [V14-139]</p> <p>it would just say system is too busy or something, so you couldn't log the children on (Eco- tech limitation; Ling- log on) [V14-141,106]</p> <p>the laptop I have got has internet, so sometimes it works, sometimes it doesn't, (Eco- technical limitations) [V16-073]</p> <p>it doesn't work anymore because the internet is patchy on that computer (Eco-technical limitations) [V16-074]</p> <p>and then the internet connection went and it just wouldn't cooperate anymore (Eco- technical limitktations), [V16-077]</p> <p>they can't share drive because the network is gone (Eco-technical limitation, Soc- team building limitation), so [V16-078,067]</p> <p>if the internet doesn't work (Eco- technical limitations), [V16-087]</p> <p>whereas if you are going to have to start from the whole internet and you search and the first few things you click on you don't find anything useful (Form-internet; Eco- access to infor; Anal- useful) [V16-092,051]</p> <p>if they have done it in a particular program, it might not wish to save (Eco-technical limitations),[V18-031]</p>	Inefficiency of technology

9	<p>There is not enough laptops (Eco- limited resources). [V3-085]</p> <p>There's definitely not enough and more and more we find that as the school gets bigger and more teachers are using computers in their lessons which is good but then you haven't got enough for everybody (Eco- limited resources). [V3-086]</p> <p>we only have 5 of them so again its sort of resources and equipment. [V10-057,002]</p> <p>if we have more, it would be better, [V10-058]</p> <p>but when u've got 30 children and telling them to work from like 5 roomers, [V10-003,059]</p> <p>there is only one per the whole school and that depends on when they are available (Quan, Eco) [V12-001,061]</p> <p>so we share one amongst us when they are available (Soc, Eco). [V12-057,062]</p> <p>Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would have done if they had the ICT available. (Form,Eco) [V</p> <p>because have they had that, they will be able to look back I think the language what they would have used would have been enriched (Eco, ling) [V</p> <p>I wouldn't do that if it was just me in the classroom (Eco-limited staff). [V12-093]</p> <p>there was one printer in the school working and obviously with the amount of staff and children that we have and the amount of people that were relying on it (Eco- limited resources) [V12-096]</p> <p>you are the only one as the teacher (Eco- only one), [V14-116]</p> <p>they want their own one (Eco). [V14-128]</p> <p>we should have had more trainings (Eco- more (were insufficient); Ling- trainings), [V14-095,119]</p> <p>I kind of wish we had a bit more training on it (Eco- more; Ling- training) [V14-096,120]</p> <p>it seems a bit too much challenge at the minute (Aesth) to.....the children to use individual laptops (Eco), [V15-019,022]</p> <p>having children on computers a lot is not good for them (Social- children; Form-computers; Eco- a lot) [V16-052,068,093]</p> <p>the angle of things you need to teach them grows every year (Anal- of vision; Eco- grows every year). [V 16-096,044]</p> <p>At the moment, there's no alternative to a pen drive if they were to continue the following week (Eco- limited resources). [V18-035]</p>	Limited Resources
10	<p>we have to sometimes loose the key to the bank where they are all kept so we can't get in there anyway (E-access to bank). [V3-087]</p> <p>whether we are going to need it or not (E-resources), [V3-088]</p> <p>we can't access the network so I can't access my shared drive or my network on the computers which means I can't access document I have prepared and things like that. (Eco- techn limitations) [V12-063]</p> <p>we sometimes have the same problem with the internet and when you can't access the internet, things that we planned in advance are very difficult (Eco). [V12-064]</p> <p>just none of us could access it and its being like that since we can't access it (Eco,Juri). [V12-076,116]</p> <p>they can't go back in it and access it again (Eco- access it) [V12-085]</p> <p>it was really difficult to access the computers (Eco- to access the computers) [V12-086]</p> <p>or something like that and they couldn't go back and access (Eco-access) [V12-087]</p> <p>and re-access the work that they have done (Eco- re-access) [V12,088]</p> <p>they couldn't go back to where they had written the document on (Eco- access; Ling-written the document on), [V12-089,052]</p> <p>If they have not got access on their own thing (Eco- no access), [V12-091]</p> <p>we did have a big melt down because we had OFSTED coming to observe and no printers were working (Juri- OFSTED; Eco- tech limitation) [V12-095,119]</p> <p>we quite often come in to find that we can't access something we've saved previously (Eco- technical limitation). [V12-094]</p> <p>the system stops other people log on (Eco- technical limitation). [V14-138]</p> <p>and ...I believe that should be the main focus especially at home a lot of them do access computers (Pis-believe, commitment to this focus; Eco- a lot, access)- [V15-047,020]</p> <p>the problem is that if we have 30, I think they will become very focused on their own computer (Eco- limited resources) [V16-075]</p> <p>if the tablets are left out, that will give me the ability to assess if that child has</p>	Access to resources

	<p>only managed to get to level two in ten minutes, (Eco- Accessibility of resources) [V16-076]</p> <p>if you ve got something small then sometimes maybe just miss it out and then come back to it (Eco- limited resources; Analy-clarity). [V16-033,079]</p> <p>I can't find it, I have looked everywhere, there must be somewhere you can borrow resources, will check council if they have got an ICT library, if they have got all those resources you can lend (Analy-awareness; Ling- library; Eco-saving of resources,). [V16-080,059,035]</p> <p>I work with a small group at the back of the classroom, so the facility isn't there to do it (Eco- access to facilities). [V18-036]</p> <p>if you didn't have all that (Eco- didn't have all that-limited access to games), [V20-065]</p> <p>whether they are faced with too much (eco- too much) [V20-066]</p>	
11	<p>and that feels very wasteful then (Eco- wasteful), [V16-090]</p> <p>otherwise sometimes they go missing (Eco-lacking), [V16-091]</p>	Waste

MALE (Formative Aspect)

This section shows the breakdown of both the formative and economic aspectual issues of the male gender. The qualitative gender data analysis as discussed in section 7.3.1 is done in order to open-up the quantitative aspectual profiles. As earlier explained, the 1st order term captures the precise words of the participants while the 2nd order themes represents the meaning of the excerpt of issues in the 1st order terms. The table below focuses on the formative aspect of issues male teachers found meaningful. Also the further analysis focuses on the economic aspect of issues male teachers found meaningful.

Male Gender (Formative Aspect)
1st Order Terms
the children are not always using this [V13-017] (Form) it's often difficult to manage the computer system if the children are using the laptops [V8-022]
technology is only getting better and we are getting more lazy, more reliant on computers [V13-093] (Pist- getting better; Form- laziness). ... so they can mess up the whole queue of your lesson, as oppose to pen and paper, then at the end of the day you can't go flat in the middle of the lesson or if you use it for an extended period, it doesn't need recharging at the end of the day. [V8-023] they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [V8-024] if you rely entirely on ICT and if they don't work, you have to have a backup, [V8-025]
a new skill to teach people and I think it's all changing all the time- of course it is, so what we learnt today will be non-existence in two years' time [V13-097] (Form- skill; Anal- teach) we've got new technology which is not as simple to use as the older technology was. [V8-018] but when I try to play back from the apple software, it doesn't allow me to play back at the moment [V8-021]. ..obviously the age of technology makes a difference to them as well, [V7-026] ... we have to use older laptops which don't work as well and that can be a bit frustrating [V7-027]
it's just bin prepared, be organised and know how to use something effectively that's for every resources [V13-023] (Form-organised, how to use-shaping; Eco-effectively, resources). that doesn't necessarily mean that they will achieve more or learn more [V8-020] ... I spent a long time planning what we are going to do, [V7-031] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [V7-034,] got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [V7-32] ... where you have got to adapt your lesson and people just share things. [V7-038]
I know the limitations of this technology so I know what's going to work and what's not going to work. [V8-026] ... technology can fail from time to time [V7-029] ... it doesn't work as you want it to do. [V7-030] It doesn't work when you want it to work, that's the biggest issue really [V7-035] but it just doesn't work.[V7-053]
but actually it can affect the pace of things in the afternoon. [V8-027] ... sometimes you waste time a lot around something to work [V7-028]
Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. [V7-033] the problem of connecting to the Wifi connection because sometimes you can't access it, [V7-041] the rope to the back has been disconnected [V7-048] and nobody has been given the chance to go to the back of it and reconnect it. [V7-049] ... either children or members of staff haven't put them back correctly, [V7-037]
... I think that's just the way the technology is, [V7-036] ... having an awareness that something could go wrong [V7-039] you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information[V7-040]
we have had a few technical issues on the ware, [V7-042] ...we have all been trained but because of tech issues it hasn't worked as it should. [V7-44] It's an issue with the wireless connection not working as it should.[V7-052] It just hasn't quite worked as it should, [V7-056]
where certain things have been lost so for that reason obviously affect our ability to use them as well as we would like [V7-043] so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to [V7-045] ... But it isn't just down to not wanting to use it, but so many issues have gotten into the way [V7-046]
Too often the machines are updating and a couple of hours still on updates, you can't get on. [V7-050] Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with 440 once again the wireless connection. [V7-051] some of the children start saying '. I have lost connection 'and that's because someone else has logged on. [V7-054]

... I think you will lose that little thing I think the children need that kind of -uhm, being able to- how to use pencil and paper or being able to play around. [V6-024]

... Computers make it too sterile [V6-025,]

...really think they get lazy if they go on the computers too much. [V6-026]

...teach them common sense and then show them how to use a computer. [V6-032]

... Train them but know how to use your brain first- know how to write, add up and have a little bit of common sense which if they rely on the computer too much, they are not going to have it. [V6-033]

... if you don't learn all the skills [V6-027]

... they are just using it cuz of OFSTEAD [V6-029]

... they think they should be using it all the time [V6-30]

... can start thinking of using a computer [V6-031]

Male Economic

Ineffectiveness of technology

[V13-054] [V13-057] [V13-060] [V13-061] [V13-064] [V13-053]

...at the snap of your finger, you want to be able to find the answer [V13-054]

...going to be effective really [V13-057]

...is it effective in teaching [V13-060]

...or is it going to make my life easier [V13-061]

...it's just bin prepared, be organised and know how to use something effectively that's for every resources [V13-064]

...people just think convenience [V13-053]

Inefficient use of time

[V7-071] [V7-069] [V6-052]

...It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work... [V7-071]

...I spent a long time planning what we are going to do, [V7-069]

...you don't sit in front of computer all day long. I think that idea of timing itself [V6-052]

Waste of time: How you have invested so much time yet unproductive

[V7-068] [V13-055] [V13-056] [V13-058] [V13-059] [V13-062] [V13-063]

... sometimes you waste time a lot around something to work [V7-068]

...you are wasting your time [V13-055]

...something I'm not going to waste time doing [V13-056]

...it gets a bit outdated or wasting time [V13-058]

...it has just become a waste of time [V13-059]

...you just don't want to waste your time with technology really [V13-062]

...waste for an hour or seeing things that shouldn't be [V13-063]

Time investment: consciously investing time

[V7-070] [V7-071]

...got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [V7-070]

...how you want it to work so you have to come up with an alternative. [V7-071]

Time consuming: hindrance to management of time

[V7-077] [V8-041]

...too often the machines are updating and a couple of hours still on updates, you can't get on [V7-077]

...in fact the process of getting all that running is so time consuming [V8-041]

Lack of time

[V6-051]

... because I didn't have time to look for the shape [V6-051]

Limited resources

[V7-073]

... when you might not have enough of what you need,[V7-073]

Money

[V7-074] [V7-082] [V7-078] [V7-080] [V6-050]

...It comes down to money really, the school has only a certain amount of money to spend each year [V7-074]

...so you don't get value for money that way. [V7-082]

...and again, the school has spent a lot of money, [V7-078]

...obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school [V7-080]

...unless you pay a lot [V6-050]

Budget: resources planned for an allocated purpose

[V7-081] [V7-074]

...and when you come back to school we really can't afford to do that as much as we'd love [V7-081]

...and there's a budget specifically for ICT and it also depends on the priority of the school. [V7-074]

Technical resource limitation

[V7-079] [V7-083] [V7-084] [V7-075] [V7-076] [V13-049] [V13-050]

...it's very limited to the amount of computers you can put on at one time. [V7-079]

... sometimes you find that some sites are blocked when you want to go on them. [V7-083]

...sometimes problems where some of the apps sometimes get wiped of. [V7-084]

...for whatever reason from time to time they get wiped, they have reset themselves. [V7-075]

...you get the ipads out and children can't access what you want them to access on it. [V7-076]

...if the computers are going really slow [V13-049]

...it's not always ready [V13-050]

Inadequate use of technology

[V13-048] [V13-051]

...how often do the kids actually get up and use the interactive white board element of it but use them quite a bit depends on the subject specifically really [V13-048]

...very little to be honest [V13-051]

Ineffectiveness of technology

[V13-054] [V13-057] [V13-060] [V13-061] [V13-064] [V13-053]

Inefficient use of time

[V7-071] [V7-069] [V6-052]

Waste of time: How you have invested so much time yet unproductive

[V7-068] [V13-055] [V13-056] [V13-058] [V13-059] [V13-062] [V13-063]

Time investment: consciously investing time

[V7-070] [V7-071]

Time consuming: hindrance to management of time

[V7-077] [V8-041]

Lack of time

[V6-051]

Limited resources

[V7-073]

Money

[V7-074] [V7-082] [V7-078] [V7-080] [V6-050]

Budget: resources planned for an allocated purpose

[V7-081] [V7-074]

Technical resource limitation

[V7-079] [V7-083] [V7-084] [V7-075] [V7-076] [V13-049] [V13-050]

Inadequate use of technology

[V13-048] [V13-051]

Appendix VIII

Qualitative Analysis of DTE Issues by Teacher's Years

This is discussed in the sub-section of 7.3.2 and 8.2.4.

It gives in details the 1st order terms of the following Aspects and years along with its 2nd –order terms:

- Early Years (Social Aspects) (See: Section 7.3.2.1)
- Early Years and Year 4 (Lingual Aspects) (See: Section 7.3.2.2)
- Year 1 (Juridical Aspect) (See: Section 7.3.2.3)
- Year 6 (Formative Aspect) (See: Section 7.3.2.4)

The 1st order terms are coded for transparency and this can be linked to the main data analysis of V1-V20 (See Appendix 6)

YEARS ANALYSIS FINDINGS

Early Years (Social Aspect)

S/N	1 st Order Terms	2 nd Order Theme
1	<p>so that speech isn't there cuz they are not used to interacting [V5-046] (Ling- speech; Soc- interacting)</p> <p>they don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me [V5-050] (Soc- to talk to anybody; Ling- communicating online; Psyc- scares me).</p> <p>in school the whole communication thing just gets slimmed down cuz of ICT [V5-053] (Soc- interaction, school; Ling- communication).</p>	Limited social interaction
2	<p>as soon as we put the same story on the TV, they didn't move ...and that's because they are so used to that non-engagement [V5-047] (Soc- non-engagement),</p> <p>and again it's back to that non-engagement [V5-048] (Soc- non-engagement)</p> <p>if they spend their whole life engaged in ict and computers [V5-051] (Eco- spend whole life; Soc- enagaged; Form- ICT, computers)</p>	Non- engagement
3	<p>they are sat there and they are playing the game (then no point do they get that sense of risk or that taking part [V5-049] (Psyc- sense of risk; Soc- taking part).</p>	Relationships
4	<p>they've not got that life experience [V5-054] (Social- societal influence),</p>	Cultural Assumptions
5	<p>I don't really like them using them independently, even though they can use them independently if they were at a table, I am worried that they might drop them. [V11-024] (asethic-not fun, social-institution)</p>	Independence

Early Years and Year 4 (Lingual Aspect)

S/N	1 st Order Terms	2 nd Order Themes
1.	<p>we find in Early Years the draw back been a lot of our children coming at three with speech and language delay [V5-033] (Ling- speech and language delay)</p> <p>so that speech isn't there cuz they are not used to interacting [V5-034] (Ling- speech; Soc- interacting)</p> <p>and they come in very low with poor speech, poor physical, poor locomotive skills not toilet trained all those kind of things [V5-044] (Ling- low speech; Juri- below expectation).</p>	Speech defect
2.	<p>we did a story and we read it in a book and we had 33 of them on the carpet screaming all day [V5-035] (Ling- story, read, book; Psy- screaming),</p> <p>so getting them to sit on the carpet and to listen to a story from a book is so important than sat down in front of peppa pig [V5-045] (Aesth- sit to listen; Ling- book)</p>	Struggles to use books

3.	<p>they don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me [V5-036] (Soc- to talk to anybody; Ling- communicating online; Psysc- scares me).</p> <p>they are sat there and they are playing the game [V5-037] (Soc- playing the game; Ling- game).</p>	Virtual communication risks
4.	<p>and I think Teachers today are so used to having their best friend Google where they can type in what they want and it all comes up [V5-038] (Ling- Google website).</p> <p>that whole research purpose we had or I had when I was in school is gone because Google does it for you [V5-039] (Anal- research; Ling- Google; Form- does it for you- achievement).</p> <p>and then you find out you can't actually do it cuz the website is down. [V11-018]</p> <p>we have our RM security and that website has not actually bin flagged up [V11-022]</p>	Website reliance
5.	<p>Kids today do not know how they are....really. but it also affects things to do with their spelling [V5-040] (Ling- spelling).</p>	Effect on spellings
6.	<p>they are not used to writing out proper words [V5-041] (Ling- writing; Juri- proper words)</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting [V11-020] I think that is the massive disadvantages.</p>	Effect of writing
7.	<p>in school the whole communication thing just gets slimmed down cuz of ICT [V5-042] (Soc- interaction, school; Ling- communication).</p> <p>it's amazing because we focus so much on what we call primary learning which is their communication [V5-043] (Anal- focus; Ling- communication).</p>	Effect on communication
8.	<p>using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad), [V11-018]</p>	Inappropriate Advertisement
9.	<p>it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things . [V11-018]</p> <p>we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms [V11-018]</p> <p>esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards.</p> <p>but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty. [V11-019]</p>	Wobbly designed Programs
10.	<p>for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down [V11-018]</p>	Difficulty with Passwords

11.	<p>sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they are not- you just don't know. [V11-021]</p> <p>it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation) [V11-021]</p> <p>I was in the class once and I typed in 'daddy bear' cuz I wanted the story from the three bear and it was an image that should never be on there. [V11-022]</p>	Likelihood of Deceit
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Year 4 comprises of V10, V11, V8, V1 (Lingual Aspect)

S/N	1 st Order Terms	2 nd Order Themes
<u>1</u>	<p>and when you've got them all trying to log on to the same thing it can be a little bit slow [V10-038]</p> <p>when they were all trying to log on to it in one classroom, it wasn't working [V10-046]</p> <p>when the power cut goes on, it do affects the log in system.. [V1-030] (L-login system, Aes- no harmony)</p> <p>so it all takes time for the children to get their log in so they can save their own data [V1-031] (Eco- mismanagement of time, L- login, save data)</p>	Log-in difficulties
<u>2</u>	<p>it's quite difficult to show their work on a big board [V10-039]</p> <p>sort of go round and that's quite sort of difficult thing to get into showing each other's work. [V10-040]</p> <p>so i couldn't show bigger images or have things on the boards, [V10-043]</p> <p>i just find it easier having everything typed out on my smart board for my lessons rather having to spend the time handwriting things on the white board. [V10-044]</p>	Signage obstacles
<u>3</u>	<p>children forget their passwords to get onto the computers,</p> <p>[V10-041]</p>	Difficulties with Password
<u>4</u>	<p>if you are trying to write on them, you write one place and its right at the other place [V10-042]</p> <p>Also, an advantage of using a flip chart as oppose to using that is they see me modelling, [V8-030]</p> <p>actually the physical process of writing, while I am physically writing [V8-031]</p> <p>..here...say for example, I am doing a multiplication and I am using a method, I might use it on another....drawing it for example, but there's something more realistic about seeing me writing it on a paper that would then mirror what they will have to do, [V8-032]</p> <p>I like to scribble in and demonstrate rather than this is how you do it [V1-029] (L-reduced/poorer quality information)</p>	Writing difficulty
	<p>so they've found the clip at home, they have played and you try to play it in school and its bin fuzzy or something like that happening. [V10-045]</p> <p>I guess they can become too reliant on them at the end. [V10-047]</p> <p>so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much. [V10-050]</p> <p>that actually I would rather just use a flip chart in the first place and say 'look at this'... [V8-028]</p>	Website/ Internet reliance
	<p>you know, on the ipads we have calculators so i guess they could go on there and use those, [V10-047]</p> <p>different games, things like that errm, apps which they can use these days to calculate for you. [V10-047]</p> <p>so using a video clip, they will just be enjoying it because it's a video clip as oppose to the actual learning that's depended on the video clip. [V8-029]</p>	Likelihood of Deceit

	Okay, when we have done any writing and they are using some of the words like spell words or things like that- obviously alot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing. [V10-049]	Effect on spelling
	the only thing I have tried that was a little successful was I was trying to record myself doing calculations from my perspective using an ipad so that I can play the video back to the children for them to see what it looks like through my eyes, [V8-033] but when I try to play back from the apple software, it doesn't allow me to play back at the moment. if they are switching from multiple windows or going from one program to another [V8-038] if I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use, [V1-032] (L- word document, Aesthetic- disharmony) we use words that we have typed in PowerPoint with cd and sometimes it just would not work [V1-033] (F- tech, L- cd, PowerPoint).	Wobbly designed Programs
	also, it's sometimes difficult when you have asked the children to search for particular thing, [V8-035] you are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic [V1-026] (E- waste of time, L- reduced access to information).	Inappropriate Help system
	they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [V8-036]	Inaccurate information
	on the internet it's the popular ones, you get adverts before it and it's very hard to time is so you don't get the advert [V1-034] (L- advert, E- timing). and the advert was way inappropriate [V1-035] (J- inappropriate, L- advert)	Inappropriate Advertisement
	The projectors are temperamental (Ling., Phys), [V1-027] so when we do hymn practice (Ling), I have to stand in the far corner of the hall and [V1-028]	Expression
	you have to remember to take the photos off very quickly and put them in a folder [V1-036] (L- pictures, A- logicity of instruction),	Archives

Year 1 (Juridical Aspect)

Year 1 comprises of V6, V15 (Juridical Aspect)

S/N	1 st Order Terms	2 nd Order Themes
	then you are not going to use a computer properly how to use a pen properly [V6-057]	Effect of inappropriateness
	... they are not using it cuz of OFSTEAD [V6-059] ...subconsciously, I might go- oh, I need to have this on my computer because someone is coming in to watch. [V6-060] ...when someone came in to watch and they saw that I stacked pictures all over the smart board, which I have done now they would go' why, have you got pictures on your smart board? instead of having the computer running?' [V6-063]	Fear of authority
	...if a computer can do all of adding up all of its own, so why teach the children to add up, what's the point- a computer can do it, so I don't need to teach them any more, so.. No don't think that's a good idea. [V6-061] so we have such a big catch up job to do to be able to give them the literate skills for life really [V15-037] (Eth, Juri).	Questioning quality
	a lot of children in my year group are quite below in reading and writing [V15-031] (Ling- reading, writing; Juri- quality)-	Low standards

	<p>and they are below where they should be reading [V15-032] (Juri).</p> <p>but I do believe myself as a Teacher who works in such a deprived area where standards are very low [V15-033] (Pis- believe, Ethi- deprived; Juri- standards)</p> <p>and the children at this age come up with very poor reading and writing skills [V15-034] (Juri- very poor, quality; Ling- reading and writing)</p> <p>a lot of them come in as 1-2 year olds in terms of the speech and their language [V15-036] (Juri- standards), in such a deprived area, ermm, children's social interactions, interactions with peers and things like [V15-038] (Juri, Soc)-</p>	
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Year 6 comprises of V18, V13, and V7 (FORMATIVE)

S/N	1 st Order Terms	2 nd Order Themes
1	<p>we can sometimes get a block on them that's one problem [V18-012] (Form- technology)</p> <p>or the screen doesn't work or things are not connected correctly [V18-014] (For- tech).</p> <p>main computer room projector wasn't working and the computer when you are trying to get it to work and someone has done something with it [V18-015] (form- tech, shaping)</p> <p>Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. [V7-033]</p> <p>the problem of connecting to the Wifi connection because sometimes you can't access it, [V7-041]</p> <p>...we have all been trained but because of tech issues it hasn't worked as it should. [V7-044]</p> <p>Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection. [V7-051]</p> <p>some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on. [V7-054]</p>	Technical resource limitation
2	<p>things that don't work [V18-013] (form- destroying, tech).</p> <p>what you are trying to get up there to use as a class isn't working [V18-016] (Form- tech not working).</p> <p>I just wished everything worked all the time [V18-018] (Form- worked all the time).</p> <p>... technology can fail from time to time [V7-029]</p> <p>... it doesn't work as you want it to do. [V7-030]</p> <p>It doesn't work when you want it to work, that's the biggest issue really [V7-035]</p> <p>we have told them all the so many things we want to do It just hasn't quite worked as it should, [V7-055]</p>	Inefficiency of Technology
3	<p>i wouldn't take on doing something unless I'm confident i knew how to operate the equipment [V18-017] (Psys- confidence, form- forming).</p> <p>the children are not always using this [V13-017] (Form)</p> <p>a new skill to teach people and I think it's all changing all the time- of course it is, so what we learnt today will be non-existence in two years time [V13-097] (Form- skill; Anal- teach)</p> <p>it's just bin prepared, be organised and know how to use something effectively that's for every resources [V13-023] (Form- organised, how to use-shaping; Eco-effectively,</p>	Difficulty in usage for novice

	resources).	
4	<p>They will be scanned and marked by the computer, so its new to me [V18-019] (Form-technology).</p> <p>In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong [V18-020] (Anal- doesn't know how clear; Form- technology; Juri-Appropriateness).</p> <p>what we are using for our lessons [V13-015] (Formative- tools) we using certain apps to develop learning understanding of the children [V13-016] (Anal- learning understanding; Form- apps, to develop-shaping) technology is only getting better and we are getting more lazy, more reliant on computers [V13-098] (Pist- getting better; Form- laziness).</p>	Untamed reliance on technology
5	<p>...obviously the age of technology makes a difference to them as well [V7-026] ... we have to use older laptops which don't work as well and that can be a bit frustrating [V7-027]</p> <p>So in an ideal world different technology, go out and try different things you could use. [V7-057]</p>	Incompatibility of Technology
6	<p>... sometimes you waste time a lot around something to work [V7-028]</p> <p>... I spent a long time planning what we are going to do, [V7-031]</p> <p>got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [V7-032]</p> <p>It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative.[V7-034]</p>	Inefficient use of time
7	<p>... I think that's just the way the technology is, [V7-036]</p> <p>... having an awareness that something could go wrong [V7-039]</p> <p>...you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information. [V7-040]</p> <p>...but it just doesn't work. [V7-053]</p>	Technology bias
8	<p>we have had a few technical issues on the ware, [V7-042]</p> <p>were certain things have been lost so for that reason obviously affect our ability to use them as well as we would like [V7-043]</p> <p>so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to [V7-045]</p> <p>... But it isn't just down to not wanting to use it, but so many issues have gotten into the way [V7-046]</p>	Effect of past technical experiences
9	<p>... either children or members of staff haven't put them back correctly, [V7-037]</p> <p>the rope to the back has been disconnected [V7-048]</p> <p>and nobody has been given the chance to go to the back of it and reconnect it. [V7-049]</p> <p>It's an issue with the wireless connection not working as it should, [V7-052]</p>	Connection issues
10	<p>Too often the machines are updating and a couple of hours still on updates, you can't get on. [V7-050]</p>	Restraint on technological power

S/N	Early Years	Year 4
1	<p>Website reliance and I think Teachers today are so used to having their best friend Google where they can type in what they want and it all comes up (Ling- Google website).</p> <p>that whole research purpose we had or I had when I was in school is gone because Google does it for you (Anal- research; Ling- Google; Form- does it for you- achievement).</p> <p>and then you find out you can't actually do it cuz the website is down. we have our RM security and that website has not actually bin flagged up</p>	<p>Website/ Internet reliance</p> <p>so they've found the clip at home, they have played and you try to play it in school and its bin fuzzy or something like that happening. I guess they can become too reliant on them at the end. so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much. that actually I would rather just use a flip chart in the first place and say' 'look at this'..</p>
2	<p>Effect on spellings Kids today do not know how they are....really. but it also affects things to do with their spelling (Ling- spelling).</p>	<p>Effect on spelling</p> <p>Okay, when we have done any writing and they are using some of the words like spell words or things like that- obviously alot of them know how to go on the spell check so that obviously affects them learning their spellings than going in to get the dictionary and finding out how to spell them. yea, so that sort of thing.</p>
3	<p>Effect on writing they are not used to writing out proper words (Ling- writing; Juri- proper words)</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting I think that is the massive disadvantages.</p>	<p>Writing difficulty</p> <p>if you are trying to write on them, you write one place and its right at the other place Also, an advantage of using a flip chart as oppose to using that is they see me modelling, actually the physical process of writing, while I am physically writing</p> <p>..here...say for example, I am doing a multiplication and I am using a method, I might use it on another....drawing it for example, but there's something more realistic about seeing me writing it on a paper that would then mirror what they will have to do, I like to scribble in and demonstrate rather than this is how you do it (L- reduced/poorer quality information)</p>
4	<p>Inappropriate Advertisement</p> <p>using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad),</p>	<p>Inappropriate Advertisement</p> <p>on the internet it's the popular ones, you get adverts before it and it's very hard to time is so you don't get the advert (L- advert, E- timing). and the advert was way inappropriate (J-inappropriate, L- advert)</p>
5	<p>Faulty designed Programs it might be the power point one minute, then you might want to put something else on to flick in btw other links- so things like that, so that's one of the hardest things .</p> <p>we use our phonics program so the letter sounds are on the computer, but they decided to change our learning platforms</p> <p>esp. them bin young, you may see them keep pressing it wrong so that it makes it go quick so it's one of those things where we try to build in the rewards.</p> <p>but definitely you still need the fine balance (we would do the worksheet with them than have them do it the actual physical counting of things as well as doing that. like I said we would have a.... cuz there will be a lot of cheats..they are crafty.</p>	<p>Faulty designed Programs</p> <p>the only thing I have tried that was a little successful was I was trying to record myself doing calculations from my perspective using an ipad so that I can play the video back to the children for them to see what it looks like through my eyes,</p> <p>but when I try to play back from the apple software, it doesn't allow me to play back at the moment. if they are switching from multiple windows or going from one program to another if I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use, (L-word document, Aesthetic- disharmony) we use words that we have typed in PowerPoint with cd and sometimes it just would not work (F- tech, L- cd, PowerPoint).</p>
6	<p>Difficulty with Passwords for a couple of days, the passwords weren't working, so sometimes you type the password and the site is down</p>	<p>Difficulties with Password</p> <p>children forget their passwords to get onto the computers,</p>
7	<p>Likelihood of Deceit sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they</p>	<p>Likelihood of Deceit</p> <p>you know, on the ipads we have calculators so i guess they could go on there and use those, different games, things like that erm, apps which they can use these days to calculate for you.</p>

	<p>are not- you just don't know.</p> <p>it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation)</p> <p>I was in the class once and I typed in 'daddy bear' cuz I wanted the story from the three bear and it was an image that should never be on there.</p>	<p>so using a video clip, they will just be enjoying it because it's a video clip as oppose to the actual learning that's depended on the video clip.</p>
8	<p>Speech defect</p> <p>we find in Early Years the draw back been a lot of our children coming at three with speech and language delay (Ling- speech and language delay)</p> <p>so that speech isn't there cuz they are not used to interacting (Ling- speech; Soc- interacting)</p> <p>and they come in very low with poor speech, poor physical, poor locomotive skills not toilet trained all those kind of things (Ling- low speech; Juri- below expectation).</p>	
9	<p>Struggles to use books</p> <p>we did a story and we read it in a book and we had 33 of them on the carpet screaming all day(Ling- story, read, book; Psy- screaming),</p> <p>so getting them to sit on the carpet and to listen to a story from a book is so important than sat down in front of peppa pig (Aesth- sit to listen; Ling- book)</p>	
10	<p>Virtual communication risks</p> <p>they don't have to talk to anybody unless (God forbid) they've the headset and they are communicating online and that scares me (Soc- to talk to anybody; Ling- communicating online; Psyc- scares me).</p> <p>they are sat there and they are playing the game (Soc- playing the game; Ling- game),</p>	
11	<p>Effect on communication</p> <p>in school the whole communication thing just gets slimmed down cuz of ICT (Soc- interaction, school; Ling- communication).</p> <p>it's amazing because we focus so much on what we call primary learning which is their communication (Anal- focus; Ling- communication),</p>	
12		<p>Log-in difficulties</p> <p>and when you've got them all trying to log on to the same thing it can be a little bit slow</p> <p>when they were all trying to log on to it in one classroom, it wasn't working</p> <p>when the power cut goes on, it do affects the log in system.. (L- login system, Aes- no harmony)</p> <p>so it all takes time for the children to get their log in so they can save their own data (Eco- mismanagement of time, L- login, save data)</p>
13		<p>Signage obstacles</p> <p>it's quite difficult to show their work on a big board sort of go round and that's quite sort of difficult thing to get into showing each other's work.</p> <p>so i couldn't show bigger images or have things on the boards,</p> <p>i just find it easier having everything typed out on my smart board for my lessons rather having to spend the time handwriting things on the white board.</p>
14		<p>Unreliable Help system</p> <p>also, it's sometimes difficult when you have asked the children to search for particular thing,</p> <p>you are supposed to ring up and get it unblocked and by the time they have done that, you are doing a different topic (E- waste of time, L- reduced access to information).</p>
15		Inaccurate information

		they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information,
16		Expression The projectors are temperamental (Ling., Phys), so when we do hymn practice (Ling), I have to stand in the far corner of the hall
17		Archives you have to remember to take the photos off very quickly and put them in a folder (L-pictures, A- logicity of instruction),

Appendix IX

Qualitative Analysis of DTE Issues by Schools SCHOOLS ANALYSIS FINDINGS

The school analysis findings are discussed in the sub-section of 7.3.3 and 8.2.4.

It gives in details the 1st order terms of the following Aspects and years along with its 2nd –order terms:

School_A (Formative Aspect) (See: Section 7.3.3.1)

School_A (Social Aspect) (See: Section 7.3.3.2)

School_A (Economic Aspect) (See: Section 7.3.3.3)

School_A (Lingual Aspect) (See: Section 7.3.3.4)

School_B (Juridical Aspect) (See: Section 7.3.3.5)

School_B (Pistic and Aesthetic) (See: Section 7.3.3.6.1)

School_C (Pistic and Aesthetic) (See: Section 7.3.3.7)

School_B (Ethical Aspect) (See: Section 7.3.3.8)

SCHOOL_A (FORMATIVE ASPECT)

S/N	1 st Order Terms	2 nd Order Themes
1	gone back and come back .. things were freezing [V14-077] (Form- freezing) and the screen froze [V14-078] when they get to touch the interactive white board which I rarely let them do because it always goes wrong [V14-082] (Form-Tech, goes wrong). when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there [V12-039] (Form- restart). faults with the HDMI cable that links my laptop to my computer just whenever I want to have sound on [V12-044] (form- tech), it's just general kind of day to day technical issues, [V12-028] with this.....board...as soon as you touch them, it flicks on (Form- tech) and that flicks through the laptop- [V15-011] we quite often find that the internet isn't working [V12-042] (Form- technology) Obviously, got to the lesson and there wasn't a single child in the class who could access it and it was partly because of the filtering system, it was blocked so they couldn't get on and it just wouldn't work. [V7-033] we have had a few technical issues on the ware, [V7-042] ...we have all been trained but because of tech issues it hasn't worked as it should. [V7-044] the rope to the back has been disconnected [V7-048] Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection. [V7-051] It's an issue with the wireless connection not working as it should, [V7-052]	Technical Malfunction
2	it's just more of my own competences that have to be raised [V14-075] (Form- competences). don't really know how to use it, so [V14-080] (Form- use-shaping).... They have done a piece of work (Form)[V14-091], they don't know how to save their work, work not saved (Form), the battery dies and its gone [V14-092] that was quite difficult as well rather than them be able to print and learning the skill of printing [V12-037] (Form-skill of printing). it's very good if you can use it [V17-008] (Form). i can't use a smart board [V17-009] (Form) we've got new technology which is not as simple to use as the older technology was. [V8-018]	Difficulty in usage
3	I don't think anybody else has used it [V14-076](Soc- anybody else; Form-used it). even actually getting onto the computer is an issue [V14-090] (Form- tech). and nobody has been given the chance to go to the back of it and reconnect it. [V7-049]	Inaccessibility of Technology
4	so they can't even actually login into their computers [V14-089] (Ling- log on; Form). I have to deal with children standing up, walking around, its just my nightmare ...someone is going to knock, laptop is going to be flying [V14-088] (Form) it's difficult setting it up, the setup is the hardest part of the lesson [V12-029] (For), getting the laptops all out getting them set up and getting them logged on [V12-030] (Form, Ling), saving things in the wrong places and not being able to access it again [V12-034] (Form- saving things in the wrong place; Eco- access). ... either children or members of staff haven't put them back correctly, [V7-037] it's often difficult to manage the computer system if the children are using the laptops [V8-022]	Strenuous technical requirements
5	it doesn't work [V14-074] (Form). it wasn't working [V14-083] (Form- not working) i found this for them and if it worked it would have been a great learning tool for them and it would have been that part of a lesson for them so it was a shame it didn't work. [V14-086] it was just a pain because it was constantly- it's not working, right [V12-041] (Form- not working) if it works, which doesn't in so many classes [V17-006] (Form). if something is broken or not working [V15-008] (Form)- ... sometimes you waste time a lot around something to work [V7-028]	Limitation of Technology

	... it doesn't work as you want it to do. [V7-030] but it just doesn't work. [V7-053]	
6	there's no connection between the amazing equipment we have got [V14-079] (Form- connection.), ...obviously the age of technology makes a difference to them as well, [V7-026] ... we have to use older laptops which don't work as well and that can be a bit frustrating [V7-027] but when I try to play back from the apple software, it doesn't allow me to play back at the moment. [V8-021]	Detached version of Technology
7	we just have so many things to do [V14-081] (Form-to do). what am I going to do (Form), was there thinking on my feet, [V14-085] I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access (form, Eco) [V12-032] Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would done if they had the ICT available. (Form,Eco) [V12-033] ... I spent a long time planning what we are going to do, [V7-031] got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [V7-032] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [V7-034] but actually it can affect the pace of things in the afternoon. [V8-027]	Hindrances to Achievement/Goal
8	I think it's just hard in school where data is very low (Form), [V14-093] ... where you have got to adapt your lesson and people just share things. [V7-038] the problem of connecting to the Wifi connection because sometimes you can't access it, [V7-041]	Deprived facilities
9	with no disk space so we have to keep enlarging the disk space and that is a bit of a problem (Eco, Form.) [V12-027] didn't have a printer installed on their computer (Form- printer installed), [V12-036] class room haven't got projectors that works [V17-010] (Form)	Limited Technical Resources
10	and it needs to download first (For) [V12-031] Too often the machines are updating and a couple of hours still on updates, you can't get on. [V7- 050]	Restraint on technological power
11	so is it not worth restarting all the computers in the middle of a lesson (Aesth- middle of a lesson), [V12-040] losing what they have done already (Form- destroying) [V12-040] then you've to restart it, pull the cable out, put it back in, restart it pull it out, put it back in (Form- tech; Kine- movement) [V12-045]	Inconsiderate one-way quick fix
12	ended up putting everything through one printer which was a bit of a night mare cuz obviously everybody needed things and needed them urgently (Form- technical overload), [V12-043] some of the children start saying 'Ms. I have lost connection 'and that's because someone else has logged on. [V7-054]	Technical Overload
13	I do say we should use alot more skills in the Early Years (Form) [V17-007] because they just want to go on the computers (Form- tech). [V17-011] the children knew how to use an ipad better than how to use a pencil (Form). [V17-012] bin able to teach the children good computing skills (Form), [V15-012] so they lost out on that skill of being able to print themselves so yeah that was quite difficult (Eth- lost out; Form- skill; Soc- themselves) [V12-038] So again if you planned using them in your class, [V7-047] that doesn't necessarily mean that they will achieve more or learn more [V8-020] they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [V8-024]	Hindrances in skills formation
14	... technology can fail from time to time [V7-029] so that independent in you using and fixing things. so I think because their ICT skills are so basic, so if you bring the laptops down- they are temperamental- they don't always work (Form, Aesth), [V15-009] It doesn't work when you want it to work, that's the biggest issue really [V7-035] ... I think that's just the way the technology is, [V7-036] ... having an awareness that something could go wrong [V7-039] It just hasn't quite worked as it should, [V7-056] I know the limitations of this technology so I know what's going to work and what's not going to work. [V8-026]	Assumptions of Technology

15	were certain things have been lost so for that reason obviously affect our ability to use them as well as we would like [V7-043] so we have had a lot of problems with it so you will find as staff want to use it, they actually think about doing it but once you get to the stage where it's gone wrong a few times, you don't tend to use it, or use it in a way that you were meant to [V7-045] ... But it isn't just down to not wanting to use it, but so many issues have gotten into the way [V7-047]	Bad experiences on usage
16	you probably leave yourself more open with using the internet might not necessarily take you the right path to finding the right information. [V7-040] ... so they can mess up the whole queue of your lesson, as oppose to pen and paper, then at the end of the day you can't go flat in the middle of the lesson or if you use it for an extended period, it doesn't need recharging at the end of the day. [V8-023] if you rely entirely on ICT and if they don't work, you have to have a backup. [V8-025]	Fallible design of technology

SCHOOL_A (Social Aspect)

S/N	1 ST ORDER TERMS	2 ND ORDER THEMES
1	again if all the children can play this on their ipads, I don't know how to do that (Soc- children, play; Anal- know how). [V14-108] I take for granted a lot of these children know things that in my childhood (Pistic- take for granted; Social-Children, institution; Anal- know things, awareness) [V14-111] but i don't know how to use it- cuz i'm of the older generations(Anal- know how; Soc- generation). [V17-021]	Limited technical know-how
2	I don't think anybody else has used it (Soc- anybody else; Form-used it). [V14-109]	Technical avoidance
3	you ask your partner for help because they don't think these things through first (Soc- partner, Eth- help; Anal- think through). [V14-110] but only a few children actually came back and had the support from the family to do that (Soc, Eth). [V15-017]	Obtaining support and critique
4	children have got to share one (Soc- share) [V14-112] they don't want to share (Soc- don't want to share), [V14-113] so we share one amongst us when they are available (Soc, Eco).[V12-057] and because we share the ipads throughout the school, they don't have them in (Soc- share, school) [V17-024] ... children have to share if there's not quite enough to go round. [V7-065] ... where you have got to adapt your lesson and people just share things. [V7-067] and generally, it's either a case of children would have to pair up and then you would continue or you would have to revert back to an alternative method of teaching [V8-039]	Reluctant to Share
5	no one might put them so they can charge (Soc- no one, role) [V14-114]	Irresponsibility
6	so they lost out on that skill of being able to print themselves so yeah that was quite difficult (Eth- lost out; Form- skill; Soc- themselves) [V12-058] ...they are not in school and they know how to use ipads but they don't know how to talk to one another(soc)- [V17-022] and then communicated more with each other because children don't talk face to face now a lot (Soc- interaction) [V17-023] in such a deprived area, ermm, children's social interactions, interactions with peers and things like (Juri, Soc)- [V15-018] ... so you have to work together which not everyone can do successfully [V7-066]	Hindrance on social interaction
7	because they just feel it's not quite important because I am not doing it on my own (Psyc- feel; Soc- on my own), [V12-059] I am doing it on my friend's (Soc- friend's) [V12-059]	Not taking ownership
8	just from my knowledge of certain children from my class I do know that some are on the computer straight after school (Soc, Anal.) [V15-016]	Technology Addiction

9	If it goes wrong, it has an effect on behaviour [V8-040]	Misbehaviour

SCHOOL_A (Economic Aspect)

S/N	1 st Order Terms	2 nd Order Themes
1	<p>they are really expensive(eco-expensive) [V14-115] and these cost like(Eco-cost)... [V14-117] they were really expensive (Eco- expensive). [V14-118] we place the importance on how they are expensive (Eco- expensive) [V12-092] very often you don't have the resources to buy a copy of a book for everybody (Eco – limited resources) [V14] It comes down to money really, the school has only a certain amount of money to spend each year and there's a budget specifically for ICT and it also depends on the priority of the school. [V7-074] and again, the school has spent a lot of money, [V7-078] obviously, the school has spent a lot of money and they have spent a lot of time fixing it round school [V7-080] and when you come back to school we really can't afford to do that as much as we'd love to. [V7-081] so you don't get value for money that way. [V7-082]</p>	Cost
2	<p>you are the only one as the Teacher (Eco- only one), [V14-116] we should have had more trainings (Eco- more (were insufficient); Ling- trainings), [V14-119] I kind of wish we had a bit more training on it (Eco- more; Ling- training) [V14-120] they want their own one (Eco). [V14-128] there is only one per the whole school and that depends on when they are available (Quan, Eco) [V12-061] so we share one amongst us when they are available (Soc, Eco). [V12-062] I wouldn't do that if it was just me in the classroom (Eco-limited staff). [V12-093] it seems a bit too much challenge at the minute (Aesth) [V15-019] to.....the children to use individual laptops (Eco), [V15-020] ... when you might not have enough of what you need, [V7-073]</p>	Limited resources
3	<p>and its the time (Eco-time) [V14-121] reminding myself how to do it will take me a few hours (Psyc-reminding; Eco- few hours) [V14-122] I have got 90 books to mark and so many lessons (Quan-90 books; Anal- mark, lessons)..its never there any time (Eco- time). [V14-123] tried if they are suitable for the lesson (Anal) and I am spending time (Eco- time) [V14-124] I spent time the whole last night finding it (Eco- spent time; [V14-125] Anal- finding it), checking it (Juri), playing it (Aesth) and now this part of my lesson that's meant to be 10-15 min long (Eco- length of time), [V14-126] getting them out takes time (Eco- takes time), [V14-130] but even just getting the laptops out onto their tables that can take up to 10 minutes and putting them away (Eco), [V14-131] you haven't actually got a lot of time (Eco). [V14-132] so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to (Juri, Eco, Anal) [V14-133] I won't waste my time (Eco). [V14-134] ..after spending an hour (Eco), [V14-135] they haven't done anything in an hour (Eco), [V14-136] so they are just sat there waiting for a page to load (Kin- load, Eco- wastage of time) [V14-143] cuz they are just sat there looking at blank screens waiting for something to load (Eco, Psy- looking, waiting) [V14-144] It will take like an hour and half for children to just log on (Eco, Ling). [V12-067] it's completely pointless because by the time you have started your lesson, you have got 10mins and the lesson is over (Eco). [V12-068] you need to watch every minutes of the everything before you then teach it which makes it quite time consuming (Eco). [V12-069] because if you've got to watch half an hour episode to check there is no swearing, that is half an hour that could have taking and making up result or something like that (Juri, Eco). [V12-070] which you think' I'm pushed for time (Eco) [V12-072] so they are like - sound cable, oh, sound cable so that just adds time (Eco- time), [V12-098] ... sometimes you waste time a lot around something to work [V7-068] ... I spent a long time planning what we are going to do, got resources ready for it, had sets of instructions, spent my own time researching how it will be used, [V7-070] It's just frustrating then, you have spent a lot of time getting something ready and it doesn't work how you want it to work so you have to come up with an alternative. [V7-071]</p>	Inefficient use of time

4	<p>the system stops other people log on (Eco- technical limitation). [V14-138]</p> <p>when it does not work cos it's just becomes a talking and writing lesson rather than an ICT session (Eco, ling).. [V12-079]</p>	Inefficiency of Technology
5	<p>the system crashes (Eco- technical limitation)[V14-127]</p> <p>couldn't get on the internet cuz sometimes they have little life button if they switch (Eco- tech limi), [V14-139]</p> <p>our wifi wasn't very good (Eco) [V14-140]</p> <p>it would just say system is too busy or something, so you couldn't log the children on (Eco- tech limitation; Ling- log on) [V14-141]</p> <p>it had the success one day and the next day it was something to do with the settings and the browser settings or something and every time you went into it you have to go onto the internet settings, go on advance and type a certain ip address or a web address in or something you would allow the safety off and that stopped working (Eco- echn limitations,Physical,) [V12-075]</p> <p>they had it all up there on the board came to use it next day and it's all gone (Juri, eco), [V12-078]</p> <p>when i turn my computer on sometimes there is no printer installed on my computer and if i restart it they are all there (Eco- technical limitation; Form- restart). [V12-090]</p> <p>she ended up having to teach a lesson with no sound on the clip (eco-tech limi- no sound)- [V12-097]</p> <p>when you are in the middle of a lesson and you are like - right, I'm ready to show this clip now and then it plays with no sound (Eco- technical limitation), [V12-099]</p> <p>for whatever reason from time to time they get wiped, they have reset themselves. [V7-075]</p> <p>sometimes problems where some of the apps sometimes get wiped of. [V7-084]</p>	Technical Malfunction
6	<p>and you have got 10min worth of battery before they die (Eco).[V14-129]</p> <p>space on the shared drive and on our own drives like space for document, we often run out of space (Eco), [V12-065]</p> <p>with no disk space so we have to keep enlarging the disk space and that is a bit of a problem (Eco, Form,) [V12-066]</p> <p>past I've had problems where I've wanted to download something and I can't even access it because there is not enough space to even save the document (Eco) [V12-071]</p> <p>we've got 2 year 3 classes we might save something in them and both classes connect its self so that becomes difficult and that is full as well. (Anal, Eco) [V12-074]</p> <p>you need your space - making it bigger and we do that, like when we have the RM people but it takes a while (Eco), [V12-073]</p> <p>it was becoming full very quickly and they couldn't access it (Eco- full quickly, couldn't access it). [V12-084]</p> <p>we did have a big melt down because we had OFSTED coming to observe and no printers were working (Juri- OFSTED; Eco- tech limitation) [V12-095]</p> <p>there was one printer in the school working and obviously with the amount of staff and children that we have and the amount of people that were relying on it (Eco- limited resources) [V12-096]</p> <p>Too often the machines are updating and a couple of hours still on updates, you can't get on. [V7-077]</p> <p>it's very limited to the amount of computers you can put on at one time. [V7-079]</p>	Technical resources limitation
7	<p>they hadn't even logged on (Eco), [V14-137]</p>	Difficulty in usage for novice

	their experiences are quite limited (Eco- limit), [V15-021]	
8	<p>we can't access the network so I can't access my shared drive or my network on the computers which means I can't access document I have prepared and things like that. (Eco- techn limitations) [V12-063]</p> <p>if you've tried to get 30 people on the internet at one time, they can't get on (Quan, eco) [V14-142]</p> <p>we sometimes have the same problem with the internet and when you can't access the internet, things that we planned in advance are very difficult (Eco). [V12-064]</p> <p>just none of us could access it and its being like that since we can't access it (Eco,Juri). [V12-076]</p> <p>then my lesson was all planned and I couldn't use the software that I had planned to use (Eco, pis,). [V12-077]</p> <p>I would say the level at which they achieved that was lower than it would have been have they had the internet the ICT access (form, Eco) [V12-080]</p> <p>Whereas they lost that slightly, they did achieve the objective, probably not to the same level like they would done if they had the ICT available. (Form,Eco) [V12-081]</p> <p>saving things in the wrong places and not being able to access it again (Form- saving things in the wrong place; Eco- access).[V12-082]</p> <p>because have they had that, they will be able to look back I think the language what they would have used would be been enriched (Eco, ling) [V12-083]</p> <p>they can't go back in it and access it again (Eco- access it) [V12-085]</p> <p>it was really difficult to access the computers (Eco- to access the computers) [V12-086]</p> <p>or something like that and they couldn't go back and access (Eco-access) [V12-087]</p> <p>and re-access the work that they have done (Eco- re-access) [V12-088]</p> <p>they couldn't go back to where they had written the document on (Eco- access; Ling-written the document on), [V12-089]</p> <p>we quite often come in to find that we can't access something we've saved previously (Eco- technical limitation). [V12-094]</p> <p>If they have not got access on their own thing (Eco- no access), [V12-091]</p> <p>and ...I believe that should be the main focus especially at home a lot of them do access computers (Pis-believe, commitment to this focus; Eco- a lot, access)- [V15-020]</p> <p>you get the ipads out and children can't access what you want them to access on it. [V7-076] ... sometimes you find that some sites are blocked when you want to go on them. [V7-083]</p>	Limited technical access

SCHOOL _A (Lingual Aspect)

S/N	1 st Order Terms	2 nd Order Themes
1	<p>I can't teach them if I don't know how to use power point [V14-094]</p> <p>they don't know how to print</p> <p>they obviously don't pickup on those... [V12-055]</p>	Know-how
2	<p>we should have had more trainings... [V14-095]</p> <p>I kind of wish we had a bit more training on it [V14-096]</p>	Inadequate staff training
3	I have got children who don't speak in English [V14-097]	Effect on Communication

	because they don't communicate with one another, you know it's all texting [V17-015] children with English as their additional language they don't pickup on their vocabulary [V12-056]	
4	I don't know what they have logged onto [V14-098] and they can't log in [V14-100] so they can't even actually login into their computers [V14-102] it would just say system is too busy or something, so you couldn't log the children on [V14-106] if too many people log on once [V14-107] It will take like an hour and half for children to just log on [V12-067] getting the laptops all out getting them set up and getting them logged on [V12-047] having the children have their own log in for the computer [V12-050] that proves quite difficult when they didn't have any log on [V12-051] Quite often the machines are not speaking to the server so it won't let you log on and I think this is something to do with once again the wireless connection. [V7-064]	Log-in Difficulties
5	and I think, if they don't know how to use it now, when they get into high school and they still don't now how to write something in word and they have homework on it [V14-099] when it does not work cos it's just becomes a talking and writing lesson rather than an ICT session...[V12-048] they couldn't go back to where they had written the document on..[V12-052]. especially when we have Early Years, like paintings [V17-031] and things like that to develop their movement in the hands and wrist to write [V17-014] a lot of children in my year group are quite below in reading and writing [V15-013] and some of those children very rarely read at home [V15-014] and the children at this age come up with very poor reading and writing skills (Ling- reading and writing) [V15-015] Also, an advantage of using a flip chart as oppose to using that is they see me modelling, [V8-030] actually the physical process of writing, while I am physically writing [V8-031]	Effect on writing
6	they have log ins and every time the forget their passwords (Ling- log ins), [V14-101]	Difficulty with Passwords
7	trying to actually get their work with their names on it [V14-104] so you have got all these work and their types so can't recognise their handwritings [V14-105] because have they had that, they will be able to look back I think the language what they would have used would be been enriched [V12-049] created the picture on paint (Ling- picture) [V12-053]	Poor documentation
8	We have had a couple of occasions when pictures come up, maybe a bit violent or things like that (Ling- pictures) [V12-054] the only thing I have tried that was a little successful was I was trying to record myself doing calculations from my perspective using an ipad so they I can play the video back to the children for them to see what it looks like through my eyes, but when I try to play back from the apple software, it doesn't allow me to play back at the moment. [V8-033]	Inappropriate Advertisement
9	but i still think they need to use the library definitely we all went to the library a lot (Ling- library) [V17-016]	Avoidance of library
10	i do think it's very important to use books (Ling- books) [V17-018] ..here...say for example, I am doing a multiplication and I am using a method, I might use it on another....drawing it for example, but there's something more realistic about seeing me writing it on a paper that would then mirror what they will have to do, [V8-032] because you tend to loose that interest with books (Ling- books) whereas with a book, you can control it a bit more, [V17-020] a book that's suitable and one that you know you can find answers, [V7-063] that actually I would rather just use a flip chart in the first place and say 'look at this'..[V8-028]	Struggle to use books
11	do they- they just send a text, an email (Ling- text, email). [V17-019]	Virtual Communication
12	... but there wasn't a reason why it would be blocked because it wasn't an inappropriate site, [V7-059]	Inappropriate website

13	but children have to be aware of what's appropriate what's the best information, [V7-060] because sometimes you can end up on the wrong website or wrong information [V7-061] they will not understand how they have gotten to a particular point or the skill of being able... because we are living in a world now where there's so much information, [V8-036] also, it's sometimes difficult when you have asked the children to search for particular thing, of instructions [V8-035]	Inaccurate information
14	so using a video clip, they will just be enjoying it because it's a video clip as oppose to the actual learning that's depended on the video clip. [V8-029]	Likelihood of deceit
15	if they are switching from multiple windows or going from one program to another [V8-038]	Faulty design of programs

SCHOOL_B (JURIDICAL ASPECT)

S/N	1 st Order Terms	2 nd Order Themes
1	so it won't let things about 'Jesus' through, but will let things about other things through (J- injustice, Pistic- religion) [V1-058] the technology wasn't sort of.. it kept saying there was errors on the information, but as far as I was concerned, there weren't any errors(L- information; J-error; P- believe) [V2-036] maybe there's a fraction of the word or a slight meaning that Salford has decided is not acceptable, and therefore something we are trying to look at is very harmless to the word we are trying to get to (Juri- appropriateness; Aesth- misfit). [V18-043]	False Judgement
2	I am banned from approaching a computer because as I walk towards it, it goes wrong (Juri,..) the new teaching of code is not going well in this class at the minute, not only you can't choose not to use it (J- legal matters)..... [V1-065] it was a bit scary really that you were going to do things right on (Psysc- feeling, J- responsibility), [V2-039] but again- for me to be using certain method is again dictated to by the work i am given or what's going on in class (Juri- dictated to, Social- institution).[V18-044] it's generally not my choice (Juri- not my choice). [V18-049]	Undue Enforcement
3	where somebody is watching you and evaluating your lesson. there's nothing you can do about that, (J-authority,assessment) [V1-060] the main problem is the people who govern the system (J-authority) [V1-065] cuz if you talk to Salford council they say they don't put children in flats (Juri, ling) ... they are not using it cuz of OFSTEAD [V6-059] ...subconsciously, I might go- oh, I need to have this on my computer because someone is coming in to watch. [V6-060] ...when someone came in to watch and they saw that I stucked pictures all over the smart board, which I have done now they would go' why, have you got pictures on your smart board? instead of having the computer running? [V6-063]	Authority
4	blocked sites (J- unduly blocked) we have the main frame in the computer room, sometimes if something goes wrong with that, you might not be able to access them programs (F- destruction, J- no access/denial) [V2-015,035] you might not be able to access something (J- no access), [V2-037] we do have power cuts periodically and everything goes wrong (J- injustice, form- destroying) [V1-061] if anything breaks it affects different people in the school cuz they can't photocopy things for their classes (J-denial of what is due;). [V2-038] then now and again we experience cut-outs and when the internet cuts out, we have no phone because it's all connected (J, eth) [V4-084] you know, we just want them to come and replace them (Jur-due), [V4-085] when Ofsted was in the building for that computer not to be working (Juri- OFSTEAD- Authority body; Form- computer not working) [V5-064] the day ofsted were coming our internet was down (Juri- OFSTEAD-Authority body; Form- internet not working) [V5-065]	Denial of what is due
5	and the advert was way inappropriate (J-inappropriate, L-advert) [V1-062] so if you then show them a book on a screen, you are not actually modelling reading are you in a right way we really think of reading (Juri, Ethic). [V4-081] they think they are bin grown up when they go on these sites and they don't understand why they are not really allowed- why they need to be 13 (Pis, Juri.), [V4-086] -the boys particularly usually play on 18 games you know very violent games (black cops, all sort off) (Eth, Juri).[V4-091] some don't and quite a lot of them have something in their bedroom- might have a tablet in bed with you (Juri, for) – [V4-093] and we've got children who are playing games like call of duty, black ops for 18 year olds at the age of 3 (Juri- inappropriateness). [V5-063]	Inappropriateness

	then you are not going to use a computer properly how to use a pen properly [V6-057] there will be inappropriate pictures on the screen at the same time (Juri-inappropriateness; Ling- pictures;). [V13-077] and such inappropriate things (Juri- inappropriate),[V13-083]keeping it suitable content (Juri,). [V13-082] we risk getting swear words upon the screen, inappropriate adverts at the end (Pist- risk; Ling- swear words; Juri- inappropriate), [V13-084] In that if a child doesn't know how clear but if it's a machine that's marking, it only looks for a certain thing and if that's not there it might mark it wrong (Analy-doesn't know how clear; Form- technology; Juri-Appropriateness). [V18-046]	
6	and print them off, you have to remb to delete them before the next person and put them on charge again (J- responsibility) [V1-063] or you can't remb everything you have learnt ((Psy-remember, Ana- clarity,)) or you are suppose to have learnt (Jurid- responsibility). [V2-040] some families keep close range on what the children are doing (Soc, Juri), [V4-092] so Mr X is the IT coordinator, he gets lumbered with all these (Juri, Ethi), [V4-080] they are not easy to handle in the class, they are certainly not, as good as it could be. (Eth, Soc Juri,) instead of going round in a circle (Juri). [V4-083]	Responsibility
7	isn't it. so rather than teaching them IT, we are teaching them to use books (Eth, Juri), [V5-063] they are not used to writing out proper words (Ling- writing; Juri- proper words) [V5-066] and they come in very low with poor speech, poor physical, poor locomotive skills not toilet trained all those kind of things (Ling- low speech; Juri- below expectation). [V5-067]	Quality
8	they are like kept in all the time because the parents think it's not safe out (Juri, eth, Psysc,) which to be honest it's not very safe around here ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth),	Security
9	what you want is an happy medium isn't it (Juri). so when they do get older, they are going to be constantly on a catch up (Juridical-on a catch up, emancipation). [V5-068] on Monday we had a parent saying it and it just becomes a really big issue- (Juri, Ling) [V4-087] children say all the time anyway (they fall out) the next day they are best friends again but once` it's sort of out there, it's there forever isn't it, you can't get it back again (Pis, Juri) [V4-088] but the parents can't stop them from doing it (Juri, Social)[V4-089] but you don't really want to go into details (Eth, Juri),	Balance
10	use them quite regularly probably not to their full potential (Juri- not to their full potential) [V13-071] if you don't use it to its full potential (Juri- full potential) [V13-072] not using the ipads to their full potentials (Juri-do justice to-full potential), [V13-074]	Maximum use
11	the internet would show us false answers (Juri-quality) [V13-075] you will not get the right video (Juri- quality) [V13-076]	Truthfulness
12	how educated are the people who do the videos (Jurid)? [V13-079] but how many people..... know the wrong method for something (Juri) [V13-080] ...if a computer can do all of adding up all of its own, so why teach the children to add up, what's the point- a computer can do it, so I don't need to teach them any more, so.. no don't think that's a good idea. [V6-061]	Standards
13	if you ask them to do research and stuff, they will copy off things (ling-research; Juri- copy off things) [V13-078] and people copy off websites (Juri- copy off; Lin- websites), [V13-081]	Insincerity

Similarities with School B (Pistic and Aesthetic)

S/N	ASPECTS	1 ST ORDER ISSUES	2 ND ORDER THEMES
1.	Pistic	so it won't let things about 'Jesus' through, but will let things about other things through (J- injustice, Pistic- religion) [V1-069]	Against Religious Faith
		I don't generally prepare lessons on it, because with me it always goes wrong. (AES-misfitting, pist- prejudice) [V1-070]	Prejudice
		it does make your life simple in some ways (Pist), but	

		over complicates it in others (Pist), [V4-125] doesn't it you have to have plan A and plan B when technology is involved (Pist, For). [V4-127]	
		I believe there are plenty that haven't got numbers on (Pis- believe), [V1-071] the technology wasn't sort of.. it kept saying there was errors on the information, but as far as I was concerned, there weren't any errors(L- information; J-error; P- believe) [V2-041] I think it needs to get clean (Pis), ...it can be very dangerous which everybody knows- don't they? (Pist, Eth) (V4-137)	Certainty
		it's much more instance maybe they are loosing patience (pistic- patience) [V1-072] they expect everything instant.'we live in the instant mash society' where everything has to be done immediately.nobody wants to wait for anything (Pistic- prejudice) [V1-073]	Lose of good Moral
		you sort of get used to these machines and their problems (P- idolatry). [V2-042] most people just automatically turn to computer to look at things. but I prefer books (Pis- idolatry) [V2-044] but again it's high up, so it's when things like that happen you realise you've come to depend on it (Pist) [V4-124] he said he feels he does rely too much on his whiteboard (Pistic) [V4-130] he feels he's become a bit dependant on it (Pist). [V4-131] so just been over reliant on it really can be a problem (Pist). [V4-134]	Idolatry
		I think I'm kind of part of the older people (Pis- belief). [V2-043] they think they are bin grown up when they go on these sites and they don't understand why they are not really allowed- why they need to be 13 (Pis, Juri.), [V4-135]	Way I see myself
		I can use one, if I do teach, my instinct is not to use it (Pist), [V4-129] although I got all the training (Ling), I didn't use it regularly enough to feel absolutely confident with the white board (Eco, Pist), [V4-128] ... computers make it too sterile [V6-067] ...I think some people become too reliant on computers [V6-068]	User resistance
		we've said yes (Pist-commitment)- [V4-132] it's hard work getting them to come (Pis- comitmnt). [V4-133]	Commitment

Table (Pistic and Aesthetic)

S/N	ASPECTS	ISSUES
1	Pistic	children say all the time anyway (they fall out) the next day they are best friends again but once` it's sort of out there, it's there forever isn't it, you can't get it back again (Pis, Juri) [V4-136]

		<p>it's very hard for children to understand why it's dangerous (Pist, Anal)</p> <p>we find the children around here tend to be one extreme or the other (Eth, pis), [V4-138]</p> <p>but they do. so I do think it has changed childhood, I don't know it's difficult (Eth, Pis) [V4-140]</p> <p>on a whole, I would say probably negative, as far as children are concerned. that might be me bin old fashioned.(Pis, Soc) [V4-141]</p> <p>they are used to everything bin fast and exciting (Pis, Aesth) [V4-142]</p> <p>some people get over-reliant on it (Pistic- reliant), [V5-069]</p> <p>and I had this whole lesson relied on that smart board and the internet wasn't working (Pist- relied; Form- internet not working). [V5-070]</p> <p>people have just become too reliant on it (Pistic) [V5-071]</p> <p>... computers make it too sterile [V6-067]</p> <p>...I think some people become too reliant on computers [V6-068]</p> <p>...if we are all relying on the computer [V6-069]</p> <p>...sometimes I think u don't trust the technology [V9-044]</p> <p>...They said we were going to be paperless, but I think it has generated more paper [V9-045]</p> <p>not rely on finding a video or the snappy things (Pistic- not relying; Ling- video) [V13-088]</p> <p>don't rely on computers for everything (Pist- rely), [V13-091]</p> <p>most are reliant on their computers (Pistic- trust), [V13-092]</p> <p>technology is only getting better and we are getting more lazy, more reliant on computers (Pist- getting better; Form- laziness). [V13-093]</p> <p>we risk getting swear words upon the screen, inappropriate adverts at the end (Pist- risk; Ling- swear words; Juri- inappropriate) [V13-096]</p> <p>but i would say that it's from my point of view more difficult to do what i need to do if i had to use the ipad or computer (Pistic- point of view; Aesthetic- difficulty), [V18-048]</p> <p>So sometimes, the person is better but not always (Pist- the person is better). [V18-049]</p>
2.	Aesthetic	<p>I don't generally prepare lessons on it, because with me it always goes wrong. (AES-misfitting, pist-prejudice) [V1-050]</p> <p>when the power cut goes on, it do affects the log in system.. (L-login system, Aes- no harmony) [V1-051]</p> <p>if I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use, (L-word document, Aesthetic- disharmony) [V1-052]</p> <p>you think any compatibility? (Aesth) [V1-053]</p> <p>you have to find the right cable for the right number (Aes- harmony) [V1-054]</p> <p>I wouldn't like to do the job, it will be very difficult (S- structure of org/job, Aesth- difficulty). [V1-055]</p> <p>don't use too much colouring because it's too expensive.(Aesth- decoration, E- cost) [V1-056]</p> <p>it was quite hard to move over and it obviously ...word problems (Aesth- not fun). [V2-028]</p> <p>the transition was a bit sort of mind bugling at first (Aesth- imbalance;).[V2-029]</p> <p>the transition was hard, at first it was quite complicated. (Anal- no clarity; Aesth- not fun) [V2-030]</p> <p>even though you don't sort of welcome the change (Aes-switch/change) [V2-031]</p> <p>I think I'm not sort of interested in technology (Aesth- interest), [V2-032]</p> <p>I'm not inclined to pursue it (Aesth- indifference). [V2-033]</p> <p>I'm really not that interested in them other than work (Aest- boredom) [V2-034]</p> <p>it's quite hard at first (Aesth- Not fun) [V2-027]</p> <p>you know because they sit at home watching screen (Social, Aesth), [V4-070]</p> <p>so little niggling things you didn't bother with (Aesth), [V4-071]</p> <p>but whereas once its sort of out there and they are forwarding it to each other (Eth, Aesth) [V4-072]</p>

	<p>so it's quite hard (Aesth). [V4-073]</p> <p>and they are tired and sometimes they say they have had nightmares because they have watched horror things (Aesth, Psyc). [V4-074]</p> <p>ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth), [V4-075]</p> <p>and the ones that stay inside they are a lot of the time watching telly or on a computer or that sort of thing (Aesth, Eco). [V4-076]</p> <p>so they might have bin texting each other, or on a game where you can talk to somebody through a game (Aesth, Ling). [V4-077]</p> <p>It affects them if they are either tired or they have been up all night playing or bin having nightmares because of what they have watched (Aesth, Psych, Bio) [V4-078]</p> <p>they are used to everything bin fast and exciting (Pis, Aesth) [V4-079]</p> <p>cuz they are so used to being put in front of the TV (Aesth- fun) [V5-058]</p> <p>when you make them sit down to read a story book they are not as engaged because that bright flashing screen isn't coming (Anal- engaged; Aesth- bright flashing screen) [V5-059]</p> <p>and they don't get to go on the outdoors, they don't get to do messy play and everything else (Aesth- outdoor, play, fun), [V5-060]</p> <p>so getting them to sit on the carpet and to listen to a story from a book is so important than sat down in front of peppa pig (Aesth- sit to listen; Ling- book) [V5-061]</p> <p>but if a child is used to being plugged in front of TV, they are going to be used to sitting in front of the screen all that kind of thing (Aesth). [V5-062]</p> <p>but that quite a laborious activity [V6-053]</p> <p>... I think you will loose that little thing I think the children need that kind of -uhm, being able to- how to use pencil and paper or being able to play around. [V6-054]</p> <p>...if children didn't have that joy of getting a book, going and sitting. [V6-055]</p> <p>... I am bored, so I just drew it and I photocopied it. [V6-056]</p> <p>I know you can make the words bigger, but sometimes the screen itself is a strain on you [V9-040]</p> <p>you don't see children playing outside [V9-041]</p> <p>if you are not prepared really (Aesth- prepared) [V13-067]</p> <p>you are doing that research adhoc where the kids are just there, that would back fire (Anal- adhoc-unprepared; Aest- backfire). [V13-073]</p> <p>or are they just relying on playing computer games because everything again is so easy (Aesth- playing games) [V13-044,090]</p> <p>it kind of not to work when you are expecting it to work (Aesth- expectation). [V13-068]</p> <p>the worry is they are just going on random websites that are not suitable (Ling- random websites; Aesth- not suitable) [V13-069]</p> <p>maybe there's a fraction of the word or a slight meaning that Salford has decided is not acceptable, and therefore something we are trying to look at is very harmless to the word we are trying to get to (Juri- appropriateness; Aesth- misfit). [V18-037]</p> <p>we also have the problem that these computers don't have dvd or we can't play everything we want to play through the smart board (Eco- technical limitations, Aesth- incompatibility). [V18-038]</p> <p>if things go wrong in the mean time you either have to put up with it (Aesth- chaotic) [V18-039]</p> <p>it's just that it doesn't necessarily fit in with what our role is (Aesth- misfit, no integration), [V18-040]</p> <p>but i would say that it's from my point of view more difficult to do what i need to do if i had to use the ipad or computer (Pistic- point of view; Aesthetic- difficulty), [V18-048]</p> <p>purely from a case of me and a child and a book can move anywhere and sit anywhere and its easy done that way.` (Kine- movement; Aesth- simplicity) [V18-042]</p>
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Differences with School B (Ethical Aspect)

S/N	1 ST ORDER TERMS	2 ND ORDER THEMES
1	<p>one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem.(Ethical- Psychic-emotion) [V1-066]</p> <p>so if you then show them a book on a screen, you are not actually modelling reading are you in a right way we really think of reading (Juri, Ethic). [V4-104]</p> <p>Downside in the school I suppose is the children going on things that they shouldn't (Eth) [V4-109]</p>	Unethical content

	<p>I don't know about, they are messaging each other and it causes all sorts of problems because they are not old enough (Ling, Eth, Bio) [V4-110]</p> <p>but whereas once its sort of out there and they are forwarding it to each other (Eth, Aesth) [V4-111]</p> <p>you get all kinds of rubbish (Ethical- rubbish), [V13-085]</p> <p>or seeing things that they shouldn't be seeing (Eth) [V13-094]</p> <p>waste for an hour or seeing things that shouldn't be (Eco- waste an hour; Eth- seeing things that shouldn't). [V13-094]</p>	
2	<p>is not a 2 minutes job, it's a five minutes job by the time you have worked out where it is, so that's sometimes why people don't use them because they don't want to go through this.(E-time, Psy- not willing to go through, the effort required, ETH- no self-giving) [V1-067]</p> <p>well it does and the kids get the amount of my extra time benefit out of it (Eth- self-giving), [V1-068]</p> <p>there are some songs that can do without the words, so we have to revert with the ones they know without the words up on screen (Ethi, Spatial). [V4-100]</p> <p>obviously, there's nobody in a small primary school whose job it is permanently to be doing that (ETH), [V4-101]</p> <p>so Mr X is the IT coordinator, he gets lumbered with all these (Juri, Eth), [V4- 102]</p> <p>but actually he's a full time Teacher as well (Eth,). [V4-103]</p> <p>isn't it. so rather than teaching them IT, we are teaching them to use books (Eth, Juri), [V4-105]</p> <p>they don't always do what you want [V6-064]</p>	Not self-giving
3	<p>then now and again we experience cut-outs and when the internet cuts out, we have no phone because it's all connected (J, eth) [V4-106]</p> <p>...if a computer can do all of adding up all of its own, so why teach the children to add up, what's the point- a computer can do it, so I don't need to teach them any more, so.. no don't think that's a good idea. [V6-066]</p> <p>but you couldn't say it out at first because it was putting the typist out of work (Eth) [V4-107]</p> <p>that did actually come in quite quickly, the typists were put out of work (ETH). and everybody began to do their own typing. [V4-108]</p>	Improper
4	<p>and you don't really want to have to explain to them exactly why it's so dangerous (Eth, Ling) [V4-113]</p> <p>but you don't really want to go into details (Eth, Juri), [V4-114]</p> <p>they are like kept in all the time because the parents think it's not safe out (Juri, eth, Psyc.) which to be honest it's not very safe around here [V4-118]</p> <p>or they just want them off- out of the house, which neither is great (eTH) [V4-119]</p> <p>they are not easy to handle in the class, they are certainly not, as good as it could be. (Eth, Soc Juri,) [V4-122]</p> <p>but it wouldn't be that convenient to do that (ethical- sacrifice). [V18-047]</p>	Burden
5	<p>-the boys particularly usually play on 18 games you know very violent games (black cops, all sort off) (Eth, Juri). [V4-115]</p> <p>and their parents have no idea about what they are doing or what they are on (Eth, Soc). [V4-116]</p> <p>we find the children around here tend to be one extreme or the other (Eth, pis), [V4-117]</p> <p>ones that aren't free are on computers all the time but they are risking in other ways (Aesth, Juri, Eth), [V4-120]</p> <p>but they do. so I do think it has changed childhood, I don't know it's difficult (Eth, Pis) [V4-140]</p> <p>...it would be an inconvenient [V6-070]</p>	Exposure to unethical risks
6	<p>...I don't think it's a priority to teach a child to use a computer just because another country is doing it and they are ahead in their computing, [V6-065]</p>	Unhealthy competition
7	<p>...it can be very dangerous which everybody knows- don't they? (Pist, Eth) [V4-137]</p>	Known danger

Similarities with School C (Pistic& Aesthetic Aspect)

S/N	Aspect	1 st Order terms
1	PISTIC	<p>how safe is it to pick the right website they can go on which is what I wanted to look at.(pistic- trust, ling-website,)</p> <p>a different system perhaps will be better (Pistic- a different system will be better) ,</p> <p>they disagree with them on principle (Pistic- disagree with them on principle),</p> <p>and they buy very much into toxic childhood (pistic- buy very much; biotic- toxic childhood) –</p> <p>I need to be brave with the ipads (Pist- to be brave),</p> <p>scared of getting it wrong (Psych- Scared; Pistic- getting it wrong)</p> <p>then that's sort of affects lessons so obviously you can't rely on that,</p> <p>I guess they can become too reliant on them at the end. you know, on the ipads we have calculators so i guess they could go on there and use those, different games, things like that erm, apps which they can use these days to calculate for you. yea, i think it's finding the balance using that to help as well as kind of knowing the basic skills in themselves.</p> <p>so yea, if it's kind of completely wiped out, i guess you will realise what you did before it was around which is bad really when you think about it that you do rely on it so much.</p> <p>Chasing the patience away (Pist),</p> <p>it's specially the generation now that will suffer more (Pis)..</p> <p>children get impatient (Soci- children; Pist- impatient)</p> <p>boys haven't got particularly any special patience (Pist- patience- of good morale),</p> <p>i think their reaction side of things are a lot quicker than possibly used to their patient level (Psych- reaction side; Pistic- patience level- of good morale).</p> <p>be patient even though you get into arguments (Pist- patient; Soc- argument),</p> <p>i think it's quite a lot dangerous in that side of it (Pistic- quite a lot dangerous).</p> <p>just because I don't use it in my everyday life (P- commitment)</p> <p>this is something I don't use in my day-to-day life (P-identity, A-awareness).</p> <p>because I think if I press the wrong button I am going to lose it all (Pis- believe),</p> <p>think- oh no, I don't want to do that, it might delete and I might not get it (Pis- believe, Psy- emotions),</p> <p>they don't think it's going to disappear (Pis- trust),</p> <p>I have a lot more confidence in teaching in traditional way (P-certainty)</p> <p>for instance writing on that board because I know that the worst thing that can happen to me is the pen will run out and I will just find another one (L-writing, Eco- resources, P-absolute).</p> <p>you know I rely on the old way of doing things because its less things that can go wrong,(P- rely, Aes-chaotic)</p> <p>I just think its safer and I feel more confident with them (P-believe, Eth-safety).</p> <p>Sometimes it's easier for the Teacher (I know its more work), to just stand up themselves and tell the class because then you haven't got to rely on the sound system working or not (Pis-commitment, Eth- giving,).</p>
2.	AESTHETIC	<p>so sometimes you kind of loose the point you want to make, you have to shift the activity to a different focus (Anal-clarity;Aesth-activity).</p> <p>I tend to use my own digital camera rather than the ipads, because of the issue of getting the information from one unto the other (Aesth- compatibility),</p> <p>they are quite rough with the books and we had to spend a long time learning how to look after a book (Aesth- rough; Eco- spend a long time, Ling- book),</p> <p>but sometimes finding the right thing the first time and if you click to go back on a link and it's changed slightly and it comes up as 'this is no longer recognised' or' this web page no longer exists' (Aesth- changed slightly; Jurid- comes up as 'this is no longer recognised'; Ling- web page).</p> <p>I don't want to buy them all and find that they are not useful (Eco- buy; Aesth- not useful)</p> <p>because the pressure is all about you (Aesth- pressure)</p> <p>have children who struggle to hold a pencil well (Aesth- struggle; Physical- hold a pencil well)</p> <p>if you have got children where they have never seen one and children who use them at home it's quite hard to bring that together (Aesth- bring together).</p> <p>in the future it's terrifying (Aesth- terrifying).</p> <p>I don't really like them using them independently, even though they can use them independently if they were at a table, I am worried that they might drop them. (aesthetic- not fun, social-institution</p> <p>.....cuz they have done it so many times again they will be bored so it does has its pros and cons. (quantitative-amount,aesthetic-boredom,)</p> <p>sometimes the actual physical things like writing on a paper are things you can do in different ways and print in different formats are things which makes it more exciting I think that is the massive disadvantages. The pen pal app costs a fortune and it only has 20 exercises. (lingual-writing,aesthetic-exciting, fun,</p>

		<p>economic-cost, economic-limited exercises)</p> <p>sometimes you do see the kids in a trance(and you think to yourself), then you try to make it more exciting as much as you can, and then you think sometimes- are they getting absorbed into what's happening, are they taking it in or they are not- you just don't know. it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time. (aesthetic-exciting, fun, lingual-symbol, characters, analytic-conceptualisation)</p> <p>so it's hard for them to use. aesthetic-hard to use</p> <p>sort of go round and that's quite sort of difficult thing to get into showing each other's work.</p> <p>i know that some Teachers don't use them as much becuz it's more trouble than its worth sometimes.</p> <p>so that can even be a pain cuz obviously the children can be all over the place and they are arguing over who is taking what turn and who is having a go and things like that</p> <p>When i was at school, technology was around, we used tech quite alot anyways. but i can say we did play out alot more and played games with each other socially with friends rather than stucked, glued to an ipad or an xbox or things like that.</p> <p>so it just knocked the whole afternoon off (Asthe) cuz we couldn't do it,</p> <p>because the children will struggle (Aesth),</p> <p>so you can be playing on your xbox or play station all night (Aesth).</p> <p>it kind of cause disruption in the class</p> <p>that causes a lot of disruption in getting the lessons started</p> <p>that can kind of disrupt the lesson (Aesth- disrupts)</p> <p>that did disrupt the lesson (Aest- disrupt the lesson)</p> <p>they are not all getting a go, they are not all focusing on it and it just causes disruption around the classroom really (Juri- not all getting a go; Analy- not all focusing; Aesth causes disruption).</p> <p>some of the programs if it's got videos or games, they are not compatible (Aest-not compatible)</p> <p>but with some of the programs not bin compatible with their use, you are a bit restricted sometimes. (Aesth- not being compatible; Eco- a bit restricted-limited)</p> <p>it's a bit boring isn't it when we've not got those things- (Aesth- boring)</p> <p>they haven't got outside activity interest (Aesth- activity interest).</p> <p>it could get quite boring (Aesth- boring),</p> <p>they are so focused on these games that they don't have anything outside, (Aesth- games)</p> <p>it seems to work differently (Aesth- work differently)-</p> <p>i don't think their minds will work on it the same way of thinking the same way as they do (Aesth-harmony).</p> <p>i think they are just into the games (Aesth- games)</p> <p>and then if you've not been able to watch it, then you can't do the next bit so that happens quite a lot in school (Aes- harmony).</p> <p>you know I rely on the old way of dong things because its less things that can go wrong,(P- rely, Aes-chaotic)</p> <p>a lot of kids nowadays probably don't need to, they just go the computer or laptops and just Google it and they have found it (Aesth- embracing change, L- signage).</p> <p>they can watch something but not hearing it makes it useless, (Aesth-harmony)</p> <p>it's like lots of different things every day (Aes-assuming occurrences).</p> <p>you just play and stop (Aes- fun).</p> <p>because its hindering writing (Aes- writing),</p> <p>its not like when they come to sit and write a story and think of their own characters their own settings, their own problem (An- conceptualisation, L- story, Aes- write,harmony) .</p> <p>but their writing skills because they have got really poor handwritings (Aes- writing skill, L-write),</p> <p>as in (c u) and okay and abbreviate words like tmorz instead of tomorrow and you can see it coming through into their writings definitely (Aesth-style of writing),</p> <p>also a word could be spelt right but you have used it in the wrong context (Aesth, Lin)</p>
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Appendix X

Diversity Overview

This section aims to give an interpretation of meaning by assigning aspects to the issues collated; this demonstrates ‘diversity’ of the down-to-earth issues of what Teachers hold as meaningful. The following interpretive aspectual analyses are discussed below. Each of these aspects further reveals the meaningful issues behind the utterances of the data.

An Interpretative Study of User’s ICT issues

Quantitative aspect: Amount and number of children and the number of ICT resources available in the schools. Teachers struggled with issues in this aspect. In at least seven users in this study, the number of children using digital technologies that needs to be monitored, as reflected in the following quotes:

“...you can't monitor 30 children at the same time and they are often in tangent...” [V8-001]

“...terrifies me if I get 30 children on the computer...” [V16-002]

“...but the thought of 30 of them at the desk, especially if they are pulling them off each other or bashing at them...” [V16-003]

Adding to the complications was the technical difficulties Teachers face when such an number of children login at once. This contributed to some issues Teachers struggle with the use of ICT in the classroom, which was noted by two Teachers:

“...if too many children log in at once...” [V14-005, 008]

“...if you've tried to get 30 people on the internet at one time, they can't get on [V14-009]

“...Getting all 30 children all logged on to the computer with their unique username and password, it will take me the best part of my time.” [V16-001]

Also identified were issues about the number of children to use a number of resources, which is reflected in the following quotes:

“...If the sound or light goes, it can't be used at all, you can't get 30 children round this (shows an iPad). It's not good enough is it?” [V19-001]

“...you've got 3 to 4 children round a laptop and then they are not learning enough and not as focus because it's too many of them round it” [V20-001]

Spatial aspect: This aspect is exhibited in the layout of the classroom and how it does not work well with the technology signals. Some of the issues raised on this aspect are highlighted below by two Teachers:

“...then it has to do with where you are...” [V3-003]

“...it has to do with the signal interference in this room...” [V16-007]

Kinematic aspect: This aspect reflects the issues with speed required or the difficulty in movement as explained by Primary Teachers. Examples are given below:

“...because I am not particularly a good typist, I wouldn't have been able to type and explain...” [V1-002]

“...I have to go round and check that they are bin plugged in and things like that...” [V10-007]

“...then you've to restart it, pull the cable out, put it back in, restart it pull it out, put it back in...” [V12-002]

Physical aspect: The kernel meaning of this aspect reflects on energy and mass as they cannot be directly observed, but as they are expressed in things. Primary Teachers had issues with charging the laptops. For example:

“...so they haven't been charged or something has gone wrong with them...” [V7-003]

“...getting them out and finding that they are flat when you turned them on was one of those problems...” [V16-016]

Biotic aspect: This aspect reflects on the life function. Some biotic issues Teachers mentioned are related to their everyday lives.

“...When you look at the screen after while...” [V9-004]

“...Teachers tend to use it a lot, these interactive white board, but it seems to be the only the younger Teachers...” [V17-002]

Psychic aspect: This aspect reflects the issues Teachers face on how they function psychologically in seeing, hearing, feeling, responding, having emotions, etc. Lots of the Teachers in this study raised many issues that falls into this aspect. Only a few excerpts will be used as examples:

“...it's just that any occasion where you have got a learning objective/aim for a lesson and something gets in the way, it's frustrating more than anything...” [V7-010]

“...the fear is- you become so reliant on computers that you forget how to do stuff...” [V6-014]

“...I like to use the iPad, but I am a bit nervous about having them independently on the table...” [V11-004]

“... I had a bad experience with it...” [V12-015]

Analytic aspect: This aspect reveals how we function analytically by making distinctions, by being logical and forming and clarifying concepts in our thought process. Lots of the Teachers highlighted issues on this aspect. A few will be discussed to show the kind of issues users are interested in:

“...I can't teach them if I don't know how to use power point...” [V14-052]

“...then every child has to remember their log in and password and they can't always remember it...” [V2-028]

"...when you make them sit down to read a story book they are not as engaged because that bright flashing screen isn't coming..." [V5-014]

"... but really, it's the log in procedure that has been an issue..." [V8-010]

"...so we are really trying to push these children up in numeracy, illiteracy, and because of that it feel like we don't get a bigger chance to spend as much time on the things like ICT as we like to..." [V14-073]

Formative aspect: this aspect entails how we shape, achieve, control or plan things. It is closely linked with technology and technique. Examples of issues found with ICT use that are meaningful in this aspect are highlighted below:

"...we do have power cuts periodically and everything goes wrong..." [V1-021]

"...and I had this whole lesson relied on that smart board and the internet wasn't working..." [V5-029]

"...we have all been trained but because of tech issues it hasn't worked as it should..." [V7-044]

"...Too often the machines are updating and a couple of hours still on updates, you can't get on..." [V7-050]

"...there's no connection between the amazing equipment we have got..." [V14-079]

Lingual Aspect: some of the issues respondents raised are categorised into this aspect. This aspect reflects how we function lingually when we write, speak or read. There are some DTE lingual issues Teachers mentioned, examples are:

"...using a resource on you tube, it could be one other thing where you are sat using it and an advertisement comes up (so you have to tell the children to skip ad)..." [V11-018]

"...it's hard, I try to put characters they would like and you think are they actually focusing or they are watching the character, so it can distract at the same time..." [V11-021]

"...if I forget to convert it from that to a word document and send it to school, it gets gobbled and it's of no use..." [V1-032]

Social aspect: some of the ways we function in this aspect is when we give respect, interact with others, build relationships and so on. Teachers raised some issues which were categorised into the social aspect, they are:

"...they don't want to share..." [V14-113]

"...in school the whole communication thing just gets slimmed down because of ICT..." [V5-053]

Economic aspect: this aspect reflects how we manage limited resources. In this case resources can also be money, time and so on. Most of the issues Teachers raised fell into this aspect in various ways. For example:

"...so you don't get value for money that way..." [V7-082]

"...reminding myself how to do it will take me a few hours..." [V14-122]

"...past I've had problems where I've wanted to download something and I can't even access it because there is not enough space to even save the document..." [V12-071]

Aesthetic aspect: A number of Teachers discussed the chaos encountered with ICT in the classroom. Other reflection of this aspect which respondents found meaningful are when they enjoy a thing or find it boring, when there is integration of ICT with their works and so on. For example, Teachers brought up the following aesthetic issues:

"...or are they just relying on playing computer games because everything again is so easy..." [V13-044,090]

"...it kind of not to work when you are expecting it to work..." [V13-068]

"...it's just that it doesn't necessarily fit in with what our role is..." [V18-040]

Juridical aspect: this aspect reflects the laws and legal system. Other meaning this aspect portrays can be seen as rewards, punishments, appropriateness, quality, and so on. Some of the issues Teachers raised categorised on this aspect is the undue enforcement they are faced with ICT use in the classroom. Examples raised are highlighted below:

"...it's generally not my choice..." [V18-049]

"...where somebody is watching you and evaluating your lesson. There's nothing you can do about that..." [V1-060]

Ethical aspect: this aspect goes beyond what is right or wrong and the ethicality of organisation (school). Teachers mentioned issues that reflects the following selflessness, self-centredness, generosity, taking advantage of others and competition. Excerpts discussed are quoted below:

"...one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem..."

[V1-066]

"...so if you then show them a book on a screen, you are not actually modelling reading, are you? in a right way we really think of reading..." [V4-104]

Pistic aspect: this aspect is reflected in the issues Teachers raised especially when they discuss their reliant on ICT. This aspect is reflected in Teachers' beliefs and assumptions in ICT use in the classroom. For example:

"...so just been over reliant on it really can be a problem..." [V4-134]

"...and I had this whole lesson relied on that smart board and the internet wasn't working..." [V5-070]

This section has successfully produced the overview of diverse DTE aspectual issues Teachers face using ICT in the classroom.

Appendix XI

Critique of the Research

Appendix 11 contains a log of the various research decisions made by the Researcher and the reasons behind them. As discussed in section 9.4, documenting the research decisions may be valuable to other Researchers in the information systems community.

S/N	Decision	Why
1	Why this area of topic? What interest me most about ICT and why in education and not any other area?	
2	How does my research topic align with business school?	The historic and huge amount of UK Government funding to equip schools with ICT facilities is alarming and yet a huge worth of benefit is not being obtained from this spending.
3	Why is primary school of interest?	In Early Years settings, children are encouraged to develop varieties of skills, some are; the ability to explore, observational skills, problem solving skills, creativity and imaginative skills and so on. In this technology age, are these skills impeded, curbed or achieved and? Primary school teachings are the foundation of education, children in this stage are surrounded by ICTs and this raises some concerns to parents and Teachers when ICT are not properly used to support their children's learning.
4	Why not high-level issues	Discussions on barriers in the use of ICT in education are already saturated by issues of interest to senior management, ICT providers, policy makers and so on, which the Researcher termed high-level issues.
5	Why DTE issues- what are the literature backings to support the need of DTE issues	As literatures focus on high-level issues, Government keep pumping in more money to solve them, yet there is less worth of benefits compared to the amount spent that is experienced with ICT in education. This suggests that there are some actual 'everyday' issues Teachers' encounters in ICT use in the classroom which are being overlooked or ignored by literatures. There is a great difference in views when Teachers discuss and interpret the issues they face with ICT use in the classroom with respect to their learning and teaching goals and the high-level issues mostly discussed in literatures (Alexander, 2010; Osei et al., 2014). It is these DTE issues that affect the success and quality use of ICT and are meaningful to Teachers, in contrast to the issues mostly discussed in literatures.
6	Why qualitative and interpretivist approach?	As fully described in Section 4.1.1 The Researcher is interested in the meaning on the actions participants discussed. As discussed by Klein & Myers (1999), understanding Teachers' relationship with technology in their various primary schools is constantly changing and should be treated as a unique historical occurrence. The Researcher aims to obtain a rich and detailed participant's experience in order to have a better understanding of their perception on DTE issues.
7	Why Dooyeweerd?	The nature of computers is closely bound up with human experience. There is a need of a philosophy that understands the relationship between humans and technology and able to address the everyday life issues without losing the meaningfulness of these issues.
8	Why indepth interviews?	DTE issues are mostly taken-for-granted or overlooked issues, because they are viewed as insignificant or not worth our attention (Ahmad et al., 2013). Simply observing a user does not disclose enough to the Researcher rather what the user is thinking must be discovered. The use of in-depth interviews will help to bring out these overlooked and deep information as it concerns personal matters such as an individual's self, lived experiences, values and decisions (Gubrium et al., 2002).
9	Why those research needs? Diversity, Depth, Values	Depth- There is a kind of knowledge that is actually the most valuable and mostly in form of experience, know-how, insight etc. however this kind of knowledge is difficult to share without experience sharing because it is deep and it is a tacit knowledge (Nonaka, 1994; Abidi, 2005; Mirza, 2009). Diversity- Literature has revealed that there are many barriers that hinder the effective use of ICT in education and it has been argued that there are close relationships between many of the identified areas of issues; any factor influencing one area is likely to influence several other issues. Value- There is a need to understand the kind of values Teachers place on ICT tools in the classroom, as this will make it essential to provide related trainings on such, to invest and implement educational technologies in the classroom and as a guide for policy makers on ICT in the classroom policy formation. An example that can encompass these three research needs: consider this issue of information overload which hinders the Teacher from identifying relevant and suitable information and this leads to information blackout because the system is presenting information from the wrong perspective due to a problem that may be connected to a poor system design and Teachers are unable to interpret the information presented with correctly and they complain that the information provided to them is depleting and because of the wrong information given, it results to misuse or wrong decision and in future occurrence they do not want to use the system again and they are seen as being resistant to ICT use.

10	Why ICT in the classroom?	A focus on the practical use of ICT facilities in teaching and learning and not ICT as a curriculum subject and also a focus on ICT tools that are indeed helpful to Teachers, rather than what forces itself on Teachers or makes the teaching process more difficult for them will be the research focus.
11	Why the use of aspectual analysis as framework?	Dooyeweerd aspectual analysis was considered the best method because it provides philosophical grounds for understanding diversity and its help to avoid overlooking important factors (Basden, 2008). Aspects are in harmony. If we function well in every aspect then things will go well, but if we function poorly in any aspect, then our success will be jeopardised (Basden, 2008). Dooyeweerd aspect allows us to take an everyday approach to human use of computer. It looks at each aspect of the user's experience of interacting with ICT.
12	Why did I select these learning and teaching theories?	They are mostly used
13	Why this research is analysed both quantitatively and qualitatively?	<p>It can be viewed from the quantitative perspective because Teachers' issues were classified by aspect and the number of times each aspect came up both on the answer column and on the EIV column were counted up.</p> <p>The quantitative analysis helps to reveal the most and least emphasised aspects, which is, aspects that are overlooked and emphasised. Also, it shows the aspects the Primary Teachers (participants) found meaningful and this can be used in practice, for example, in staff training. Lastly, it helps reveal the profile of meaningfulness, that is, the aspects on which issues are more meaningful than other issues.</p> <p>The quantitative analysis help validate the Researcher's findings in the qualitative analysis.</p> <p>The quantitative analysis shows that there is a difference between EIV from answers and questions. Hence, it is good for analysts to separate out EIV, and Dooyeweerd helps us to do so. This is discussed further in Section 7.4.1</p>
14	Why interest in UK? And not from the Researcher's country?	There is no doubt of the ripple effect of an issue on ICTE in a developed country to be passed unto a third world country like Nigeria, which is mirroring the developmental growth of UK. Hence, it is more beneficial if the recommendations from this study are implemented in UK and positive improvements are accounted for and wider recommendations are made to other countries. Conducting a timely research in this line can stimulate Researchers in Nigeria to adapt the research method and approach based on their environmental and cultural factors. In addition, differences in background, culture and probably difference in way of thinking which the Researcher possesses can bring in some fresh perspectives into this study.
15	Why primary schools in Salford?	Salford is typically known as a deprived community with disadvantaged pupils (DfE, 2010; The Telegraph Education 2016). There is a need to meet in this community, and the Researcher's concern is to contribute towards the rise of the educational standards in Salford Primary schools. One of the ways to make this contribution is by helping Teachers to survive and thrive in a connected society- if literatures will not, the Researcher's survey will.
16	How were Teachers selected for the interview process?	<p>The Researcher attached to the email sent to the Head Teachers, the Participant Information Sheet (PIS) and Consent Form (CF) ahead of time to the head Teachers so interested Teachers would have ample time to make decisions on their participation in the research study.</p> <p>To gain a broad picture on the research topic, it was it was thought helpful to interview at least one member of staff for each year, if possible have a mix of male and female staff, and a mix of those who tend to use ICT and those who tend to avoid or minimise its use.</p> <p>The Head Teachers suggested to the Researcher the best time for the commencement of interviews as notified by Teachers.</p>
17	Why did I interview twenty Teachers? And why only from three primary schools?	<p>The Researcher did not have any restriction placed on the number of interviews; however twenty was arrived at when no new information could be obtained with further sampling.</p> <p>Fourteen letters were sent to the Head Teachers of the compiled primary schools of Salford and three of these schools gave a positive and welcoming response.</p>
18	Were interviewees involved in the use of aspects? Why/why not	The Researcher did not involve participants in the use of aspect neither did the Researcher tell the participants about thinking of aspects. Because the Researcher needed as much openness in the thought process as much as possible without any restriction.
19	Was the research influenced by the use of aspects during the interview process?	Unconsciously, aspects did come at the back of the Researcher's mind to stimulate part of the conversation. For example, from the respondent's answers, when the Researcher intuitively noticed that much emphasis is placed on an aspect, e.g. formative (technology) and an abrupt response is placed on the juridical aspect (Ofstead) as an example within the same conversation, the Researcher opens this up more. For example, '... in your comment, you mentioned about Ofstead, please can you tell me more?' This is done not just to get more details about Ofstead, but to get Teachers' views on some juridical issues. Although this was not planned, it was only at the back of the Researcher's mind and intuitive.
20	Why do I repeat the phrases used	The Researcher chose to repeat the phrases used by the interviewee in order to

	by the participants during the interview process?	diagnose any form of inaccuracy and to help stimulate the interviewee to say more.
21	Why the use of open-ended questions	The use of open-ended questions during the interview helped explore the topic deeply and produced a rich and full account from each participant
22	What strategy was implored in order to minimise bias?	To minimise bias, the Researcher focused more on the issues participants voluntarily gave. The research study focused and collated these DTE issues on what users think rather than defining these issues based on the Researcher's interests or what the literature states.
23	Were there structured questions used for the interview process?	In this interview, there were no structured questions in place as this would defy the aim of getting the ignored/overlooked diversity of issues. Instead the Researcher developed an interview guide questions aimed towards a conversational flow for both the interviewee and the interviewer to open up more questions to get what is meaningful to the interviewee on the research study.
24	Why did I not make use of NVivo Software?	Nvivo Software was considered and trainings were attended prior to the analysis period. However, the Researcher was constrained with the lack of opportunity to systematically breakdown the data directly, the hindrances the software gave the Researcher to get familiar with the data and most importantly the DTE approach is based on meaning in phrase and not themes of the texts and the Researcher found it more helpful to manually analyse the data to get a viable result.
25	Why EIV?	The EIV in this study are information voluntarily given by the participants. The rationale behind separating out answers from EIV is to reduce research bias and be able to lay emphasis on issues participants think are meaningful. Dooyeweerd's emphasis on 'meaning' motivated the Researcher to separate out what is meaningful to the Researcher and to the participants (Teachers). Other reasons for the use of EIV are explained in more details in section 4.7.2 (See Stage 2).
26	Why the use of colour code in the analysis process?	To clearly identify issues the use of colour code made issues distinctive in the midst of the conversation. And also for easy access in analysis
27	Why the use of tables in the analysis process?	It helped me to separate out clearly phrases of issues in answers from those in EIV. For structure and to easily identify what is missing or overlooked. For easy extraction in order to produce a detailed and appropriate analysis. To help clarify thoughts and give easy access for the next stage which is the aspectual analysis. It is helpful for ease of use and accessibility. The table shows the frequency of occurrence of both answers and EIV on each aspect. It also compares both the answers and EIV gotten from the interviewee on each aspect.
28	What was the process engaged in to understand an issue aspectually?	To understand an issue aspectually, I usually take a look at the whole picture and reflect on the main issue(s) in the sentence. The main aspectual meaning of each issue(s) is identified, and then tabulated. My most preferred route with aspectual analysis is that I intuitively begin with the most obvious aspects, and then proceed to ones that these aspects remind me of. I make sense of these by mirroring these issues in reference to one or more of the aspects.
29	Why did I count up the number of times a certain aspect occurs?	In order to produce a summation of all the frequency distribution on the aspects so as to get the percentage value on each of these aspects. This helped produce a mathematical data that was used to create a graphical illustration in form of a bar chart to show surprises in terms of aspects that are downplayed and emphasised amongst various cohorts.
30	Why a second type of qualitative analysis method (values)?	I have analysed it this way because of the complexity of each values. Taking into account that themes themselves are complex. Hence, aspectually analysing these themes will be a corrective measure to those been too rigid on the themes. It helps to expatiate on what is counted as values in ICT use by primary Teachers.
31	In what way did I challenge all preconceptions that have guided the analysis process of this study?	The Researcher questioned the data analysis process and discovered some inconsistency and had to re-do the data analysis again but this time with more clearly identified guidelines. The Researcher took a cue from the fifth principle of dialogical reasoning in interpretive field research that requires the Researcher to confront all prejudices that has guided the original research design and become as transparent as possible to the reader and to herself (Myers and Klein, 1999). Therefore re-doing the analysis helped the Researcher understand better the data analysis process from the initial misunderstood process earlier done.

32	What were the research decisions I made to maintain research standards?	The Researcher discussed the research, its methodology and analysis process with senior colleague and supervisor within the university. I ensured that all necessary agreements were made with the ethics committee of the University of Salford and the participating Primary Schools (Teachers). The Researcher recorded all interviews sessions using a recorder. The interpretation of the aspectual analysis done was verified by supervisor and senior colleagues. The Researcher also sent introductory email to respondents outlining the aims and objectives of the study and gave participants opportunities to discuss and also inform the respondents about their rights and responsibilities. In addition, the Researcher showed the application of the 7 principles used as criteria for judging interpretive research in Information System (IS) in this study. More details can be viewed in section 4.9
33	What were the research decisions I made to ensure this study is ethical in nature	In consideration to University of Salford rules and regulations, this research falls under the scope of the Research Governance and Ethics Committee (RGEC). Hence the Researcher applied for ethical approval (see Ethical Approval Appendix 1) prior to conducting the field study. Further decisions can be viewed in section 4.9.1
34	Why aspectual profile	Aspectual profile can provide us with useful indications especially if any aspects are either over-emphasised or under-emphasised. Aspectual profile also helped to show the way the interviewee had interpreted the interviewer's questions.
35	How did I develop the profile	My usual first step into this is to develop a table that has the number of times each aspect revealed itself.
36	Why is the profile represented in bar charts	Aspectual profile can be drawn in bar charts for easy visual readings. This way, one can easily see the aspects that are taken for granted, overlooked or belittled. This bar chart reveals the degree to which each respondent finds each aspect important. To show any bias and reveal the aspect with more interest on. This graphical presentation shows how what Primary Teachers want to talk about differs from what the interviewer wanted to talk about.
37	Why EIV	When participants give voluntary information, that is, beyond what they were asked, this is known as EIV in this study.
38	How did I reveal and manage bias in this study?	The aspectual profile of the interview question reveals that the interviewer focused more on some aspects. However, the focus on the aspects was not intentional as the interviewer did not formulate these questions by using the fifteen aspects. Therefore, if the participants only answered according to the interviewer's questions, other important aspects that were ignored would not have gotten responses on them. Further discussion can be found in section 6.1.2.1 The aspectual analysis done on the interviewer's question has helped to fulfil the third principle- the principle of interaction between the Researchers and subjects (Klein& Myers, 1999). Further discussion can be seen in section 4.7.1
39	Why I focused on the meaningful issues- (overall)	Because it represents Teachers' interests as a whole and what they voluntarily found meaningful. Another reason for focusing on the EIV is because of the occurrence of research bias during the interview, and such should not be ignored.
40	Why the qualitative analysis on just two aspects as it concerns gender?	The qualitative analysis will discuss on the formative aspect because the male Teachers found it most meaningful while the female gender found the economic aspect most meaningful. Therefore, in order to do a comparative analysis, both the formative and economic aspects will be discussed
41	How did I go about my qualitative analysis	An excerpt of the terms used in a specific aspect are compiled and categorised as the 1 st order terms. Similar issues are grouped together and given a theme name.
42	how did I come about the theme names	The theme name is based on the intuition of the Researcher on the best phrase that captures the issues in the 1 st -order category as a whole
43	what's the difference between the 1 st order and 2 nd order	The theme name is placed in the 2 nd order theme column for ease of data structuring.
44	what's the use of the data structure	The data structure helps to configure our data into an organised visual aid. Also helped to arrange the raw data into an organised visual aid.
45	What is the difference between a major issue and sub-issues	Creating a major issue is based on the 1 st order terms, which are the respondents' original terms. Hence finding similarities among the many terms in the major issue leads to a sub-issue.
46	What is the reason for comparison (similarities and differences)	It helps to identify what both genders find meaningful and which of these issues is relevant to either one of the genders.
47	What does the tick symbol signify	There are some concerns relevant to both genders while others are relevant to one of each. The tick sign shows if they are common to both the male and female gender.
48	Why the need for sub-issues	It shows that there is a likelihood of occurrence of some deeper issues in a major issue.
49	What symbol identifies the sub-issues	The alphabets represent the sub-issues.
50	Why the focus on the social aspect in the qualitative analysis of the	The social aspect has the highest issues in the Early Years as compared to other years. Hence, it is appropriate to assume that all issues to be revealed are already

	Year?	raised in the Early Year.
51	Why the focus on the lingual aspect in the qualitative analysis of the Year?	Early Years and Year 4 both found the lingual aspect most meaningful across other aspects. It is then necessary to open this up and find out the issues that are meaningful to these cohorts.
52	Why the focus on the juridical aspect in the qualitative analysis of the Year?	This section focuses on the juridical aspects in Year 1 because it raised the most concern issues across other years.
53	Why the focus on the formative aspect in the qualitative analysis of the Year?	This section focuses on the issues in the formative aspects in Year 6 due to the peak of concerns across all years.
54	Why the focus on the formative aspect in the qualitative analysis of School A?	In School A the formative aspect is seen as one of the prominent issues raised by Primary Teachers.
55	Why the focus on the social aspect in the qualitative analysis of School A?	The social aspect in school A is the lowest issue discussed across the three schools.
56	Why the focus on the economic aspect in the qualitative analysis of School A?	The economic aspect in school A has the highest issues among other aspects comparatively. Also examining across the three schools comparatively, the economic aspect in school A has the highest issues.
57	What is the qualitative analysis of the difference in aspects across the three schools?	In school B, the Ethical aspect is found to be remarkably outstanding compared with school A and C.
58	How did I go about the quantitative analysis of values	<p>The method used for the quantitative analysis was a count up of the frequency distribution on the amount of statement that portrayed the success of using ICT in the classroom by participants that were meaningful in each aspect. An aspectual table was developed and the various count-ups were inserted respectively. This produced a statistical data that was used to create a graphical illustration in form of a bar chart to show aspects that are downplayed and emphasised.</p> <p>Despite the focus of the research study which is on the issues Teachers face using ICT in the classroom, participants willingly discussed the values they derive from using ICT. Further details can be viewed in section 6.8.1</p>

Appendix XII

Literature B Analysis

Quantitative Comparison of Literature with DTE Issues of Users'

This section first discusses the analysis process carried out on the literature to create the literature aspectual profile as discussed in section 5.1.1. As discussed in section 5.2.1, the aspectual profile is drawn in bar charts and helps to indicate under-emphasised and over-emphasised aspects. There are ten papers reviewed in this section, each of these papers are numbered, for example, P1, P2 and so on.

The issues discussed per paper were collated and aspectual analysis was carried out on each issue. The mechanics involved in creating the aspectual profile involved separating out each issue into the aspects that makes them meaningful before counting up the sum up per aspect and the numbers of times an excerpt of issue appears. This process creates a frequency table as shown below, (Table 7.35), this helps develop the aspectual profile (bar chart) easily.

Number of issues mentioned by Literature in each aspect: Frequency Table of Literature (B)

S/N	Aspects	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Total
1	Quantitative	-	-	-	-	-	1	-	2	-	-	3
2	Spatial	-	-	1	-	-	-	-	-	1	-	2
3	Kinematic	-	-	-	-	-	-	-	-	-	-	-
4	Physical	-	-	-	-	-	-	-	-	-	-	-
5	Biotic	-	-	-	-	-	-	-	-	-	-	-
6	Psychic	1	1	1	-	4	-	6	3	15	10	41
7	Analytical	2	2	-	-	2	-	10	2	6	4	28
8	Formative	-	5	-	-	3	1	5	5	8	6	33
9	Lingual	1	-	3	1	-	4	6	6	16	12	49
10	Social	-	-	-	-	3	-	7	2	1	3	16
11	Economic	7	1	2	4	12	6	20	35	20	19	126
12	Aesthetic	1	1	1	1	-	-	-	-	2	-	6
13	Juridical	5	-	1	-	2	3	4	3	4	2	26
14	Ethical	1	1	-	-	1	-	-	-	2	-	5
15	Pistic	3	1	1	-	1	-	6	-	3	3	18

Where P= Paper (1-10)

This section has carried out analysis on the literature review discussion as seen in section 5.1.1 and has created an aspectual table. A detailed breakdown of the papers is seen in Appendix 10. The next section will present the aspectual profile and discuss the findings the aspectual profile created.

Analysis of the Aspectual Findings of Literature Review

The literature review aspectual profile in Figure 7.24 has drawn together evidence from a range of recent journals that discuss the various issues drawn from the Teachers' perspective of ICT use in the classroom. In collating these issues, their diversity cannot be ignored. However, there are repetitions of issues by same author and other authors. The key problem this reflects is that a false importance is placed on repeated or over-stated issues while other issues not stated by other authors are downplayed and seen as less of importance.

The mechanics involved counting up the frequency of each aspect that is a summation of the occurrence of each aspect. It should be noted that an issue can be discussed more than once by same author or other authors. Each occurrence of this issue should be analysed and the count-up of these aspects carried out.

For example: The issues of technical support and access to resources were mentioned thrice in both paper 9 and paper 10 and once each in paper 8. The summation of this count-up per aspect produced the bar chart above. This process was done with over 350 issues derived from the literature examined.

The aspectual profile above has revealed the functioning aspect of the most discussed ICT issues by literature. The aspectual profile above clearly shows the economic aspect as the most emphasised while both the aesthetic and ethical aspects are the least emphasised when viewed from the psychic aspect to the pistic aspect. However, the lingual aspect placed on issues with trainings, and the psychic aspect on issues with emotions is the next point of emphasis. However, there is a wide gap of focus on issues in the economic aspect compared to other aspects across board. The formative aspect represents issues such as achievement, planning, technology and so on. It is useful to mention that both the analytical and juridical aspects show roughly the same rate of interest in the literature. It is surprising that ethical issues like sacrifice and aesthetic issues such as the integration of ICT into learning are rarely discussed by literature. The use of aspect analysis has enabled each of the issues collated to be examined separately from one another.

The section has explained the literature review methodology and the aspectual analysis process of the various issues collated.

The next section compares the aspectual profile of data (what Primary School Teachers find meaningful) with literature review profile.

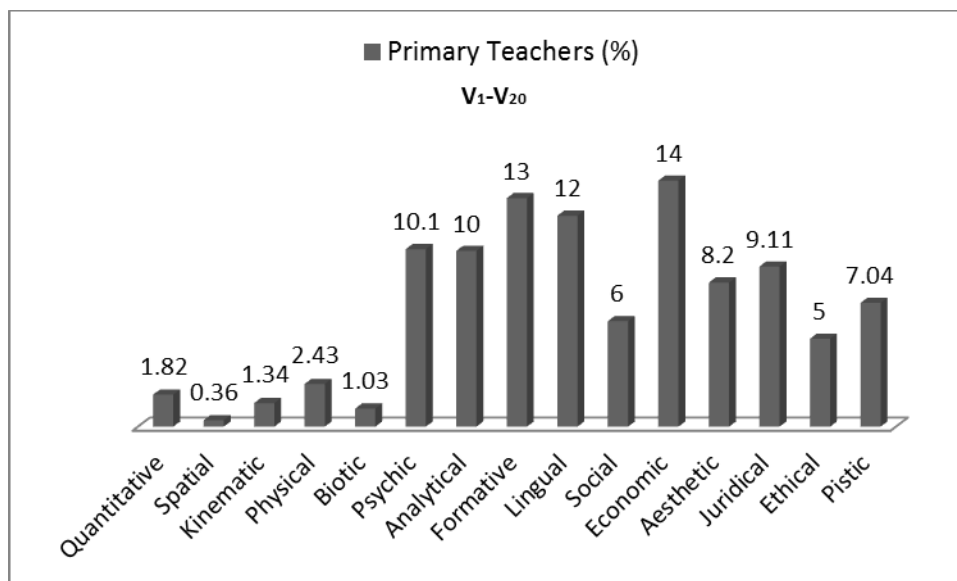
Quantitative Comparison of DTE Issues

This sub-section compares the aspectual profile of data (what Primary School Teachers find meaningful) with the literature review profile. The number of issues identified that are meaningful in each aspect are shown in Table 7.36 for both users (EVI only) and literature.

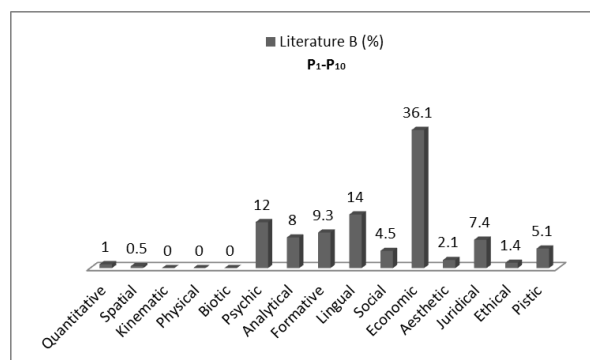
Comparison of Literature & Users Frequency Table

ASPECTS	Users count	Users (%)	Literature Count	Lit. (%)
Quantitative	30	1.82	3	1
Spatial	6	0.36	2	0.5
Kinematic	22	1.34	-	0
Physical	40	2.43	-	0
Biotic	17	1.03	-	0
Psychic	166	10.1	41	12
Analytical	162	10	28	8
Formative	208	13	33	9.3
Lingual	194	12	49	14
Social	97	6	16	4.5
Economic	223	14	126	36.1
Aesthetic	135	8.2	6	2.1
Juridical	150	9.11	26	7.4
Ethical	81	5	5	1.4
Pistic	116	7.04	18	5.1
Total	1647		353	

The percentage values are shown visually in the following bar charts.

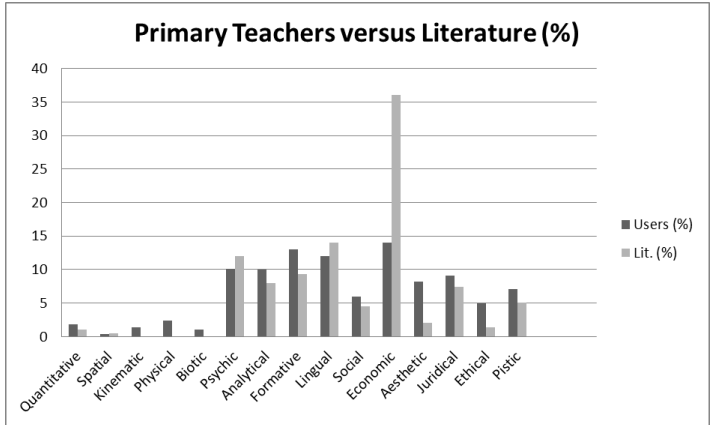


User's Aspectual Profile



Literature Aspectual Profile

The next aspectual profile brings together and compares both the perspectives of the Primary School Teachers and the literature B profiles. The reason for this comparison is to reveal some overlooked or ignored issues as it concerns Teachers' use of ICT in the classroom.



Comparison of Users and Literature (B) Aspectual Profile

The graph above combines both the aspectual chart on Primary School Teachers and literature reviewed. This reveals a number of interesting findings.

1. The literature studied showed a very marked interest in the economic aspect, above all other aspects. By contrast, the interest of users was much more evenly spread.
 2. The users showed some interest in early aspects (e.g. spatial arrangements and movements) while the literature completely ignored these.
 3. The users found aesthetic and ethical issues meaningful, while rare interests of these aspects were found in the literature studied.
 4. Both users and literature found most other aspects meaningful to some extent, although interest in the social aspect was lower than we might have expected, given that primary-school teaching involves social relationships with children and parents.
- These results raise questions of why these are the case. Finding 4 raises the question of whether the types of issue that are meaningful in each aspect are the same. This can be answered by qualitative analysis.

Qualitative Analysis of Literature

This section seeks to identify what makes the selected phrases a problem to the speaker, or if not an actual problem, something worth saying. To do this, Dooyeweerd's philosophy is used to examine the context around the utterance of the highlighted issue and its functioning aspect. On whichever aspect identified, the reason why it is reasonable to think that this is an important issue to the utterer and reason for the chosen aspect is given in excerpt table below.

Dooyeweerd's aspects are used as a reference point in clarifying this process and as a categorisation of ways in which things can be meaningful, with each relevant phrase of issue being subjected to the question: which aspect(s) best expresses the message this phrase is trying to connote?

For example: '...not enough computers...'

The meaningfulness of the phrase of issue above shows the limitations of resources (computers) and emphasis would be placed on 'not enough' which is the main issue. This understanding gives a direction to the economic aspect where this issue is meaningful. The approach of aspectual analysis is to separate what makes each of these issues meaningful into their respective aspects. This aspectual interpretation is based on intuition, because Dooyeweerd suggests that it is possible to grasp the kernel meaning of each aspect through intuition rather than exact definition (Ahmad, 2012).

There are ten papers reviewed in this section. Each of these papers are numbered, for example, paper 1, paper 2 and so on. The first column gives details about the paper and the code (PL1.01) signifies the serial number of the issue identified from paper 1. The aspect column states the functioning aspect of the issue highlighted while the last column gives the reason why the Researcher chose the selected aspect. The issues are given code numbers for easy identification. This code can be explained as PL (Paper Literature), followed by the paper number (x) and a dot while the issue number is the last two digits which can be found in the raw data analysis step. For example PL6.02 is the second issue identified in paper six of the literature reviewed.

A detailed tabular description that includes the rest of the papers examined is shown in Appendix XII.

Literature issues by qualifying aspect

Paper No, Author, Title, Issue Page	Code	Aspect	Issue (Excerpt from literature)	Reason for the chosen aspect
PAPER 1 Harrison, S. (2003). History, ICT and Learning in the Secondary School. pp. 30-39.		Pistic	Government relying principally on its delivery metaphor, and the belief that the 'top-down' transmission of information from 'the centre' can effect change.	Idolatry, trust
	PL1.01			
PL1.02		Juridical	Teachers were either unaware of or had found 'unhelpful' many of the materials designed to promote the use of ICT in subject teaching.	Appropriateness, quality
PL1.03		Economic	Lack of time to plan how to integrate computers into classroom use.	Lack of time

The next step of the analysis is explained below.

12. Group issues in each aspect into themes

This section furthers the analysis process into four columns such as the paper code, the aspect the issue functions, the 2nd order theme and the 1st order terms. The 1st order terms are the main issue excerpts from the literature while the 2nd order theme represents the meaning of the data in relation to the aspect it functions while its frequency of occurrence is placed in parenthesis.

As earlier discussed in section 7.2.5, the first step was to count up or sum up per aspect the numbers in the 2nd order theme, which is the frequency of occurrence placed in parenthesis as highlighted above. This process creates a frequency table as shown below, (Table 7.68), this is then used to develop the aspectual profile (bar chart).

Frequency table of aspectual literature issues

CODE	ASPECTS	2 ND ORDER THEME	1 ST ORDER TERMS
PL6.02	Quantitative	Amount (1)	The length of the curriculum that needs to be covered during the year
PL3.05	Spatial	Layout (1)	The location of machines
PL5.08	Psychic	Confidence (13)	Lack of personal confidence
PL5.16			Lack of confidence to integrate ICTs in the curriculum
PL9.05			Lack of confidence among Teachers,

The type of understanding sought in this literature review is to show the classification of these issues that might influence or determine a Teacher's use of ICT in the classroom. Secondly, to reveal the ICT issues that are mostly discussed by the current literature. Thirdly, to highlight that each issue discussed should not be considered separately from each other and should not be reduced to each other. Also that nor should an issue be viewed as less meaningful nor deserving less attention compared to another issue. The next section compares the aspectual findings from Primary School Teachers with literature reviewed.

Comparison Analysis of Literature with DTE Issues

This section compares the aspectual findings of meaningful issues collated from the responses of Primary School Teachers against the current literature on the subject, as discussed in section 7.2.5. The comparison is not a quantitative one, but a qualitative comparison that reveals discourse on ICTE issues from the Teachers' perspective. The reason for comparison is because this study focuses on understanding the issues faced by Teachers rather than the foci of the literature.

Within each aspect, issues were grouped by standard coding techniques to identify different ways each issue is meaningful in each aspect (Saunders et. al., 2003). These types were compared between users and literature.

This was particularly useful in two main ways. One was to compare types of issue in aspects that both users and literature found reasonably meaningful. For example:

Formative aspect in literature: technical faults, lack of technical support, technical skills. Among users: these, plus how ICT hinders creativity, achievements, and how they are constantly faced with technical problems and laziness.

Juridical aspect in literature: appropriateness, pressure, quality and policies. Among users, some of these, plus denial of what is due, legal matters, undue enforcement, security, low standards, fear of authority and so on. An example of the latter is found in one utterance:

"...subconsciously, I might go- 'oh, I need to have this on my computer because someone is coming in to watch..."

[V6-060]

The other was to understand what is meaningful to users in aspects that are neglected by the literature. For example:

- Aesthetic aspects among Teachers: some of the issues identified are misfit, ensure the work integrates, assuming simplicity, harmony/chaos and so on. One Teacher remarked:

"...if things go wrong in the mean time you either have to put up with it..." [V18-039] (*Aesthetic- chaotic behaviour among students when Teachers need to sort out technology that goes wrong*).

- Ethical aspect among Teachers: ethicality of organisation or information, sacrifice, selfishness, hospitality, self-centredness and so on. One Teacher explained,
 "...one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem..." [V1-066] (*Ethical- Unethical content*)

Quantitative Comparison of Literature with DTE Issues of Users'

This section first discusses the analysis process carried out on the literature to create the literature aspectual profile as discussed in section 5.1.1. As discussed in section 5.2.1, the aspectual profile is drawn in bar charts and helps to indicate under-emphasised and over-emphasised aspects. There are ten papers reviewed in this section, each of these papers are numbered, for example, P1, P2 and so on.

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8	Formative	-	5	-	-	3	1	5	5	8	6	33
9	Lingual	1	-	3	1	-	4	6	6	16	12	49
10	Social	-	-	-	-	3	-	7	2	1	3	16
11	Economic	7	1	2	4	12	6	20	35	20	19	126
12	Aesthetic	1	1	1	1	-	-	-	-	2	-	6
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Quantitative Comparison of DTE Issues

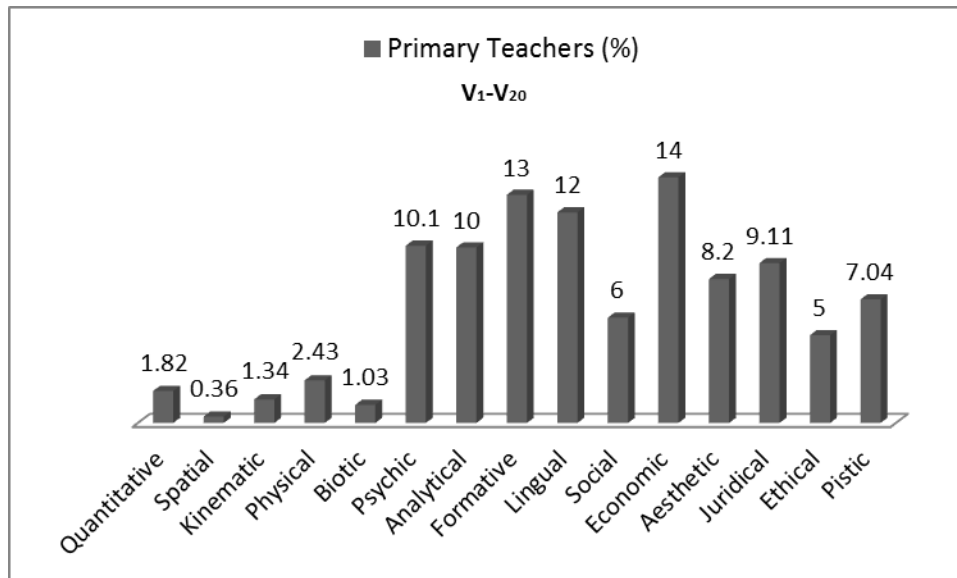
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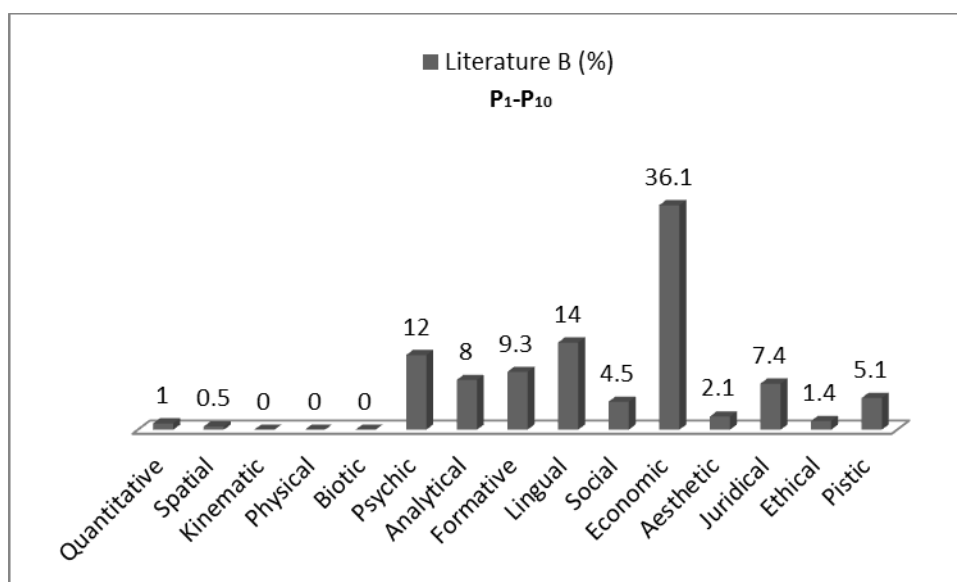
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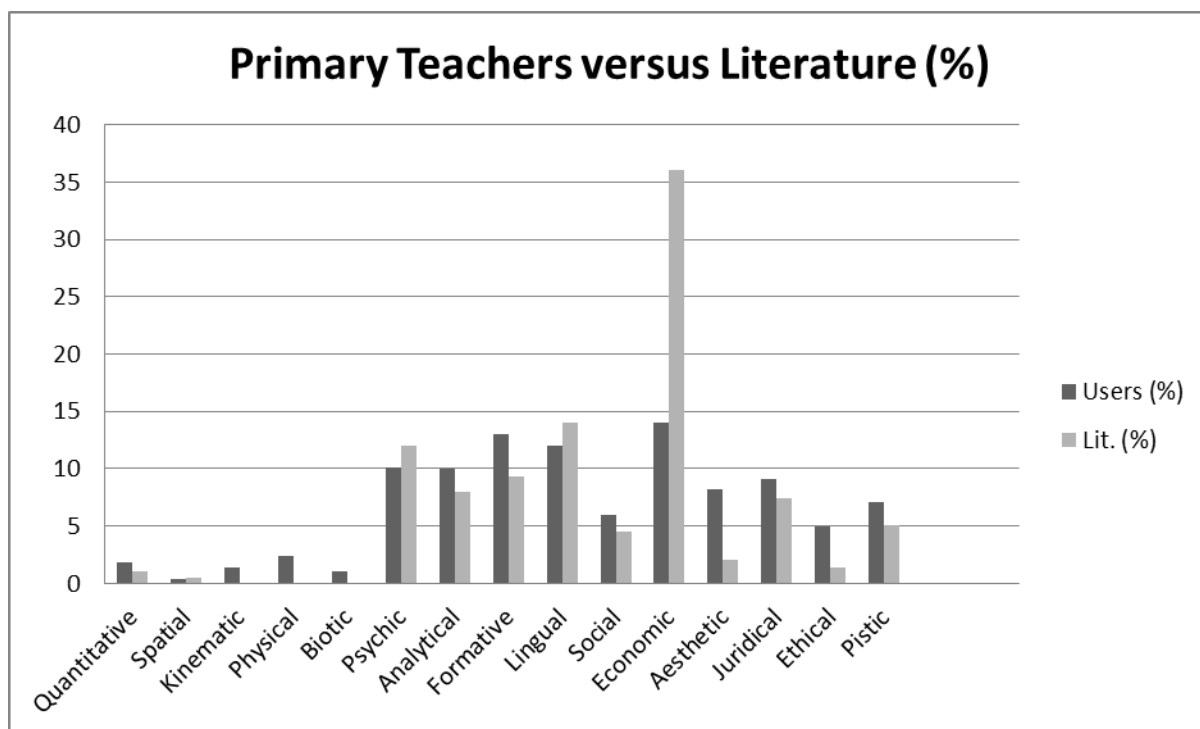


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For example: '...not enough computers...'

The meaningfulness of the phrase of issue above shows the limitations of resources (computers) and emphasis would be placed on 'not enough' which is the main issue. This understanding gives a direction to the economic aspect where this issue is meaningful. The approach of aspectual analysis is to separate what makes each of these issues meaningful into their respective aspects. This aspectual interpretation is based on intuition, because Dooyeweerd suggests that it is possible to grasp the kernel meaning of each aspect through intuition rather than exact definition (Ahmad, 2012).

There are ten papers reviewed in this section. Each of these papers are numbered, for example, paper 1, paper 2 and so on. The first column gives details about the paper and the code (PL1.01) signifies the serial number of the issue identified from paper 1. The aspect column states the functioning aspect of the issue highlighted while the last column gives the reason why the Researcher chose the selected aspect. The issues are given code numbers for easy identification. This code can be explained as PL (Paper Literature), followed by the paper number (x) and a dot while the issue number is the last two digits which can be found in the raw data analysis step. For example PL6.02 is the second issue identified in paper six of the literature reviewed.

A detailed tabular description that includes the rest of the papers examined is shown in Appendix X.

Literature issues by qualifying aspect

Paper No, Author, Title, Issue Page	Code	Aspect	Issue (Excerpt from literature)	Reason for the chosen aspect
PAPER 1 Harrison, S. (2003). History, ICT and Learning in the Secondary School. pp. 30-39.		Pistic	Government relying principally on its delivery metaphor, and the belief that the 'top-down' transmission of information from 'the centre' can effect change.	Idolatry, trust
	PL1.01			
PL1.02		Juridical	Teachers were either unaware of or had found 'unhelpful' many of the materials designed to promote the use of ICT in subject teaching.	Appropriateness, quality
PL1.03		Economic	Lack of time to plan how to integrate computers into classroom use.	Lack of time

The next step of the analysis is explained below.

13. Group issues in each aspect into themes

This section furthers the analysis process into four columns such as the paper code, the aspect the issue functions, the 2nd order theme and the 1st order terms. The 1st order terms are the main issue excerpts from the literature while the 2nd order theme represents the meaning of the data in relation to the aspect it functions while its frequency of occurrence is placed in parenthesis.

As earlier discussed in section 7.2.5, the first step was to count up or sum up per aspect the numbers in the 2nd order theme, which is the frequency of occurrence placed in parenthesis as highlighted above. This process creates a frequency table as shown below, (Table 7.68), this is then used to develop the aspectual profile (bar chart).

Frequency table of aspectual literature issues

CODE	ASPECTS	2 ND ORDER THEME	1 ST ORDER TERMS
PL6.02	Quantitative	Amount (1)	The length of the curriculum that needs to be covered during the year
PL3.05	Spatial	Layout (1)	The location of machines
PL5.08	Psychic	Confidence (13)	Lack of personal confidence
PL5.16			Lack of confidence to integrate ICTs in the curriculum
PL9.05			Lack of confidence among Teachers,

The type of understanding sought in this literature review is to show the classification of these issues that might influence or determine a Teachers' use of ICT in the classroom. Secondly, to reveal the ICT issues that are mostly discussed by the current literature. Thirdly, to highlight that each issue discussed should not be considered separately from each other and should not be reduced to each other. Also that nor should an issue be viewed as less meaningful nor deserving less attention compared to another issue. The next section compares the aspectual findings from Primary School Teachers with literature reviewed.

Comparison Analysis of Literature with DTE Issues

This section compares the aspectual findings of meaningful issues collated from the responses of Primary School Teachers against the current literature on the subject, as discussed in section 7.2.5. The comparison is not a quantitative one, but a qualitative comparison that reveals discourse on ICTE issues from the Teachers' perspective. The reason for comparison is because this study focuses on understanding the issues faced by Teachers rather than the foci of the literature.

Within each aspect, issues were grouped by standard coding techniques to identify different ways each issue is meaningful in each aspect (Saunders et. al., 2003). These types were compared between users and literature.

This was particularly useful in two main ways. One was to compare types of issue in aspects that both users and literature found reasonably meaningful. For example:

Formative aspect in literature: technical faults, lack of technical support, technical skills. Among users: these, plus how ICT hinders creativity, achievements, and how they are constantly faced with technical problems and laziness.

Juridical aspect in literature: appropriateness, pressure, quality and policies. Among users, some of these, plus denial of what is due, legal matters, undue enforcement, security, low standards, fear of authority and so on. An example of the latter is found in one utterance:

"...subconsciously, I might go- 'oh, I need to have this on my computer because someone is coming in to watch..."

[V6-060]

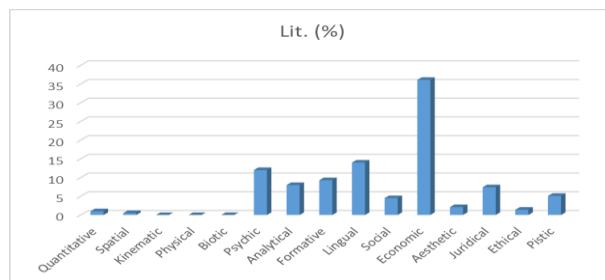
The other was to understand what is meaningful to users in aspects that are neglected by the literature. For example:

- Aesthetic aspects among Teachers: some of the issues identified are misfit, ensure the work integrates, assuming simplicity, harmony/chaos and so on. One Teacher remarked:
"...if things go wrong in the mean time you either have to put up with it..." [V18-039] (*Aesthetic- chaotic behaviour among students when Teachers need to sort out technology that goes wrong*).
- Ethical aspect among Teachers: ethicality of organisation or information, sacrifice, selfishness, hospitality, self-centredness and so on. One Teacher explained,

"...one poor friend typed in chess, very innocent, there's nothing wrong with chess and she got naked women wrapped around chess as the first thing that came up, that was a bit of a problem..." [V1-066] (*Ethical- Unethical content*)

Reflection Chapter

But here ten aspects are shown to be very important to Teachers. This has revealed that aspects can classify and show overall profiles in handling diversity.



The literature aspectual profile clearly shows the economic aspect as the most emphasised while both the aesthetic and ethical aspects are the least emphasised when viewed from the psychic aspect to the pistic aspect. It is surprising that ethical issues like sacrifice and aesthetic issues such as the integration of ICT into learning are rarely discussed by literature. The use of aspect analysis has enabled each of the issues collated to be examined separately from one another. The two aspectual graphs above revealed a number of interesting findings.

1. The literature studied showed a very marked interest in the economic aspect, above all other aspects. By contrast, the interest of users was much more evenly spread.

2. The Researcher's method showed some interest in early aspects (e.g. spatial arrangements and movements) while the literature completely ignored these.

3. The literature tends to ignore the aesthetic and ethical aspect whereas the Researcher's method found these aspects meaningful.

4. Both users and literature profiles found most other aspects meaningful to some extent, although interest in the social aspect was lower than we might have expected, given that primary-school teaching involves social relationships with children and parents. This might be a topic for future research.

These results raise questions of why these are the case. Finding 4 raises the question of whether the types of issue that are meaningful in each aspect are the same. This was answered by the qualitative analysis.

Qualitative Comparison of Literature with DTE Issues of Users'

Dooyeweerd's suite of aspects was used to analyse the various issues discussed in the literature. This is discussed in the sub-section of 7.2.5 and 7.3.5

This Appendix presents the aspectual analysis of the ten papers used in Literature (B) that produces the source for the quantitative and qualitative aspectual analysis.

A Tabular Presentation of Literature

Paper No, Author, Title, Issue Page	Code	Aspect	Issue (Excerpt from literature)	Reason for the chosen aspect
PAPER 1 Harrison, S. (2003). History, ICT and Learning in the Secondary School. pp. 30-39.	PL1.01	Pistic	Government relying principally on its 'delivery' metaphor, and the belief that the 'top-down' transmission of information from 'the centre' can effect change	Idolatry, trust
PL1.02		Juridical	Teachers were either unaware of or had found 'unhelpful' many of the materials designed to promote the use of ICT in subject teaching	Appropriateness, quality
PL1.03		Economic	Lack of time to plan how to integrate computers into classroom use	lack of time
PL1.04		Economic	History Teachers reported that access to networked computer suites was difficult, and that their history classrooms often did not contain any computers, let alone provision for whole-class projection from a computer	Limited access, resources
PL1.05		Economic	Access and facilities are still a problem for many history teachers	Access, resources
PL1.06		Economic	History teachers need time to explore the ways in which ICT can link in to what they are trying to achieve in history, and to integrate digital resources with their 'learning packages'	Need of time
PL1.07		Pistic	Too much faith has been invested in ICT's ability to increase the volume of information in the education system	Too much faith
PL1.08		Lingual	ICT is creating unhelpful 'information overload' for teachers,	Information overload
PL1.09		Juridical	it has been part of policy makers' tendency to	Policymaker's wrong

			underestimate the complexity of the process involved in learning.	perception
PL1.10		Pistic	policy makers' overvalue ICT's role in learning, as against the quality of the learning tasks that are undertaken using ICT	Overvalue- too much believe/
PL1.11		Economic	Investment in ICT has not yet made it easy for most history teachers to use computers as a routine component of lessons	Investment
PL1.12		Economic	'Teachers' time' has become an increasingly precious resource in recent years. Lack of time to think through what ICT can offer history and to consider how it can be integrated with schemes of work	Lack of Time
PL1.13		Multi-aspectual: Economic / Juridical	Heads of history, and ICT and history coordinators in primary schools need to give careful thought to how the time invested in ICT is spent, and to ensure that it does not become threatening, negative or bureaucratically top-heavy. It need not be a chore; or a defensive and heavy-hearted response to an impending Ofsted visit.	Time investment / Threatening and bureaucratically
PL1.14		Multi-aspectual: Juridical / Analytic/	The ICT capability of Teachers within and between departments remains variable. As proportions of the total lessons seen, there were fewer good lessons and more unsatisfactory lessons using ICT than was the case for history lessons as a whole. Too often objectives are unclear and lessons are insufficiently prepared for.	Appropriateness, unclear objectives / Unsatisfactory lessons
PL1.15		Multi-aspectual: Pistic / Juridical	The expectations of Teachers and pupils in some history lessons using ICT are too low, and often there is an emphasis on product at the expense of the important processes which promotes historical thinking	Low expectation / Wrong prioritizing
PAPER 2	CODE PL2.01	Pistic	Teachers' beliefs about content and the pedagogy	Belief
Abuhmaid, A. (2011). ICT training courses for Teacher professional development in Jordan. <i>Turkish Online Journal of Educational Technology</i> , vol .10, no. 4, pp, 195-210				
PL2.02		Formative	overall competence	Skilful
PL2.03		Formative	technical support provided by schools	Technology
PL2.04		Formative	principals' support of ICT integration	Support
PL2.05		Formative	Other studies have confirmed that Teacher factors such as Competence	skilful
PL2.06		Ethical	Other studies have confirmed that Teacher factors such as attitude	attitude
PL2.07		Economic	Other studies have confirmed that Teacher factors such as time	time
PL2.08		Formative	factors associated with hardware	technology
PAPER 3	CODE	Lingual	Interactive White Board technology may result in overlong presentations and a "dumbing down" of Teacher explanation to a series of bullet points	Presentations
Hammond, M. (2014) Introducing ICT in schools in England: Rationale and consequences. <i>British Journal of Educational Technology</i> Vol 45 No 2, pp. 191–201				
PL3.01				
PL3.02		Aesthetic	The kinds of activities which technology seem to promote do not lend themselves to experimental testing and "hard" evidence of impact.	Problems with integration
PL3.03		Lingual	the widespread reported practice of leaving children to use word processors for solely presentational purposes is not aligned to any viable view of teaching writing skills,	Writing, presentation
PL3.04		Economic	difficulties with lack of access to machines,	Limited resources
PL3.05		Spatial	the location of machines	Layout
PL3.06		Economic	access to technical support	resources
PL3.07		Pistic	the school ethos might not be supportive of the use of ICT	beliefs

PL3.08		Juridical	ICT policies might be underdeveloped	Policies
PL3.09		Formative	Lack of training and pedagogical leadership or shortcomings in the training provided.	training
PL3.10		Psychic	Teachers may lack confidence in using the technology.	confidence
PAPER 4	CODE	Economic	lack of tech support	Resources
Woo, D.J (2016). Structural barriers and organizational mechanisms for training and deploying ICT champions in a school. <i>Education Tech Research Dev Vol. 64</i> , pp. 839–855				
PL4.01				
PL4.02		Economic	lack of time to plan and to use software	Time
PL4.03		Formative	lack of training	Training
PL4.04		Aesthetic	curriculum barriers to technology integration	integration
PL4.05		Economic	School's financial constraints.	finances
PAPER 5	CODE	Analytical	information overload if the Teachers do not have the skills in filtering information for relevance	Logicity of instructions
Salehi, H. & Salehi, Z. (2012). Challenges for Using ICT in Education: Teachers' Insights. <i>International Journal of e-Education, e-Business, e-Management and e-Learning</i> , Vol. 2, No. 1, pp. 40-43				
PL5.01				
PL5.02		Formative	lack the necessity skills to access, process and use information	skills
PL5.03		Economic	insufficient number of computers	Limited resources
PL5.04		Economic	lack of free time for learning	Limited resources- time
PL5.05		Economic	lack of classroom time for students to use computers	Limited resources- time
PL5.06		Economic	lack of computers	Limited resources
PL5.07		Juridical	outdated, unreliable computers	Inappropriateness
PL5.08		Psychic	lack of personal confidence	confidence
PL5.09		Economic	insufficient access to the ICT resources	Limited resources
PL5.10		Pistic	resistance to change	resistance
PL5.11		Analytical	lack of awareness of the benefits of the ICTs for learning	awareness
PL5.12		Economic	lack of time for professional development to learn about the new technologies	Limited resources- time
PL5.13		Economic	lack of time to explore technologies such as the internet and social networking services	Limited resources-time
PL5.14		Ethical	ICTs not being considered as important enough to be a priority,	Competition (important enough)
PL5.15		Psychic	contentment with current approaches	contentment
PL5.16		Psychic	lack of confidence to integrate ICTs in the curriculum	confidence
PL5.17		Economic	insufficient technical supports	Technical limitations
PL5.18		Economic	little access to Internet and ICT prevent them to use ICT in the classroom	Limited access
PL5.19		Economic	Shortage of class time	Limited resources- time
PL5.20		Economic	Few ICT technical supports at schools discourage me to use ICT in classroom.	Limited resources
PL5.21		Social	Society views about ICT hinder me to use ICT.	society
PL5.22		Social/Psychic	Colleagues' negative views about ICT hinder me to use ICT in the class.	Colleagues- social interactions/ negative opinions
PL5.23		Social	School views about ICT discourage me to use ICT.	institution
PL5.24		Economic	Time needed to learn using ICT prevents me to use ICT.	Limited resources- time
PL5.25		Juridical	Requirements of qualifications discourage me to use ICT.	Requirements,
PAPER 6	CODE	Economic	lack of infrastructure	Limited resources
Vrasidas, et al., (2010) Teacher Use of ICT: Challenges and Opportunities <i>Proceedings of the 7th International Conference on Networked Learning</i> , pp. 439-444				
PL6.01				
PL6.02		Quantitative	the length of the curriculum that needs to be covered during the year	statistics

PL6.03		Economic	time constraints for ICT integration in the classroom	Limited resources- time
PL6.04		Economic	time required for preparing ICT-based activities	Limited resources- time
PL6.05		Juridical	lack of quality content	quality
PL6.06		Lingual	lack of in classroom support for Teachers	Explanation, help system
PL6.07		Juridical	lack of participation of Teachers in decision making	Denial of what is due
PL6.08		Lingual	need for professional development	Staff training
PL6.09		Juridical	Building one-size-fits-all models by professional development program designers (not taking into account Teachers’ individual needs and experiences, their learning styles, the contexts of their schools, and the stage they have reached in their career).	Inadequate implementation
PL6.10		Economic	Planning for lessons that integrate ICT is a time consuming activity	time
PL6.11		Lingual	the current curriculum and school manuals do not include ICT integration,	documentations
PL6.12		Economic/ Lingual	Lack of supporting material for each learning unit.	Limited resources
PL6.13		Economic	Teachers therefore, need to spend excessive amounts of time to find, assess, revise and adjust learning materials, activities and tools to fit the needs of their students and the curriculum.	Limited resources- time
PAPER 7	CODE	Analytical	Low Teacher expectations and a lack of clear goals for ICT use in schools	clarity
Fu, J.S (2013). ICT in Education: A Critical Literature Review and Its Implications <i>International Journal of Education and Development using Information and Communication Technology (IJEDICT)</i> , Vol. 9, Issue 1, pp. 112-125				
PL7.01				
PL7.02		Social	A lack of Teacher collaboration and pedagogical support,	collaboration
PL7.03		Analytical	A lack of experience among cooperating Teachers	Experience,reflection (experience)
PL7.04		Economic	Insufficient time to master new software	Limited resources- time
PL7.05		Economic	Insufficient time to integrate ICT during a class period	Limited resources- time
PL7.06		Economic	Insufficient skills for managing teaching materials	Limited resources- insufficiency
PL7.07		Formative	Low software competence	technology
PL7.08		Analytical	habitual ways of conceptualizing what and how students should learn	conceptualizing
PL7.09		Analytical	Limited knowledge and experience of ICT in teaching contexts	concept
PL7.10		Analytic/ Aesthetic	A lack of specific knowledge about technology and how to combine it with the existing pedagogical content knowledge to support student learning	Knowledge/ integration
PL7.11		Analytical	Excessive focus on teaching technical or operational skills rather than course content	deduction
PL7.12		Juridical	Pressure to improve scores on national examinations	Undue pressure
PL7.13		Psychic	A lack of recognition and encouragement of the timely and effective use of ICT	Feelings, Encouragement
PL7.14		Formative	A lack of in-service training on the use of ICT	training
PL7.15		Formative	Technical problems in the classroom	technology
PL7.16		Social/ Economic	Classroom management with large class sizes	Classroom/ management
PL7.17		Economic/	A lack of motivation, and technical and financial support	Limited resources
PL7.18		Pistic	Uncertainty about the possible benefits of using ICT in the classroom	uncertainty
PL7.19		Analytical	Lack of specific and definite ideas about how integrating technology into instruction will improve student learning	clarity
PL7.20		Economic	technology availability,	Limited resources
PL7.21		Economic	accessibility of ICT equipment,	Limited access
PL7.22		Economic	time to plan for instruction,	Time
PL7.23		Formative	technical and administrative support,	Support
PL7.24		Lingual	school curriculum,	documentation
PL7.25		Social	school climate and culture,	Structure of school
PL7.26		Social/ Economic	faculty teaching load and management routine,	Institution/ management
PL7.27		Juridical	pressure to prepare students for national entrance exams	Policy
PL7.28		Economic	lack of access to computers and software,	lack of access to resources

PL7.29	Economic	insufficient time for course planning, and	Limitation
PL7.30	Formative	inadequate technical and administrative support	Support
PL7.31	Formative	support from technicians, Teachers and principals	Support
PL7.32	Analytical	understanding of ICT use;	clarity
PL7.33	Pistic	beliefs, which may conflict with the application of ICT;	beliefs
PL7.34	Ethical	attitudes toward technology integration;	attitude
PL7.35	Psychic	perceptions, including intention or motivation to use ICT;	perception
PL7.36	Psychic/ Analytic	self-confidence and knowledge;	Self-confidence/ knowledge
PL7.37	Formative	technology skills;	skills
PL7.38	Formative	readiness to use ICT; and	Shaping of technology
PL7.39	Formative	technology self-efficacy	technology
PL7.40	Juridical/ Analytical	Teachers may implement policies based on limited or improper theoretical interpretations and comprehension of ICT use	Policies/ understanding
PL7.41	Juridical/ Pistic	Teachers may be under pressure to cover all content and be unwilling or hesitant to let students spend more time exploring content on their own with technology due to their other conflicting beliefs	Pressure/ resistant, conflicting belief
PL7.42	Pistic	Teacher beliefs may not resonate in their practices.	beliefs
PL7.43	Social	A school culture emphasizing competition and a high stakes assessment system can discourage Teachers from integrating technology into their classrooms.	School culture
PL7.44	Pistic	Thus, Teacher beliefs influence ICT use in the classroom	beliefs
PL7.45	Economic	technology availability, accessibility,	Limited resources
PL7.46	Formative	professional support,	Support
PL7.47	Formative	classroom management,	Shaping children's behaviour
PL7.48	Economic	access to computers and software	Access
PL7.49	Economic	insufficient time for course planning,	Insufficiency
PL7.50	Formative	Inadequate technical and administrative support	support
PL7.51	Ethical/ Pistic	Teachers' attitude, confidence, and belief in ICT use	
PAPER 8		CODE	
Al Mulhim, E., (2014). The Barriers to the Use of ICT in Teaching in Saudi Arabia: A Review of Literature. <i>Universal Journal of Educational Research</i> , 2(6), pp.487-493.		Psychic	Teachers' attitude towards technology,
PL8.01			attitude
PL8.02	Pistic	Teachers' resistance to change,	resistance
PL8.03	Economic	lack of time,	Time
PL8.04	Psychic	lack of confidence in using technology,	confidence
PL8.05	Analytical/ formative	lack of knowledge and skills in using technology,	Knowledge/ skills
PL8.06	Economic	lack of access to technology,	Access
PL8.07	Formative	lack of effective training,	training
PL8.09	Formative	lack of technical support,	Technical support
PL8.10	Economic	the high cost of hardware and software	cost
PL8.11	Economic	Inaccessibility or unavailability of ICT,	limitations
PL8.12	Economic	lack of access to hardware and software,	access
PL8.13	Juridical	Poor quality hardware and inappropriate software	quality
PL8.14	Economic	Limited resources within schools are a great impediment to the take-up of ICT.	Limited resources
PL8.15	Economic	Lack of computers and software in the classroom can seriously limit what Teachers are able to do with ICT.	Limited resources
PL8.16	Economic	Insufficient number of computers	Limited resources
PL8.17	Economic	Insufficient copies of software	Limited resources
PL8.18	Economic	lack of hardware	
PL8.19	Economic	unavailability of Internet access during the school day	technical limitation
PL8.20	Economic	technology unavailability	Limited resources
PL8.20	Economic	Lack of a suitable place for ICT integration such as a resources room and a laboratory fully equipped with the latest technologies.	Limited resources
PL8.21	Economic	Computer facilities in school were insufficient.	Limited resources
PL8.22	Social	Crowded classrooms made it very difficult to equip the classrooms with any technology.	Crowded classroom
PL8.23	Economic	The problem of lack of access to enough computers to meet the needs of a huge number of students in each classroom.	Limitations
PL8.24	Economic	Lack of access to technology as a main barrier that prohibited them from using ICT.	Limitations
PL8.25	Formative	lack of effective training	Training
PL8.26	Juridical/Lingua 1	inappropriate training styles that lack pedagogical aspects are likely to be unsuccessful,	Inappropriateness/ training style

PL8.27	Formative	The breakdown of equipment prevents Teachers from using ICT.	technology
PL8.28	Formative	Lack of training especially with regards to other ICT tools connected to laptops, such as interactive white board and data projectors	Training, technology
PL8.29	Formative	Older Teachers are not expected to have been equipped with ICT basic skills in initial Teacher training as ICT had not been introduced to their institutions at that time.	skills
PL8.30	Juridical	In the past student Teachers suffered from a lack of ICT adoption by their institutions and were not encouraged in ICT practice.	Denial of what is due
PL8.31	Formative	The problem of lack of effective training as a major obstacle to using technology properly in classrooms.	training
PL8.32	Formative	Teacher training colleges did not provide sufficient training in ICT, especially the basic computer and Internet skills.	Training
PL8.33	Formative	lack of appropriate ICT training and	training
PL8.34	Analytical	lack of awareness of its benefits in teaching	
PL8.35	Economic	The number of training packages available is not adequate to train all Teachers.	Limited resources
PL8.36	Economic	Lack of time is a universal problem in using technology; it is found wherever using technology is mentioned no matter how developed in the country.	Limited resources- time
PL8.37	Economic	Teachers lack time to either attend training or prepare technology based teaching materials.	Limited resources-time
PL8.38	Economic	They are likely to need longer time to find advice on the Internet, prepare and organise materials, attend sufficient training, practise technology and work on technical issues.	Limited resources-time
PL8.39	Economic	Teachers need a very long time to surf the Internet to find different resources for their projects.	Limited resources-time
PL8.40	Economic	shortage in time needed to prepare their teaching resources as well as shortage of time for attending adequate ICT training	Limited resources-time
PL8.41	Economic	Teachers have a heavy workload and thus they lack time that is necessary to prepare technology materials, attend training and plan how to integrate it into their curriculum.	Limited resources-time
PL8.42	Economic	lack of time in the classroom as a key barrier to ICT integration	Limited resources-time
PL8.43	Economic	Lack of time needed to prepare ICT-based activities as a main barrier.	Limited resources-time
PL8.44	Economic	Teachers could not integrate ICT into their teaching because they lack time for planning and preparing, regardless of whether or not they were willing to use it.	Limited resources-time
PL8.45	Economic	lack of time for preparation and training.	time
PL8.46	Economic	Lack of time in the classroom.	Time
PL8.47	Economic	When there is a lot to cover in that period, Teachers will be less likely to use technology where they believe it wastes time.	Frugality of resources-time
PL8.48	Economic	Lack of time as a hindrance to both use of computers in classrooms and attendance at training in ICT.	Limited resources-time
PL8.49	Economic	Teachers unanimously agree that using ICT in teaching would be weak and unsuccessful, due to insufficient time.	Limited resources-time
PL8.50	Economic	Teachers were unable to use technology in their teaching due to their workload that left them with insufficient time.	Limited resources-time
PL8.51	Economic	The short and limited class time where 45 minutes are too short to use technology and achieve the lessons' objectives.	Limited resources-time
PL8.52	Economic	Teachers felt that technology wastes class time.	Time
PL8.53	Quantitative/Economic	A large number of students, combined with shortage of time led to claims that a Teacher may lose control of the class when using technology in these conditions.	Amount of student/ Limited resources-time
PAPER 9.	CODE	Economic	Classroom budget limitations
Nikolopoulou, K. & Gialamas, V. (2015) Barriers to the integration of computers in early childhood settings: Teachers' perceptions. <i>Education and Information Technologies</i> , 20(2), pp.285-301.			
PL9.01			
PL9.02	Psychic/ Ethical	Attitudes about technology	Attitude

PL9.03	Formative	Lack of knowledge and/or training	Know how
PL9.04	Economic	lack of access to resources,	Resources
PL9.05	Psychic	lack of confidence among Teachers,	Confidence
PL9.06	Economic	lack of time,	Time
PL9.07	Formative	lack of training opportunities,	Training
PL9.08	Formative	technical problems,	Technology
PL9.09	Analytic	lack of knowledge about ways to integrate ICT in lessons,	Knowledge
PL9.10	Lingual	poor administrative support	Administrative
PL9.11	Aesthetic	Poor fit with the curriculum.	Misfit
PL9.12	Economic	levels of access to ICT are significant in determining levels of use of ICT by Teachers	Access to resources
PL9.13	Economic	Teachers are sometimes unable to make full use of the technology because they lack the time needed to prepare materials for lessons	Limited resources- time
PL9.14	Pistic	resistance to change is a factor which prevents the integration of ICT in the classroom	Users resistance
PL9.15	Formative	technical faults with ICT equipment are likely to lead to lower levels of ICT usage	Technical faults
PL9.16	Psychic	Teachers who have little or no confidence in using computers in their work, will try to avoid them	Confidence
PL9.17	Aesthetic	Individual characteristics such as experience with computers and confidence with technology as reasons for why Teachers do not use or integrate computers (despite increased availability of hardware).	Integration into their work
PL9.18	Economic	limited resources,	Limited resources
PL9.19	Economic	lack of time,	Limited time
PL9.20	Formative	lack of technical support	Technical support
PL9.21	Psychic	Teachers' negative attitudes	
PL9.22	Psychic	lack of confidence	Confidence
PL9.23	Formative	lack of effective training	Training
PL9.24	Formative	technical problems,	Technology
PL9.25	Psychic	lack of confidence	Confidence
PL9.26	Pistic	Resistance to change	User's resistance
PL9.27	Economic	lack of time has been identified as a persistent barrier by Teachers in terms of planning ways to use computers in the class,	Limited resources- time
PL9.28	Economic	lack of time in terms of Teacher training and development,	Limited resources- time
PL9.29	Economic	Lack of time in schedule for children to use computers.	Limited resources- time
PL9.30	Formative	lack of software,	Software
PL9.31	Economic	lack of funding,	Money
PL9.32	Economic	lack of time	Time
PL9.33	Formative	Lack of Teachers' technology skills.	Skills
PL9.34	Formative/ Psychic	Teachers' technology skills and confidence with technology are important barriers,	Skills/ confidence
PL9.35	Psychic	Teachers may have access to computers but feel they are unprepared and	Feel, confidence
PL9.36	Analytic	Lack the necessary experience to successfully integrate technology in their teaching.	Experience
PL9.37	Psychic	Kindergarten Teachers feel that they are unprepared, with almost half of them self-identifying as technology novices.	Users feel unprepared
PL9.38	Economic	lack of time,	Time
PL9.39	Economic	scarcity of software	Scarcity
PL9.40	Analytic	Lack of understanding of the possible use of technology with young children.	Understanding, clarity
PL9.41	Economic	lack of time	Time
PL9.42	Economic	limited access to resources	Limited resources
PL9.43	Juridical	Selection of appropriate software is an important factor influencing technology use in early childhood classes.	Appropriateness
PL9.44	Juridical	lack of appropriate Teacher training,	Appropriateness
PL9.45	Psychic	negative staff attitudes,	Negative
PL9.46	Economic	difficulties in managing equipment	Management
PL9.47	Economic	time constraints	Time
PL9.48	Economic	There are no computer labs in kindergartens.	Limited resources
PL9.49	Formative	lack of support	Support
PL9.50	Economic	lack of time for Teachers to learn/practice/plan ways to use computers (in the class),	Time
PL9.51	Lingual	lack of administrative support,	Administrative support
PL9.52	Lingual	lack of information about educational software and its appropriateness/quality,	Information
PL9.53	Lingual	lack of support regarding ways to integrate technology into the curriculum,	discourse
PL9.54	Formative	inadequate training opportunities,	training
PL9.55	Formative	lack of technical support,	Technical support

PL9.56		Economic	Lack of time for in-service training.	time
PL9.57		Psychic	lack of confidence	Confidence
PL9.58		Psychic	fear of using technology,	Fear
PL9.59		Psychic	negative Teachers' attitudes,	Negative attitudes
PL9.60		Psychic	lack of confidence in using computers,	Confidence
PL9.61		Economic	managing equipment,	Management
PL9.62		Formative	lack of Teachers' technology skills,	Skills
PL9.63		Pistic	uncertainty about usefulness of technology in Early Years,	Uncertainty
PL9.64		Analytical	Lack of knowledge of the possible use of computers in class.	Knowledge
PL9.65		Aesthetic	lack of interest of the school principal about computer use,	interest
PL9.66		Economic	Lack of equipment	Resources
PL9.67		Aesthetic	outdated, incompatible or unreliable computers,	Incompatible
PL9.68		Economic	not enough computers,	Resources
PL9.69		Economic	lack of internet access or internet is not easily accessible,	Limited resources
PL9.70		Economic	lack of funding,	
PL9.71		Juridical	Lack of good educational software.	Goodness, appropriate to the task
PL9.72		Juridical/ Ethical	class conditions	What is due
PL9.73		Economic	many demands of the curriculum,	Limited resources
PL9.74		Economic	lack of time in schedule for children to use computers in class,	Time
PL9.75		Formative	class management when computers are used,	Shaping children's behaviour
PL9.76		Juridical	concern about children's access to inappropriate material,	inappropriateness
PL9.77		Economic	large number of children in the class,	Size limit
PL9.78		Spatial/ Economic	Lack of space in locating the computer(s) and its peripherals.	Spatial layout/ size limit
PL9.79		Juridical	lack of appropriate/good educational software	Appropriateness
PL9.80		Economic	lack of funding	Funding
PL9.81		Economic	insufficient funding (for both hardware and software)	Funding
PL9.82		formative	insufficient support for Teachers,	support
PL9.83		Formative	lack of technical support,	Technical support
PL9.84		Economic	lack of financial support	Finances
PL9.85		Lingual	lack of administrative support	Administrative support
PL9.86		Formative	lack of Teachers' technology skills among Teachers'	Skills
PL9.87		Economic	lack of access to resources,	Limited resources
PL9.88		Psychic	lack of confidence	confidence
PL9.89		formative	Lack of training opportunities.	training
PAPER 10.	CODE	Psychic	Teachers who have little or no confidence in using computers in their work will try to avoid them altogether.	Confidence
British Educational Communications and Technology Agency (2004) REVIEW OF THE RESEARCH LITERATURE ON BARRIERS TO THE UPTAKE OF ICT BY TEACHERS. (Becta) ICT Research.				
PL10.01				
PL10.02		Economic	the amount of personal access to ICT that a Teacher has	Access
PL10.03		Formative	the amount of technical support available	Technical support
PL10.04		formative	The amount and quality of training available	training
PL10.05		Juridical	It may be that the amount of equipment is adequate but inappropriately organised in the school.	Inappropriately
PL10.06		Lingual	Inappropriate training styles result in low levels of ICT use by Teachers.	Training style
PL10.07		Lingual	Courses which lack pedagogical aspects are likely to be unsuccessful	Teaching
PL10.08		Economic	Teachers are sometimes unable to make full use of technology because they lack the time needed to fully prepare and research materials for lessons, particularly where this involves online or multimedia content.	Lack of time
PL10.09		Economic	Time is also needed for Teachers to become better acquainted with hardware and software.	Time
PL10.10		Formative	Technical faults with ICT equipment are likely to lead to lower levels of ICT use by Teachers.	Technical faults
PL10.11		Pistic	Recurring faults, and the expectation of faults occurring during teaching sessions,	Frustrated expectations
PL10.10		Formative	The lack of available technical support	Technical support
PL10.11		Psychic	Fear of a fault occurring that cannot be rectified and lessons being unsuccessful as a result	Fear
PL10.12		Pistic	Resistance to change	Resistance

PL10.13	Pistic	Teachers' unwillingness to change their teaching practices,	unwillingness
PL10.14	Social	Schools as institutions finding it difficult or being unable to re-organise in ways which facilitate innovative practices involving ICT.	Institution reorganisation
PL10.15	Analytic/ Economic	Teachers who do not realise the advantages of using technology in their teaching are less likely to make use of ICT.	Realise the advantage
PL10.16	Psychic	Female Teachers reporting greater levels of computer anxiety than Male Teachers.	Anxiety
PL10.17	Economic/ Lingual	the amount and type of training available,	Frugality/Type of training
PL10.18	Analytic	getting stuck and not knowing what to do next	confused
PL10.19	Lingual	Not understanding the computer jargon and the messages it gives.	Understanding the text
PL10.20	Psychic	Fear of losing their professional status, as they see the increasing use of computers in teaching as removing, or downgrading, their traditional pedagogical skills.	Fear
PL10.21	Formative	the frequency of technical problems that occur can have a direct effect on a Teacher's confidence in attempting to use that equipment,	What has 'effect on Teacher's confidence' - i.e technical problem
PL10.22	Psychic	due to the fear of it breaking down during a lesson,	Fear
PL10.23	Psychic	The fear of them breaking the equipment themselves	Fear
PL10.24	formative	The lack of Teacher competence	skills
PL10.25	formative	the quality of the training they receive,	training
PL10.26	Juridical	The fact that expecting Teachers to train in their own time caused a slow uptake in the training.	unfairness
PL10.27	Formative	The issue of training Teachers in how to use ICT to effectively manage children's learning, both during the lesson and also in the preparation of lessons beforehand (pedagogical training), rather than simply training them in the skills of using ICT equipment, is an important one.	Shaping of children
PL10.28	formative	Teachers felt that they had not had adequate training, particularly in their ability to solve technical problems and in understanding the basic workings of the technology,	training
PL10.29	Juridical	Teachers were frustrated by the expectation that they learn technology skills and applications on their own, perhaps through reading a book.	unfairness
PL10.30	Formative	Lack of ICT pedagogical training in Teacher training institutions.	Training
PL10.31	Economic	lack of access to resources	Access to resources
PL10.32	Economic	A lack of computers and software can seriously limit what Teachers can do in the classroom with regard to the implementation of ICT.	Limited resources
PL10.33	Economic	The inability of a Teacher to gain access to ICT resources	Access to resources
PL10.34	Economic	lack of resources physically available at the school	Limited resources
PL10.35	Juridical	the poor quality of the resources that were available	Quality
PL10.36	Economic	insufficient number of computers available	Limited resources
PL10.37	Economic	lack of equipment	Limited resources
PL10.38	Economic	poor organisation of resources	management
PL10.39	Psychic	Teachers are less enthusiastic about using ICT where the equipment available is old and unreliable.	Less enthusiastic
PL10.40	Formative	the fact that hardware became obsolete very quickly	Obsolete, old version
PL10.41	Aesthetic	poorly designed software	Design
PL10.42	Economic	lack of time for Teachers to design their own software	Limited resources- time
PL10.43	Juridical	Inappropriate software	Inappropriateness
PL10.44	Economic	perceived high cost of software licences	High cost
PL10.45	Economic	lack of time available for staff to evaluate software	Limited resources- time
PL10.46	Economic	Lack of personal access for Teachers	Access
PL10.47	Economic	lack of time available for them to complete given tasks,	Limited resources- time
PL10.48	Psychic	the fear of equipment breaking down in a lesson,	Fear
PL10.49	Psychic	If they use the equipment they will do something wrong and cause damage to it themselves.	Fear
PL10.50	Formative	a lack of technical support	Technical support

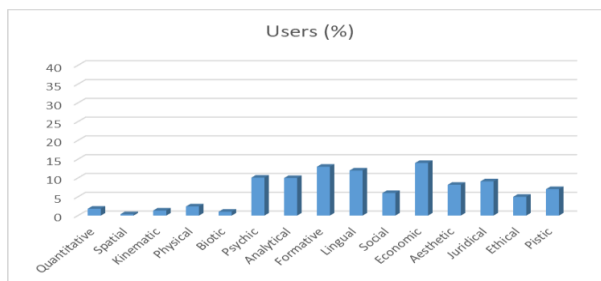
This section first discusses the analysis process done on the literature collated as discussed in section 5.1.1 whose aim is to create the literature aspectual profile. This process creates a frequency table as shown below, (Table 7.8), this helps develop the aspectual profile (bar chart) easily.

ASPECTS	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	TOTAL
QUANTITATIVE	-	-	-	-	-	1	-	2	-	-	3
SPATIAL	-	-	1	-	-	-	-	-	1	-	2
KINEMATIC	-	-	-	-	--	-	-	--	-	-	-
PHYSICAL	-	-	-	-	--	-	-	-	-	-	-
BIOTIC	-	-	-	-	-	-	-	-	-	-	-
PSYCHIC	1	1	1	-	4	-	6	3	15	10	41
ANALYTICAL	2	2	-	-	2	-	10	2	6	4	28
FORMATIVE	-	5	-	-	3	1	5	5	8	6	33
LINGUAL	1	-	3	1	-	4	6	6	16	12	49
SOCIAL	-	-	-	-	3	-	7	2	1	3	16
ECONOMIC	7	1	2	4	12	6	20	35	20	19	126
AESTHETIC	1	1	1	1	-	-	-	-	2	-	6
JURIDICAL	5	-	1	-	2	3	4	3	4	2	26
ETHICAL	1	1	-	-	1	-	-	-	2	-	5
PISTIC	3	1	1	-	1	-	6	-	3	3	18

Frequency Table

Where P= Paper (1-10)

BAR CHART ILLUSTRATION



Appendix XIII

Justification of the need for Guidelines for IS developers

As discussed in section 9.6.4.1 (Use of DTE Approach on IS Development), the Researcher will now summarise a brief discussion of the selected reviewed guideline papers. Kara (2007) showed the need for a detailed review of educational software prior to its purchase, as many Teachers find educational software valuable for various learning activities in the classroom. However, some of this software is entertainment rather than instructional, and some is outdated, offensive or biased. Another challenge accounted for was the numerous software evaluation guidelines that has led to more confusion due to lack of harmony among software evaluators whereby most of the educational software evaluation forms focused mostly on the technology and mechanics and ignored pedagogy and content.

Another guideline reviewed focused on the design guide for developers of educational software and websites for ease of use but also helpful to users, that is, Teachers and students (Beale and Sharples, 2002). Their report focused on the usability; or the guidelines that help developers produce software that people can use effectively and efficiently to perform a task. It was explained that there are two general principles that underpin most software guidelines which are categorised into know the user and know the system. Beale and Sharples (2002) explained that 'know the user' is concerned with cognitive reasoning, visual abilities, and physical and psychological effects while 'know the system' is concerned with the interactive systems used by people. Beale and Sharples (2002) report focused on the detailed issues or principles of feedback, everyday language, undo, consistency, recognition not recall, simple design, expert use, error, and documentation. Other suggestions of software design guidelines from the educational perspective were based on educational principles and considerations. In line with this, some basic steps in designing educational software were also discussed.

The Researcher noted that IS development guidelines take for granted some aspects concerning the everyday use of educational software. This can be illustrated briefly by outlining some examples of IS development guidelines against which a comparison can be made with the aspectual guidelines. The essence of this is to show the wide spread of aspects or issues that are taken for granted or overlooked.

The following steps were considered in order to produce an aspectual comparison

Dooyeweerd's suite of aspects was used to analyse the various guidelines used by developers of educational software and websites (Beale & Sharples, 2002; Kara, 2007).

Dooyeweerd's suite of aspects was used to place the educational software development guidelines in relation to the aspects with which they function

Dooyeweerd's suite of aspect revealed the various aspects that were missing in the guidelines

Aspectual analysis on IS development guidelines

S/N	Dooyeweerd Aspects	Educational Software Evaluation form for Teachers (Kara, 2007)	Design Guide for Developers of Educational software (Beale & Sharples, 2002)
1	Quantitative	-	-
2	Spatial	-	-
3	Kinematics	-	Does it need controlled interactions between dynamic objects, that is, physics experiments?
4	Physical	-	Physical
5	Biotic	-	Visual abilities. Is the topic difficult to visualise?
6	Psychic/Sensitive	-	Psychological effects. Recognition not recall, that is, to allow users recognise next actions, not remember what it is.
7	Analytic	-	Cognitive reasoning. Does it relate activities to abstract concepts, does it involve constructing and/or linking various materials?
8	Formative	-	Undo, that is, easy to recover. Consistency, that is, support of various versions of specific types of computers and operating systems such as Windows or MacOS , Expert use, that is, keyboard short cuts. Is it free of bugs?
9	Lingual	-	Feedback, Everyday language, Error recovery, that is, clear message, Documentation structure
10	Social	-	Interactive systems? Can it be helped by

			communications or collaboration?
11	Economic	Available funds, cost-benefit/effectiveness analysis, economic details	Documentation availability and accessibility. Does it need access to other sources of information?
12	Aesthetic	-	Simple design
13	Juridical	Political details	Does it meet the requirements
14	Ethical	-	
15	Pistic	-	

It seems possible that Information Systems (IS) development guidelines take for granted some aspects regarding the development of everyday use educational software by Teachers in the classroom. This analysis of these guidelines is not meant as a criticism, but rather to show how aspectual analysis can be useful as an evaluation tool to help future design improvements. This study will propose a guideline to help IS developers with future educational software development. This guidance is discussed in the following subsection 9.6.3.3.