EXPERIENCES OF STUDENTS IN USING BLENDED LEARNING

TO LEARN EDUCATIONAL TECH NOLOGY MODULES:

A CASE STUDY

BY

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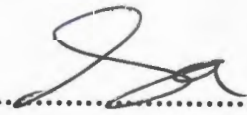
Dr. S.B. Khoza

December, 2011

DECLARATION

I, Paulinah Manone Phahamane declare that this dissertation entitled "The experiences of postgraduate students in using blended learning to learn Educational Technology (EdTech) modules: a case study" is my own work and has not been previously submitted for any degree, and is not being concurrently submitted in candidature for any other and Masters degree. Where the sources (other authors' work) have been used, they have been acknowledged giving explicit references. A reference is appended.

Signed... *Phahamane* Date. 20th Dec. 2011

RESEARCHER

As the candidate's Supervisor I agree or do not agree to the submission of this dissertation.

Signed........................Date.....20/12/2011.........

SUPERVISOR

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"CLIMB 'TIL YOUR DREAM COMES TRUE"

Often your tasks will be many'
And more than you think you can do …
Often the road will be rugged
And the hills insurmountable, too …
But always remember,
The hills ahead

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Are never as steep as they seem,

And with Faith in your heart

Start upward

And climb 'till you reach your dream,

For nothing in life that is worthy

Is ever too hard to achieve

If you have courage to try it

And you have the Faith to believe …

For Faith is a force that is greater

Than knowledge or power

Or skill

And many defeats turn to triumph

If you trust in God's wisdom and will …

For Faith is a mover of mountains,

There's nothing that God cannot do,

So start out today

With Faith in your heart

And "Climb 'Til' Your Dream Comes True"!

AMEN

DEDICATION

I hereby dedicate this research to:

Head of the Educational Technology Department Dr. S.B Khoza,

My mother, the only parent in my family, Paulinah 'Matlhalefo Moremoholo, for giving me the loving encouragement and unique support in my studies; although she is not well-informed, she was optimistic that her only daughter continues with her studies to be knowledgeable. She used to encourage us to study and achieve the highest possible academic level, thus I would like to give her my special thanks;

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ACRONYMS

BEd	Bachelor of Education
CDLP	California Distance Learning Project
CLE	Computerized learning environment
CMS	Course Management Software
CPU	Computer programme unit
E-Books	Electronic Books
E-College	Electronic College
EdTech	Educational Technology
E-education	Electronic education
E-educators	Electronic educators
E-facilitators	Electronic facilitators
E-Government	Electronic Government
E-information	Electronic information
E-learning	Electronic learning
E-mail	Electronic mail
E-moderation	Electronic moderation
E-supervisors	Electronic supervisors
E-Support	Electronic support
HEA	Higher Education Authority
HEFCE	Higher Education Funding Council for England
ICN	Indiana College Network
ICT	Information and Communication Technology
ICT4D	ICTs for Development
ITs	Information Technologies
NTNC	Northeast Texas Network Consortium
ODL	Open Distance Learning
OLS	Open Learning Systems
OMS	Open Management Systems
OLS	Online Learning Systems
OHP	Overhead Projector

SADC	South African Development Countries
LMS	Learning Management System
USDLA	United States Distance Learning Association
VLE	Virtual learning environment
WebCT	Platform whereby students access e-learning materials
ZPD	Zone of Proximal Development

ABSTRACT

This study aims to explore and report on issues related to experiences of university students in using blended learning to learn Educational Technology (EdTech) modules. EdTech is an effectual use of different technologies to support and improve teaching and learning, whereas blended learning focuses more on online learning approach and traditional face-to-face learning to compensate each others' gaps and solve some of the problems faced by both part-time and full-time students. The blend of face-to-face approaches with online learning techniques is liable to modify students' experiences of learning. The significance of this study is to equip and assist educators and course designers already using, and prepared to use, blended learning in the EdTech programme with the appropriate skills and learning approaches to develop better courses aimed at improving EdTech students' learning experiences.

This case study used qualitative data collected from twenty four EdTech postgraduate students selected purposively, employing variety of data collecting techniques. The instruments used for triangulation purposes were classroom observations, questionnaires and semi-structured interviews such as focus group and individual in-depth interviews. The study was guided by the interpretivist paradigm and social constructivist theory supported by Salomon's (2002) E-Moderating model. The aim was to understand students' experiences in relation to benefits and pedagogical practices gained in using the blended learning approach in learning EdTech modules.

The key findings show that students highly appreciated computers for personal use rather than application in the classroom mainly because at the beginning of the course they lacked computer basics. In the course they acquired basic computer and the Internet skills needed of them to learn EdTech modules productively especially IT. Another finding was an inadequacy of resources used in the EdTech programme, computers being the dominant technologies in this situation in the process inhibiting pedagogical practices. Moreover technologies in schools differ according to different subjects. However, the results imply that resources were inadequate and pedagogical practices not appropriately achieved. Thus, it is recommended that students should be computer literate when they are accepted into this course and blended learning to be used only for better learning experiences. Good EdTech with good e-learning blended with face-to-face learning result in improvements "*on the*

micro-, meso- and macro-levels of higher education" (Zentel, Bett, Meister, Rinn & Wedekind, 2008).

CHAPTER ONE

BACKGROUND TO THE STUDY AND ORIENTATION TO THE THESIS

Looking at the whole of the national and international community, and at the way organizations are run, highlights the fact that modern society is heavily dependent on the communication, processing and storage of information. It is claimed by some, that we are moving towards an 'Information society' in which the majority of the labour force will be engaged in Information Processing and the use of 'Information Technology' (French, 1986, p. 555).

1.1 INTRODUCTION

In this fast changing world of information technology and uncountable teaching and learning styles as well as approaches to education, rapid development of the use of advanced learning technologies such as computers and the Internet exists. Such learning technologies provide a host of possibilities to engage students in communication, collaboration, chatting and interaction with content, peers and educators (St.Clair, 2008). In addition, students and lecturers in higher education are also exposed to more opportunities to discover the most appropriate blend of teaching and learning styles. For the students this is of critical importance as they work on the tasks they are given, and for lecturers it is important for successful content delivery.

It is the inspiration and aspiration of most governments globally to employ new educational technologies in their education systems in implementing blended learning (Kruger, 2008). This is in order to develop proviso, enhance involvement and promote awareness of lifelong learning (Gachago, 2008). Thus, most of the students can gain enhancement from the governments' investment in the infrastructure supporting e-learning. Students who are distant from universities or those studying part-time because of work, disabilities and family issues benefit the most from such infrastructure (Burgess, 2008; Gulc, 2006).

Over the past decade, online distance learning has developed into an effective learning management tool for both intellectual and part-time training purposes in higher education (Higher Education Authority, 2004; Higher Education Funding Council for England, 2003; Indiana College Network, 2003; Northeast Texas Network Consortium, 2002). Distance learning implies an education system whereby students and educators are separated by geographic distance or time. Therefore in higher education distance learning students are isolated from the campus geographical art of the institution (Northeast Texas Network Consortium, 2002; Harvey, 2009). In the past, distance learning was usually done by correspondence; that is through post and mail. Audio and visual courses were carried out by a distant student without contact with any university staff or colleague. Nowadays such learning is by and large enhanced by Information and Communications Technologies (ICTs) such as videotapes, computers, email, mail, the Internet or interactive videoconferencing (Graham, 2005; Northeast Texas Network Consortium, 2002; Palloff & Pratt 2005; Thomas, 2006).

However, current research reports show that the incorporation of online learning in universities has not been devoid of problems. For instance, students in general may lack access to the facilitators' assistance while disabled students may lack access even to helpful technologies such as computer jaws (Gulc, 2006). In addition, students may lack infrastructure supporting e-learning in their remote environment or may not have computer access, knowledge and expertise such as digital reading skills (Eshet, 2007). Such problems invariably lead to poor performance by distance students as compared to full-time students. Sometimes their performance is affected by feelings of isolation (Coates, 2006; Bates & Khasawneh, 2007; Kurtz & Amichai-Hamburger, 2008).

Kearsley (1996) argues that, "distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organisational and administrative arrangements." However, this is not always the case with online courses, as they normally do not make

use of appropriate approaches pertinent to online learning (Andrews & Haythornthwaite, 2007; Bonk & Graham, 2006; Eshet, 2007; Graham, 2006).

Acknowledgement of the above mentioned setbacks of distance education has greatly influenced the introduction of blended learning in an effort to bridge the gaps found in both distance and traditional face to face learning. In other words, the combination of online learning and face-to-face instruction is vital as the two approaches supplement and compensate the limitations of each other, to attain the right mix of training modules. Thus, at present technologies engage students in an advanced collaborative distance learning experience, which in some cases can cooperatively go beyond a traditional lecture-based classroom (Partlow & Lavagnino, year unknown).

EdTech lecturers in this information era face numerous challenges including the fact that students belong to an inborn digital generation and hence, learn fast and move with times. Therefore, EdTech students should have quality training to adjust to the new teaching and learning context rather than teaching digital students whose work is absolutely dependant on digitisation with old-fashioned forms of knowledge. Thomas (2006, p. 1) argues that, "those of us who were not born into the digital world but have, at some point in our lives, become fascinated by and adopted many or most aspects of the new technology are, and always will be compared to them, Digital immigrants." He refers to such teachers as "digital immigrants" because they were born before digitisation; they therefore struggle with new technologies to assist digital students.

This brings about the argument that teachers should have quality training in new technologies for them to be well equipped with knowledge and relevant skills to face these challenges with confidence. Thus inadequate teacher training may possibly produce teachers with insufficient knowledge and skills to incorporate blended learning in their learning and teaching practices. Therefore it is important for EdTech students to disclose their learning experiences to help lecturers and course designers to understand and improve the course for the benefit of future trainees (Kruger, 2008). Laurillard (1993, p. 26) states that, "every academic subject faces this same kind of challenge, to help

students go beyond their experience, to use it and reflect on it, and therefore change the way they experience the world."

1.2 BACKGROUND TO THE STUDY

Blended learning has been an efficient form of learning in the development of varied forms of education, which, over the last 15 years, have brought about transformation in teaching and learning experience in numerous countries, especially in the Western countries. Like other countries, South Africa implemented blended learning in higher education to enhance teaching (Cronje, 2004; e-Education policy, 2004; Thomas, 2006). The institution selected for this study has implemented blended learning in their EdTech programme. In this programme, face to face contact is normally after work hours (4 - 6 p.m) to accommodate every student as most of the part-time students will be at work until later in the day. Most of the full-time students have work responsibilities and are usually on study leave. Thus, both groups are made up of all mature students. It is the practice of the institution under study to admit or include mature students, who hold Bachelor of Education (BEd) degree achieved over a period of four years, on a full-time basis specialising in EdTech.

The EdTech modules are delivered to the part-time and full-time students over 3 hours per day for 10 days, this means 10 lecture sessions in two successive weeks. However, there are two major problems concerning part-time students. They might be subjected to many distractions from work and family commitments, and the EdTech modules, although very useful to students in their educational growth, are often considered to be difficult. Consequently, some students tend to drop out of their EdTech studies at an early stage (Badenhorst & de Beer, 2004; Dziuban, Hartman & Moskal, 2004; Unwin, 2008). Importantly, when studying EdTech modules, students have to use technologies such as computers. Thus, in a bid to motivate and overcome problems encountered by both full-time and part-time mature EdTech students, the blended learning approach may possibly be the most suitable.

1.2.1 Definition of blended learning

The concept blended learning is broad and it has multi-approaches and definitions according to different contexts and authors. The concept has a variety of interpretations such as hybrid, mixed mode, flexible learning, electronic learning (e-learning), and web-based learning. These terms are commonly used to describe courses that combine face-to-face contact in a traditional classroom with online learning (Davis & Fill, 2007; Dziuban & Moskal, 2001; Graham, 2006; Gulc, 2006; Harvey, 2009; Moore, Perlow, Judge, & Koh, 2006; New South Wales Department of Education and Training, 2002; Rovai & Jordan, 2004; Smith, 2004; Vaughan & Garrison 2005). Thus, time for classroom contact is reduced to allow students flexible training in face to face and online learning (Halpin, 2004). Grey (2006) views the blended learning approach as an effectual and acknowledged learning mode, taking advantage of the successes and assistance of training based on technology including independent learning, face to face and online learning in a combined form modified to the particular education requirements of each and every institution. Santy and Smith (2007) emphasise that online techniques can be used in connection to ICT; using an institutional e-learning context.

Rodgers (2009) argues that blended learning implies "executing a learning strategy that integrates multiple delivery modalities (both synchronous and asynchronous) and, in so doing, creating the best possible learning solution for your target audience." Blended learning is related to the introduction of online media into a course or programme, at the same time identifying the advantages of preserving face-to-face interaction with students (Macdonald, 2006). Graham (2006), Grey (2006) as well as Davis and Fill (2007) concur that blended learning employs e-learning using a range of learning and teaching techniques to help improve students' learning experiences. Therefore, the contention here is that blended learning is a flexible pedagogical technique that supports traditional face-to-face learning and e-learning.

Thus, this study adopts the definition by New South Wales Department of Education and Training (2002) that describes blended learning as "learning which combines online and face-to-face approaches." Blended learning, particularly its e-learning component,

suggests a student-centred teaching approach, as opposed to traditional education whereby learning was teacher-centred and teachers were largely, the sources of information for the students (Gachago, 2006; Sternberg & Williams, 1998).

Electronic-learning has been credited with the potential to eliminate the hindrances to learning brought about by time and distance. Electronic resources such as computers with the Internet provide an environment of various technologies to support diverse students' needs. The goal of this approach is to enhance face-to-face instruction while, at the same time, delivering distance-learning courses (St.Clair, 2008). In distance learning, the Internet offers services such as course note, posting, assignment submissions, quizzes, simulations and communication features.

The most important motivation for using the Internet is to make it easier for students to get course materials on the web. There have been several studies analysing blended learning from institutional perspectives (Chong, 2006; Herselman & Hay, 2005; Thomas, 2006; Van der Westhuisen, 2004; Ziegnmeyer & Kupetz, 2005). However, they provide inadequate information about how easy or difficult blended learning is to use in learning. Very few case studies have been conducted to explore experiences of both part-time and full-time postgraduate students in learning EdTech modules through the blended learning approach. In particular, there is no evidence of studies on the blended EdTech students' experience in teaching and learning EdTech modules. This is especially so in reference to the knowledge and understanding of technologies the users have or the degree to which IT software assists the users in completing their EdTech tasks (Levi & Conrad, 2000).

The concept "experience" encompasses aspects such as perceptions and attitudes, learnability, efficiency, memorability, handling of user errors and user satisfaction (Nielson, 1993). If we are to gain a better understanding of the EdTech, more studies on students' experiences of EdTech modules are needed. To address the lack of controlled and situated studies on how the constraints imposed by e-learning resources affect students' learning experiences, this study was conducted to explore students' experiences of using blended learning in learning EdTech modules. In particular, the research was conducted with a focus on the following questions: What are the experiences of

postgraduate students in using electronic learning to learn educational technology modules? How do students use technology for interaction with peers, content and lecturers, especially when the lecturers are few in number or overloaded with work for fruitful interaction to take place in traditional face-to-face seminar? How can access to e-learning resources be improved to enhance learning?

The researcher was Master of Education (MEd) student who attended Educational Technology courses from 2006 to 2008 at the selected institution. Therefore, she was motivated by her assessment of how EdTech modules were delivered through the blended learning approach and how students experienced blended learning particularly in the IT module. On engaging with computers in the computer laboratory at the beginning of the 2006 academic year, the researcher noticed that most students in the class did not meet the basic EdTech entry requirement because they were computer illiterate. This was further complicated by the fact that they had problems with the English language as well. By the second semester of 2006, the researcher had realised that the computer is the major educational technology tool in use in the course. Therefore the researcher got interested in exploring and understanding EdTech students' blended learning experiences, noting the benefits, challenges, and their concerns on what could be done to improve e-learning in the programme.

1.3 RATIONALE

The use of technologies in teaching and learning is gaining popularity daily in higher education courseware design and development throughout the world. Lesame (2005) identifies various reasons for this incorporation, amongst them the improvement of technologies access and learning in time.

The South African government has proposed that by 2013 all schools should have incorporated the ICT policy, which states that every South African learner in the general and further education training bands should be ICT capable. This means they should use technologies confidently and creatively to help develop the skills and knowledge to

achieve personal goals and be full participants in the global community (Pandor, 2004). In the same vein, Cronje (2004) argues that the use of technologies in the enhancement of teaching and learning of technical subjects has to be implemented in institutions. Indeed, there is a need for higher education institutions to use technologies in teaching and learning in order to bridge the gap between real and constructed environment while also transforming teaching and learning to lifelong learning for all.

The major institutional rationale in South Africa stems from the e-Education policy that says its success rest on learners' regular access to reliable infrastructure (e-Education policy, 2004, 22). Hence, the effectiveness of technologies rests on the extent to which students have accesses to hardware, software and connectivity. Access to e-learning resources lead to an improvement in everyone's competencies, understanding and access to these resources and ICT skills (Halpin, 2004; Gachago, 2008). To explain this further, Johnson, McHugo & Hall (2006, p. 379) indicate that, "This technological strength coupled with the high level of ICT literacy of today's student makes blended learning an attractive option." E-competent learners should have access to information in the digital age and have the ability to handle information successfully, interpret and incorporate the research results, evaluate their quality, and generate the new information by adapting, applying, designing, inventing, or authoring information. For these reasons, it is essential for teacher-trainees in South Africa to have sound training which equips them with technologies skills that may help them to facilitate students at all e-schools to appropriately prepare them for work opportunities and lifelong learning (Gachago, 2008).

Blended learning can also address the challenges faced by part-time students at the institutions of higher learning. It has been already noted that their studies can be distracted by poor attendance, insufficient study time and concentration due to work or family matters, poor access to resources, lack of student-student and student-content interactions, and distance from the institution in relation to lack of travel time Burgess (2008). Other factors include poor performance, absenteeism from lectures and group discussions, and complaints about the complexity of the modules using e-learning resources such as computers, and dropping out due to work, personal matters and many

compelling social factors. Thus, the literature demonstrates the rationale for the introduction of blended learning approach to solve, amongst others, the above mentioned setbacks. Badenhorst & de Beer (2004, p. 1) argue that "a blended learning approach should be implemented and experimented to see whether it addresses some of the learning problems experienced."

Both full-time and part-time students need facilitating skills in relation to independent research and literacy skills of technologies, such as computer basics; skills, knowledge and understanding, and they should be introduced to Information Technology (IT) software to enhance their training (Burgess, 2008). International evidence from a number of Western universities indicates that the use of blended learning techniques helps them engage and carry on with students, who are studying on a part-time basis due to work dedications (Sharpe, Benfield, Roberts & Francis, 2006). Therefore, there are some strong institutional motives to develop the IT module to support all students and to cater for individual differences, meet their requirements and improve their knowledge, skills and performance.

Studies reveal that when blended learning is used on particular courses it creates favourable conditions in relation to students' performance. Thus, online learning can be of benefit in the learning experience. Most of the studies, which have investigated the effect of blended learning on the students' learning experience note that the e-learning environment is more effective than lecture-based classroom (Santy & Smith, 2007). This can be explained by the opportunity the students have, for example, to use their questioning and assessment skills to monitor their own learning (Burgess, 2008). The literature also agrees with the notion that more blended approach to learning possibly enhances mature part-time students' studies in particular. For instance, Gachago (2008) researched on the assessment of the potential of e-learning, using the blended learning approach in both full-time and part-time mature students and the results showed that it motivates and allows for students' flexibility in learning. Blended learning can thus be regarded as a technique used to give high quality learning experience. This is partly explained by the fact that a blended learning approach with access to e-learning resources

such as computers and the Internet is considered to be adequately flexible to support students whenever and wherever they are (Halpin, 2004; Graham, 2005; Thomas, 2006). Like any other educational tool or mode of educational delivery, technologies used in blended learning do not work for everyone in the same way in teaching and learning enhancement (Dertouzos, 1997). Universities are expected to adhere to and meet the requirements of technologies objectives as indicated in the Educational Policy of 2004 in order to produce teachers who are ICT capable.

As an EdTech specialisation student, the researcher was compelled by the above mentioned issues to explore the experiences of the use of blended learning within the discipline of Educational Technology in the selected institution. I thus anticipated to making a contribution to the existing body of knowledge in the e-learning field about EdTech modules. Of late, the dissemination of knowledge and information depends extensively on technologies and resultantly, educational technology uses technologies almost all the time to facilitate learning (Loveless, 2003). Therefore, it is important to know more about student's experiences of blended learning in learning EdTech modules.

1.4 PROBLEM STATEMENT

Globally, studies have been conducted to address the benefits of e-learning pedagogy. It has been argued that skills, such as problem-solving, learner's autonomy, concentration, creativity, critical thinking, teamwork and motivation, increase when e-learning is applied (Vygotsky, 1978). Students' inspiration promotes a positive learning attitude and that leads to their attentiveness during lessons and involvement in the learning activities. E-learning is therefore argued to enhance a student-centred learning approach and this is regarded as the most important benefit by most researchers.

The use of e-learning can also cater for academically differentiated students. Thus, the blend of traditional face-to-face learning and teaching styles, techniques, approaches with authentic electronic learning activities that engage students in technologies accessibility and flexibility in learning, has the efficacy to change students' learning experiences

(Davis & Fill, 2007; Gachago 2006; Gulc, 2006; Thanses Valley University, 2006; Thomas, 2006).

Although the positive results of applying blended learning approach packages may be well acknowledged, lecturers in most higher education institutions may possibly fail to appropriately implement blended learning styles due to institutional practices that still support more traditional face-to-face approaches (Davis & Fill, 2007). Thus, most of the studies on blended learning need to provide a thorough exploration and account of what actually takes place in the delivery of higher education modules through the use of the blended learning approach. It is possible that blended learning may either hinder or speed up the processes of learning, depending on the availability of relevant e-learning resources (technologies).

The latter implies that, sometimes the student's inadequate access to resources may affect the implementation of blended learning. Because the EdTech specialisation is bound to use e-learning resources in training, this becomes a distressing issue for concerned students. It is here where the researcher question arises: how can access to e-learning resources be improved to enhance teaching and learning of the EdTech modules? The answers to this question are provided in understanding the experiences of postgraduate students using blended learning to learn EdTech modules and the challenges thereof.

1.5 PURPOSE OF THE STUDY

The purpose of this study is to explore how postgraduate students experience the use of blended learning approach to learn EdTech modules at the selected institution.

1.6 THE MAIN RESEARCH AIM

- To identify and understand the experiences of the EdTech students when using blended learning at the selected institution.

1.6.1 Research Objectives

- To determine the postgraduates students' experiences in using of blended learning to learn EdTech modules.
- To determine postgraduates students' experiences of e-learnng with the lecturers and peers in the EdTech programme.

1.7 RESEARCH QUESTION

The overarching question for this study is:

- What are the experiences of the postgraduate students in using blended learning to learn EdTech modules at the selected institution?

1.7.1 Subsidiary Questions

- What are the experiences of postgraduate students in using electronic learning to learn educational technology modules?
- How do postgraduates students use e-learning technologies for interaction with peers, content and lecturers?
- How can access to e-learning resources be improved to enhance learning?

1.8 SIGNIFICANCE OF THE STUDY

It was, therefore, the researcher's anticipation that the results of this study would be a relevant reference with information which can help the selected institution in relation to the effective use of blended learning in teaching and learning.

1.9 SCOPE OF THE STUDY AND ITS RELATED LITERATURE

In conducting this study, the researcher consulted literature and data sources related to students' experiences in using blended learning to learn EdTech modules in the selected institution. According to Boote and Beile, (2005, p. 3) "A substantive, thorough, sophisticated literature review is pre-condition for doing substantive, thorough,

sophisticated research." The next paragraph comprises a brief overview of related literature.

According to many scholars, amongst them Jonassen (2003), Loveless (2003), Howie, Muller & Paterson (2005), Leseme (2005), Balanskat, Blarmire & Kefalla (2006), Kirkwood & Price (2006), Thomas (2006), Dix, (2007), Gachago, (2008), Panangalage & Pasgual (2008), Penfold & Pang (2008) and Kruger (2008), effectiveness of technologies in higher education institutions should be laid upon a well designed policy that adheres to curriculum design of the institution and the needs of the students. An equitable curriculum with well-planned blended learning approaches should have appropriate content, technologies, and pedagogical practices, while providing access to learning considering learners' flexibility and learning theories. It should play a role in empowering students with knowledge and skills that may transform their learning experiences and enable them to become critical thinkers, problem-solvers, independent learners and great achievers in life. However, there is a gap in the literature regarding the use of blended learning in EdTech learning and the experiences of students using the varied blended mechanisms. A detailed formulation on literature, challenges, limitations, similarities and various studies are discussed in chapter 2 of this dissertation.

1.10 THEORETICAL AND CONCEPTUAL FRAMEWORK FOR THE STUDY

1.10.1 The Social Constructivism Learning Framework

This study is framed within the social constructivist theory of learning, borrowing heavily from Vygotsky (1978). This theory therefore provides various definitions of learning used in this research.

The contention in this study is that learning is a social and collaborative activity as well as problem-solving approach to realistic and authentic tasks. It takes place in a meaningful, authentic context whereby peers have opportunities to take roles in promoting learning and acquisition of team-work skills, such as critical thinking, and problem-solving skills that allow them to help others to solve even the ambiguous tasks

above their development or in their ZPD (Vygotsky, 1978; Neo, et al., 2005). Similarly e-learning resources should engage EdTech students in the active learning process.

The constructivist learning context puts emphasis on student-centred learning rather than teacher-centeredness. Therefore, educators are there to facilitate learning, lead, guide, share and support students to improve their own knowledge construction rather than disseminate full knowledge to students and identify content and objectives as is advocated for by objectivists (Tam, 2000; Karagiorgi & Symeon, 2005). In addition, this learning approach supports students' autonomous learning and activities as opposed to the cognitivist view, which ignores basically the social nature of language, thus missing the point that learning is a "collaborative process" (Vygotsky, 1978). This study thus incorporated a constructivist learning approach to explore students' experiences towards a more active learning environment as would be expected in their computer laboratory.

1.10.2 Conceptual Framework

This study incorporated a conceptual framework of five developmental stages of learning; based on Salmon's (2000-2002) adapted e-moderating and e-tivities model of blended learning. The adapted model is supported by social constructivism theory propounded by Vygotsky (1978). Chapter 3, Figure 3.3 of this dissertation illustrates that there are supplementary powerful factors that the facilitators have in relation to effective and sustainable use of blended learning practices. The adopted conceptual framework indicates the five different sequential stages of development including a sequence of prearranged tasks that students have to pursue to become EdTech experts, referred to as e-tivities by Salmon (2000). Through professional development activities, students proceed through the five stages for the successful and sustainable use of blended learning. Salmon's (2000) five stage model empowers facilitators - whom she refers to as e-moderators – to play an effective facilitating role while students are also empowered to be accountable for their own learning.

1.11 OVERVIEW OF THE METHODOLOGY

This study is a qualitative research and focuses on a specific case of an institution that has incorporated blended learning approach in EdTech modules with a focus on students' qualitative experiences. In a case study, the researcher explores a single phenomenon bounded by time and activity and collects in-depth information through prolonged engagement during a continual period of time (Merriam, 1988). In addition, a case study allows for various data collection methods enabling the researcher to get rich data (Henning, van Rensburg & Smith, 2004).

The qualitative data was collected from the selected population (students) at the selected institution. Purposive sampling was used to select the participants according to the specific characteristics to be studied. The sample consisted of twenty EdTech students who will be referred to as participants or students throughout the dissertation.

1.11.1 Research Paradigm

This being a case study, the methodology and design of this study lies within the interpretivist paradigm. These approaches supported the study to explore students' experiences which are unique and personal due to their involvement in their own learning (Taber, 2006). This study is interpretive due to the fact that it is concerned with students' experiences, including attitudes, perceptions, and interpretations to get in-depth primary data from its origin (Mason, 2002). This means that the researcher had to interview participants in their natural setting to afford the participants' freedom to give out their views and for the researcher to associate what is said with what is seen, in the process restructuring their constructs on how they view their world (van Niekerk, 2009).

Another reason why interpretivism has been used in this study is that it allows the researcher to interpret whatever is heard and seen on the spot in a qualitative data collecting context. This is because the EdTech participants would not be understood without examining them in their social context and interpreting their own blended learning experiences and awareness.

1.11.2 Data Collection

Qualitative research has that quality in nature, which gives it the flexibility to employ a variety of instruments for data collection in the natural setting (Merriam, 1988). Thus, this study used different instruments to collect data and these include:

• Semi-structured and unstructured questionnaires

• Semi-structured interviews, focus group and individual interviews

• Observations

The information collected through the interviews was transcribed and analysed to come up with units of meaning. All the selected students were asked to complete the questionnaires and the SPSS program was used to analyse the data from questionnaires to validate the identified themes, categories and quotes from the participants that were interviewed. Participant observation was used to substantiate data from all the instruments used in the study.

A more detailed account of the research design and methodology of this study is outlined in Chapter 4 of this dissertation.

1.11.3 Ensuring Validity/Reliability/Trustworthiness

In this study, there are forms of evidence the researcher gave attention to, such as thick descriptions, triangulation techniques, checking by professional associates, collaboration between the researcher and the participant, transferability and reflexivity to determine whether the method, findings and interpretation have been trustworthily conducted (Lincoln & Guba, 1985). Triangulation in this study served as a strategy for obtaining different types of information, as a method for verification of information already gained by other methods, and as a combination of many different sources that supplement each other (Syvitski, 1991). The main reason for applying triangulation was that a combination of strategies yields in-depth data, than what would be obtained by using a single strategy. Furthermore triangulation helped the researcher not to engage in participants' favouritism but to develop trustworthiness (Krefting, 1991).

Trustworthiness was increased through the role played by the researcher in this study. She was an eye witness to virtually everything taking place in the study. The researcher was thus a participant observer in this research and as such she was in close contact with the participants when collecting data. Since the participants were the EdTech postgraduate students, they were within the researcher's reach due to the purposeful and small sampling method applied. The researcher had to compile field notes as she interacted with the participants when interviewing and distributing questionnaires to be completed in their natural setting. Therefore, she was a fundamental mechanism in the collection and analysis of data. The generated data were in-depth and wide-ranging to increase the validity and reliability of the study.

For further trustworthiness, professional colleagues and research subjects were included in this process to ensure that information is systematically and didactically reported (Lincoln & Guba, 1985).

1.11.4 Ethical Issues

Ethical issues were of significance in this study. The researcher was aware of all the ethical issues due to her personal involvement in the study, and adhered to them throughout the study. Thus the researcher submitted the research proposal and ethical clearance together with instruments to the supervisor, and consent letters to the research department and the EdTech department of the institution under study. Ethical clearance was approved by the university Ethics committee.

Informed consent was obtained in writing and verbally from all participants in the EdTech class during the first two weeks of the block session or lectures in the first semester before interviews started. The interviews were confidential so as to protect the interviewees from both physical and psychological harm in that all the information collected was handled anonymously. No individual or institution was named. Instead, pseudonyms were used in the report corresponding to the methods of data collection identified above. Questionnaires were distributed to students in the EdTech class who duly completed and returned them. The participants were told about the intention of the

study and were made aware that their participation was free. They were informed that they could withdraw at anytime or stage throughout the study, and that their withdrawal would not negatively affect them in any way.

1.12 LIMITATIONS OF THE STUDY

- The study is about individual blended learning experiences of twenty postgraduate students in EdTech discipline, therefore transferability of the findings may be limited. Like in all qualitative studies where the sample size is small,
- The findings cannot be generalised to the wider KwaZulu-Natal population.

1.13 ARRANGEMENT OF THESIS CHAPTERS

The report of this study consists of six chapters.

Chapter 1- Study Orientation: It provides a review of the important parts of the research. It guides the reader to the problem statement of the study. Here the reader is informed of the intentions of the researcher and the study, the aims and objectives of the study, and the limitations of the study. The background information provided in this chapter indicates the significance of the blended learning approach to EdTech students' course modules and guides the reader through the reasons that motivated the researcher to undertake the study and also outlines the intention of the researcher to explore and understand the stated problem. The research question is introduced as well as its subsidiary questions. The limitations of the study are also discussed.

Chapter 2- Literature Review in Context: It explores the significant and current literature relevant to this study. The chapter commences with introductory definitions of key terms as perceived by different authors and discusses technologies used in Education that promote successful learning. The last section focuses on current studies in three different contexts – South Africa, Africa and international – where students experienced the use of blended learning in higher education.

Chapter 3- Theoretical and Conceptual Framework: It provides a detailed description of the theoretical and conceptual frameworks guiding and supporting the study. Thus, the suitable conceptual and theoretical framework pertaining to this study is presented. A conceptual framework is developed in order to make sense of the data collected and theory to be able answer the research question, as the outline of the conceptual framework has to form the basis this study. In this theoretical framework, the following theory and models were included:

1. Social Constructivism theory
2. Salmon's E-Moderating model
3. Jone's Blended Learning Continuum model
4. Maslow's hierarchy

Chapter 4- Research Design and Methodology: It describes the research design and methodology used in this study. The chapter gives a situational overview of the research location and the rationale for qualitative research within the interpretivist paradigm, because of the subjectivity of the students' own experiences. The choice of methodology used to conduct research is important as it significantly determines the research outcome. Thus the instruments for data collection and analysis and considerations of validity and reliability are discussed. The process by which the study came to being is also discussed in terms of how it was implemented in the selected institution.

Chapter 5- Findings: It presents the results of the data correlated to the main research question. The different responses are quoted to provide a complete picture of how students experienced blended learning in learning EdTech modules. Answers to the questionnaires as well as responses from the individual and focus group meetings are examined. Thus the different categories discovered via thorough coding are presented. These categories are authenticated by considerable quotations from the various data collection instruments. The data were read several times until the researcher came up with several categories grouped into three themes below:

- Appreciating the tool than application of the tool
- Transformative e-learning course design practices underpinned by technologies

- Limited resources for e-learning activities

Chapter 6- Analysis of findings: It presents the interpretation, analysis and discussion of the findings of the study. Thus the findings presented in Chapter 5 are analysed in this chapter and positioned in the context of the theoretical framework on which the study is based. This is done in cognisance of theories enlightening the main research question, connected to findings and compared to the literature in context as reviewed and discussed in Chapter 2 of this dissertation. Focus is on the perceptions of the students' experiences of learning EdTech modules through blended learning approach and their challenges. It further presents the conclusions reached from the discussion of the findings in chapter 5 and recommendations of the study, noting its most prominent features and weaknesses, while still at the same time addressing the blended learning influence on teaching and learning EdTech modules of postgraduate students as found in the selected institution in the South African context.

CHAPTER 2

LITERATURE REVIEW

Speech has allowed the communication of ideas, enabling human beings to work together to build the impossible. Mankind's greatest achievements have come about by talking and its greatest failures by not talking. It doesn't have to be like this. Our greatest hopes could become reality in the future. With the technology at our disposal, the possibilities are unbounded. All we need to do is make sure we keep talking (Hawking, 2009, unpaged).

2.1 INTRODUCTION

This chapter interrogates the relevant literature within the context of the study introduced in the previous chapter. Literature which is relevant to the purpose of this study was collected from different studies conducted globally in relation to higher education institutions. Information was also collected from various other sources such as internal reports and various universities' reports, newsletters, brochures, articles from journals, books, book chapters, television, the Internet, magazines and national newspapers. The body of sources of information for this study is extensive and it includes academic opinions on blended learning amenities and equipment used by students in learning and the challenges they face.

Living and learning in the 21st century makes necessary the interaction and engagement with a diversity of technologies coupled with a range of high quality delivery methods, techniques, approaches and styles of learning be they student-centred, e-learning or advanced instructor-led-instruction blended pedagogical approaches, as opposed to pure traditional face-to-face instruction (McShane, 2005; Schrittesser, 2004). The blend of e-learning and traditional face-to-face approaches brought about a fresh pedagogical approach referred to as 'blended learning' within the context of outcomes-based education in few institutions (Aladejana, 2008; Alvarez, 2005; Jones, et al., 2007; Oliver & Trigwell, 2005; Thanses Valley University, 2006; Young & Duhaney, 2008). Therefore the researcher would like to understand how the learning experiences of

students are improved by this blend of delivery methods that complement the learning aids and the students' participation within South African societies.

The purpose of this literature review is to consider the theory behind the problem that is being researched, that is, to explore postgraduate students' experiences in using blended learning to learn Educational Technology (EdTech) modules in a selected higher institution. The review of literature will thus serve to identify the conceptual and theoretical basis of this study.

Of late blended learning has brought about improvements in the EdTech course via new Information and Communication Technology (ICT) that offers numerous options to conduct teaching and learning according to social constructivist principles. The principles bridge the gap brought about by traditional education; that is reducing time used in face-to-face approach (teacher-centred) to accommodate online learning approach, that encourages student-centred learning and introduces education structured by social constructivist principles (Alvarez, 2005; Hameed, Badii & Cullen, 2008; Thomas, 2006).

Through social constructivism, students take responsibility for their education and they are expected to develop creativity, critical thinking, and problem solving skills. Students also learn through scaffolding and work in collaboration to solve tasks through sharing of views (Thomas, 2006). Students are expected to be active and move away from traditional education whereby students were passive and the educators would pour information into their heads (Gachago, 2006). Constructivism in practice enables students, through the use of e-learning resources, to search for information themselves and to process this information critically.

In this review, the researcher views educational technology in its broadest sense and aims to identify issues that have been omitted by previous researchers who conducted research on similar topics globally and in South Africa. The technologies referred to here are especially related to computers and the Internet. Blended learning is argued to improve ICT skills and knowledge and to obtain ICT literacy from such a blended approach,

students must access the Learning Management System (LMS) to get new information and continue learn collaboratively (Johnson, et al., 2006). Therefore the aim of this study is to understand the ways in which students experience the blended learning approach in EdTech modules. To achieve this aim, the **DURF** model is used to explain the concepts, i.e. **D**efinitions of the key words, the **U**se of blended learning in institutions, the **R**ationale for blended learning in institutions, and a discussion of the recent **F**indings of other studies.

2.2 DEFINITIONS OF ICT, EDTECH AND BLENDED LEARNING

To provide a clear picture, ICT will be defined in three parts, that is, as Information Technology (IT), Communication technology (CT) and finally Information and Communication Technology (ICT) as a combination of IT plus CT.

IT is the equipment, processes, procedures and systems used to give and maintain information systems within an institution. According to Kante Country Council (2004, no page) "Information technology (IT) comprises the knowledge, skills and understanding needed to employ information and communications technologies appropriately, securely and fruitfully in learning, employment and everyday life. IT is to ICT as literacy is to books, journals or screen displays". On the contrary, Vallance (2008) indicates that ICT is to IT vice-versa.

IT is the technology that involves developing, maintaining and using computer systems, software, and networks for the processing and distribution of data (Vallance, 2008). It also refers to items of hardware such as laptops, scanners, overhead projectors, digital cameras and computers; and software, that is, computer programs that allow users to access, transmit, receive, process, store, retrieve, organise and present information via electronic means (multimedia programmes and database programmes) (Alexandrou, 2009).

Vallance (2008, p. 284) asserts that, "The 'C' represents communication and this term should be recognised as communication between people supported by technology. It is people who are the hub of information and technology adoption and success and also its failures." On the other hand, Spender (1994) argues that CT refers to blended electronic-communications such as telecommunications equipment via which information can be sent and accessed (computers and others). According to BNET Business Dictionary (2009) "CT facilitates communication between individuals or groups who are not physically present at the same location. Systems such as telephones, telex, fax, radio, television, and video are included, as well as more recent computer-based technologies, including electronic data interchange and e-mail." It can be concluded that the 'C' and 'CT' denote communication between individuals using a variety of pertinent technologies, in whatever situation.

IT and CT unite under a general term known as information and communication technology (ICT). According to Herselman and Britton (2002, p.270),

> ICT is basically previously separate immobile unit of data and technologies (IT), incorporated with new communication methodologies. ICTs therefore are part of networked systems, as opposed to older technologies, which were not designed for collaboration with other systems, but focused solely on data processing and the storage and retrieval of information.

Therefore, ICT comprises hardware, software and networks including means of communication, collaboration, data processing, information storage, retrieval and understanding. Scholars view ICT as the technologies and electronic resources designed specifically for e-communication, e-collaboration, appliances and services related to them and others not mentioned (Kent County Council 2004; McCann, Christmass, Nicholson & Stuparich, 1998; TechTarget, 2009). At present, "The Internet is currently the most important driving force behind the transition from IT to ICT. The Internet, which started in the Defence Force of America as a network for e-mail and file transfer, has now become the public network for everyone" (Herselman & Britton, 2002, p.270). Today, ICT is also in use in teaching and learning of various disciplines, EdTech included.

Educational Technology

It is essential to attempt to define EdTech because our understanding of it will explain how ICT is linked to EdTech as conceptualised in this study. Educational Technology is diversely defined by different authors. Rowntree (1982, p. 31) understands "Educational technology to be concerned with the design and evaluation of curricula and learning experiences and with the problems of implementing and motivating them. Essentially, it is a rational problem solving approach to education, a way of thinking critically and systematically about teaching and learning." Romiszowski and Criticos (1994, p. 54) apparently view it differently when they claim that "Educational technology is defined as a discipline committed to advancing educational efficiency by systematic design, development and evaluation of educational systems." However, Govender (1997, p. 87) defines educational technology as:

> A systematic approach that involves the use of technology in education and technology of education via the processes of design, utilization, development, evaluation and management. Educational technology in the main is therefore process driven which inherently enhances the teaching process through systems orientation and rational problem solving which must lead to efficacy and efficiency in the teaching learning situation.

One of the latest definitions is by Molenda & Robinson (2009, p. 28) who build up on previous views and contend that EdTech is all about "facilitating learning, improving performance, creating, using, and managing technological processes and resources."

Although the terminology applied in the above definitions may seem to make them differ, the underlying principles and practices are similar. They commonly mean relevant resources and activities are produced, administered and applied via theory and practice (Mansood, 2004). As a result, for the sake of a working definition for this study, the researcher considers the term 'Educational Technology' to be the knowledge of technical ways of applying the techniques, methods, theories, hardware and software used by people to improve or ease teaching and learning as per Percival and Ellington (1984), An attempt is made in this study to determine the ICTs or technologies that are controlling and empowering education in this information age. EdTech has a variety of approaches and

techniques that include features of traditional face-to-face learning, distance learning, e-learning and blended learning via ICTs.

Traditional face-to face-learning

The full traditional face-to-face contact has been the most trusted approach in education for a very long time; even now it is still a fundamental learning approach. Most of the people globally have experienced traditional face-to-face learning in classroom settings and have acquired high levels of skill in learning from these contexts (Davis, 2007; Penfold & Pang, 2008; Resta, 2005). Therefore some of the approaches, skills, methods and practices used successfully in instructor-led-instruction's context may possibly be unsuccessfully used in e-learning (Resta, 2005).

Therefore, although in some cases the traditional face-to-face learning is hindered by learning barriers such as poor student-teacher and student-student communication, and students' poor concentration and lack of motivation to participate, cooperative face-to-face learning cannot be replaced with distance or online learning completely (Davis, 2007; Ellis, 2001; Penfold & Pang, 2008; Thomas, 2006). The same thing applies to the Internet and books and, indeed, the organisation further indicates that just as the Internet library cannot substitute university's physical library, it cannot replace face-to-face interactive learning too. This demonstrates the value of retaining face-to-face learning features for the benefit of the distance learners.

Distance Learning

The California Distance Learning Project (year unknown), defines distance learning as an educational deliverance system whereby students on their own interact with educational resources. The Project further indicates that distance learning gives remote students not registered and those who are registered in universities equal chance to have educational access and can also improve their learning possibilities. Distance learning uses resources on hand and keeps on changing to employ current e-learning resources.

Distance learning is a way of training whereby the educator and the student are divorced by both remoteness and time (Distance Education: A Consumer's Guide, year unknown). It brings about understanding and capabilities gained by means of training through a variety of technologies and other techniques of learning at remoteness (United States Distance Learning Association, no date). Nevertheless, since some of the aspects in e-learning are similar to ones of distance learning, there is a refined extension of distance education in e-learning (Elloumi, 2004).

E-Learning

E-learning is a technology-based training programme that has developed extensively in the past couple of decades as a result of the inclusion of technologies into education. It is a form of training delivered by electronic means using the Internet, Intranets, extranet and other technologies such as video conferencing, video, television and DVD (Herselman & Hay, 2005; O'Neill, Singh, & O'Donoghue, 2004). As a result, e-learning cannot be divorced from technologies that make it successful. E-learning is usually branded with web-based learning due to the large numbers of users who access the Internet links nowadays (Hall, 2003; Zhou, et al., 2007). E-learning and web based training provide opportunities for construction of a new and flexible world of educational technologies.

The most crucial of the e-learning supporting aspects is that the training is usually self-paced autonomous learning (Hameed, et al., 2008). It is also highly interactive both in real time (synchronous) and at different times (asynchronous) (Ryan, 2001; Thomas, 2006; Rodgers, 2009). These interactive sessions take on various modes such as GroupWise, newsgroups, e-mail, mailing, blogspots, chatrooms, computer and videoconferencing. The above mentioned interactions engage educators' communication with students from distant places, with relatively low costs when compared to student journeys to a lecturer-led seminar (Hameed, et al., 2008; Penfold & Pang, 2008; Thomas, 2006). However, if ever a blend of e-learning with lecturer-led seminar (Blended learning) is used on campus, it has basically been shown to be a more effectual, well-organised and useful educational delivery (Aladejana, 2008; Grobler, 2002; Kruger, 2008).

Blended learning

Blended learning encompasses all the above mentioned aspects; variety of ICTs, teaching and learning approaches, theories of learning that provide the learning opportunities and a diversity of learning techniques and experiences that enhance the achievement of learning outcomes (Thames Valley University, 2006). Thus blended learning is an approach whereby the face-to-face learning experience is enhanced with appropriate educational technology, delivery methods, technologies and academic support. The blended learning will be discussed later in the chapter. But how are ICTs, EdTech and Blended learning related in relation to the study undertaken?

The Connection between ICT, EdTech and Blended Learning

As already explained, ICT comprises all technologies, hardware and software for the functioning of networks for transmission of information, but EdTech covers 'how' to use the technology. Technology in education (hardware and software) and technology of education (which includes research, teaching and learning) are used to improve teaching and learning situations (Palloff & Pratt 2005). ICT is beneficial due to opportunities it provides in the EdTech course when blended with more traditional face-to-face approaches to learning. Thus classroom contact is enhanced by encompassing thorough checking of online learning materials for online learning activities and effective collaborative learning, a variety of assessment alternatives, and institutional support (Badenhorst & de Beer, 2004). Therefore blended learning in EdTech modules may encompass the use of ICT or technologies including any medium of information like video machines, digital cameras, mobile phones with cameras, and specifically computers, the Internet and new potential technologies for communication such as weblogs, wikis and podcasts (Howie, et al., 2005; Kent Country Council, 2004; Tech Target, 2009; Viglas, 2006). Thus the appropriate use of ICT lies on EdTech methods of delivery (pedagogy), suitable learning theories for a successful and innovative blended learning approach for learning (Schrittesser, 2004).

Almost all South African institutions of higher learning have invested in ICT such as equipment, connectivity, professional development and digital learning content, but very few of them have managed to invest in this newly discovered approach – blended

learning. According to Tech Target (2009) several countries globally have formed associations specifically for the encouragement of well-organised technologies implementation and support, due to the panic and pressure they get from developed countries that they may possibly assist the technologically advanced areas and worsen the economic gap between technologically advanced areas and those which are not. Therefore, "the United Nations actively promotes ICTs for Development (ICT4D) as a means of bridging the digital divide" (Tech Target, 2009, unpaged).

A number of recent studies, such as by Thomas (2006), provide evidence of the revisit on investment and this study indicates that blended learning approach is increasingly being explored globally, more especially in developed countries, as a means of improving learning in the universities.

2.3 THE USE OF BLENDED LEARNING IN EDUCATIONAL INSTITUTIONS

The use of electronic resources in education and training has been a priority in most South African institutions during the last decade, but implementation has not been smooth as per Cross & Adams' (2007) contention. The argument by Cross and Adam (2007) is that there are significant variations of electronic-development within and between institutions. Most South Africans' institutions, however, are in the early phase of electronic resources adoption, and this phase is distinguished by poor conditions and the use of technology in education, but there is no clear direction yet on how to make improvements. Therefore, such development has been achieved at a substantial rate (Cross & Adam, 2007).

Some scholars highlight the point that the process of change in education takes time and therefore well improved and organised technologies for learning will be introduced over time. A review of other literature regarding the incorporation of technologies concentrated more on role of ICT than on practice (Loveless, 2003). But Loveless (2003) went further and raised the idea of the use of technologies to support teaching and learning, practical and technical abilities that create the challenge for developing

students' electronic-learning competences. The argument is that improvements in teaching and learning using technologies are based on more practice (hands-on activities) than the lecture-based approach. Therefore technologies are credited to have brought about a variety of new techniques of learning while improving old modes of learning and delivery of education. One of these new learning processes and modes of learning is the blended learning approach as mixed-mode learning through the use of ICTs.

Blended Learning Approach

Blended learning is a combination of two basic elements; electronic-learning with traditional face to face learning. Below is an illustration for clarification:

Traditional Face-to-face Learning **Blended learning** **Electronic Learning**
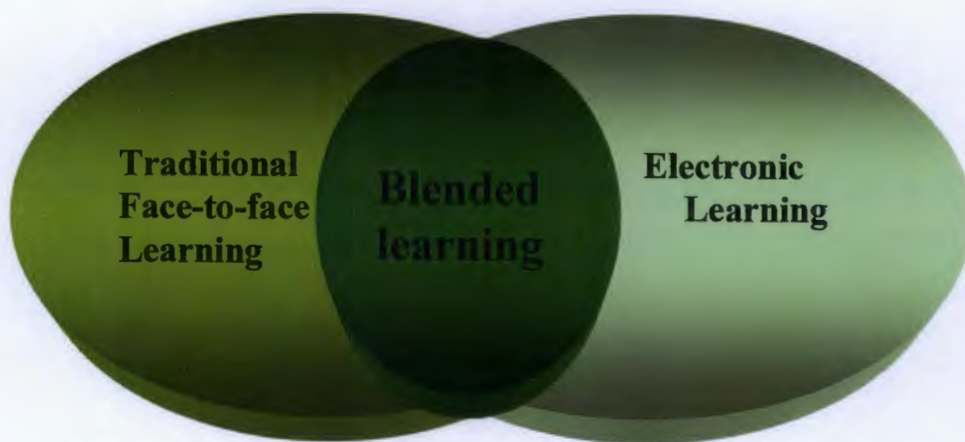
Figure 2.1

As shown in Fig 2.1, the traditional face to face learning entails students' contact and support they get from facilitators within the four walls, well equipped with relevant technologies, whereby the educator is a centre of attraction for the students benefit (Collis & Moonen, 2002). Due to its time flexibility in online learning, information can be accessed everywhere twenty-four hours a day, wherever students are, such as at the student's home or workplace, at their own pace and autonomously, to meet their own needs (Alvarez, 2005; Badenhorst & de Beer, 2004; Gulc, 2006; Penfold & Pang, 2008). Hence here learning is centred on the student.

There are some general features of blended courses that encompass the use of different activities and technologies such as chatrooms, blogspot, groupwise, message boards, voice mail, e-mail and in-class paper work to make a best possible training program for particular students (Bershin, 2004). ICT, such as computers with the Internet, commands high dominance in many educational systems; it exposes students to diverse media modes that allow them to interact and access content (Brown & Adler, 2008; Hameed, et al., 2008; Zhou, et al., 2007). Furthermore, most of the higher education institutions offering postgraduate degrees to students globally are incorporating online learning interactions together with their traditional approaches. They send course outlines, notes, tasks, take home assignments to the web to be accessed by students online (Precel, Eshet-Alkalai, & Alberton, 2009). As a result, most of the higher educational institutions have put into practice a required blend of e-learning environments and traditional face-face such as classroom lectures, together with pedagogical techniques for successful traditional learning process (Bonk, Graham & Moore, 2005; Penfold & Pang, 2008; Shemla & Nachmias, 2006). E-learning does not only give innovative running procedures of institutions and programs, but also transforms the way traditional classrooms are administered.

Even though e-learning seems to have that potential to improve teaching and learning, and has reasonable costs for the program, students may not feel inspired to learn due to its remoteness, thus their performance is negatively affected (Bates & Khasawneh, 2007; Coates, 2006; Gulc, 2006; Kurtz & Amichai-Hamburger, 2008). Therefore there is a need to balance the weaknesses of e-learning and face-to-face contact and blended learning can bridge that gap (Alvarez, 2005; Garrison & Vaughan, 2008). This can be done through educators' support, contact with colleagues and ability to learn over distance using e-learning so that students can be able to access information such as course notes, tasks, submit their assignments and receive feedback online (Crossouard, 2008; Gulc, 2006; Stacey & Gerbic, 2008). In other words, supervisor and student face-to-face interactions, students' seminar discussions and their research work submissions and online feedback as well as the appraisals between the supervisor and student are possible through blended learning (Dangel & Matthews, 2008; de Beer & Mason, 2009; Jones, Skinner & Blackey,

2007; Schümmer & Schmolitzky, 2008). Therefore the several institutions of higher education that have devoted to e-learning study and improvement have drawn attention to the fact that e-learning is a suitable assistive device to put into practice in educational programmes to develop quality learning that caters for students' needs (Gulc, 2006).

A well developed blended learning experience plan needs a variety of learning alternatives suitable for students and the situation should be well-implemented. Contrary to the perceptions of some scholars, blended learning is demanding and it necessitates extensive investment in educational technology and support. Moreover, it requires a well-structured foundation for it to be successful and course designers and instructors are required to select instruction activities that make the best use of the extensive net to include both set of connections and blended learning (Anderson, 2004).

Successful blended learning provides students with time flexibility, cost efficiency, technical support, competence, quality assurance, self-paced learning, content design, knowledge accessibility, assessment, student-centredness, a learning community and communication tools via the Internet (Anderson, 2004; Brown & Adler, 2008; Hameed, et al., 2008; Kruse, 2004; Moebs & Weibelzahl, 2006; Stacey & Gerbic, 2008). Thus learning technologies are a valuable and swift means for interactions that allow the blend of both synchronous and asynchronous interactions (Kumar, 2004; McShane, 2005).

Students can interact in the e-learning context and improve new social skills such as sharing ideas via online discussions or forums. They can also do their group work via online collaboration, and have accountability of working cooperatively in class tasks. Therefore such communication entails interaction with students and educators in distant places, in the process enabling educator-educator as well as student-educator interaction. It also allows the students to get a portion of their instruction and assignments partially presented in a traditional classroom and partly provided online (students and content interaction) (Dangel & Matthews, 2008; de Beer & Mason, 2009; Thomas, 2006). Students can access advanced resources at their own pace and have significant interactions with the content at the same time being expected to be skilful in time-

management and become successful, self-directed autonomous (de Beer & Mason, 2009; Gachago 2006; Sharpe, Benfield, Roberts & Francis, 2006; Smart & Cappel, 2006; Thomas, 2006).

There is continuing debate about the value of interaction in the learning and teaching process, but as these technologies improve and flourish in South Africa and abroad, they promise to assist in providing better and flexible delivery of education in higher education institutions. In addition, communication offers increased chances for South Africa to provide education abroad and to reduce the communication obstacles such as cost and time in distance learning through the use of the World Wide Web (McDonald, 1999-2000; Murphy & Greenwood, 1998; Palloff & Pratt 2005). "The new information technology Internet and e-mail have particularly eliminated the physical costs of communications" (Brainy Quotes, 2009, unpaged). Blended learning is therefore a powerful interactive learning mode where face to face learning experience is enhanced with appropriate educational technology, delivery methods and academic support.

For clarification, figure 2.2 as espoused by Potter (1998) is a model for effectual interactive learning within the institutions, through the use of technologies. The model shows interactive learning in different perspectives and over broad distances.

2.3.1 Learning Model Showing Types of Interaction / communication:
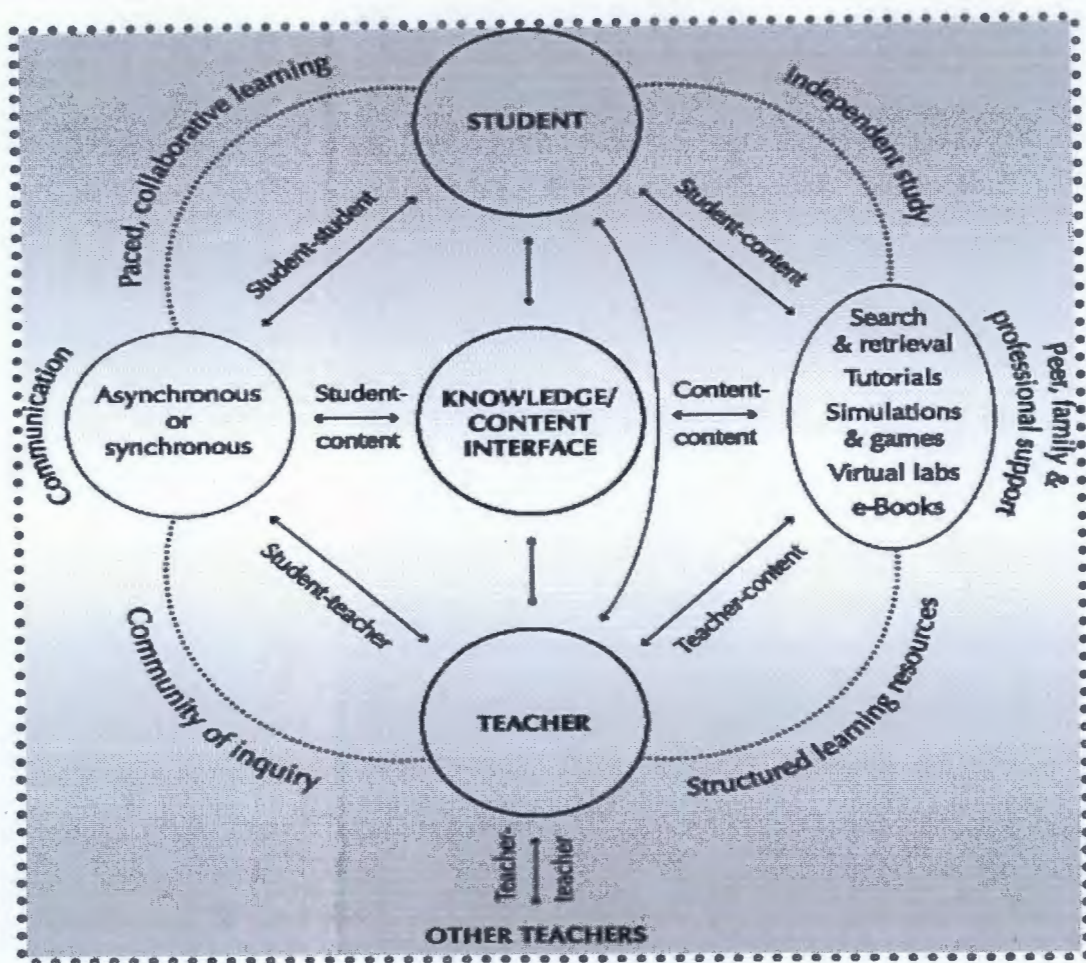
Figure 2.2

Potter (1998) states that,

> The model illustrates the two major human actors, learners and teachers, and their interactions with each other and with content. Learners can of course interact directly with content that they find in multiple formats, and especially on the Web; however, many choose to have their learning sequenced, directed, and evaluated with the assistance of a teacher. This interaction can take place within a community of inquiry, using a variety of Net-based synchronous and asynchronous activities (video, audio, computer conferencing, chats, or virtual world interaction). These environments are particularly rich, and allow for the learning of social skills, the collaborative learning of content, and the development of personal relationships among participants. However, the community binds learners in time, forcing regular sessions or at least group-paced learning.

As illustrated in figure 2.2, student-student interactions expose them to cooperative and collaborative learning as they work together to solve the given tasks. "In this new wave

of technology, you can't do it all yourself, you have to form alliances" (Brainy Quotes, 2009, no page). While students do their activities collaboratively, they also acquire collaborative and independent skills which they would not necessarily gain through learning and doing their activities individually. According to Thomas (2006, pp. 37-38), "cooperative learning and collaborative learning refers to learners working together in groups on tasks or issues, so that individual learning takes place through interaction in groups." Collaborative learning compels students to unite their views and think critically to solve even ambiguous problems.

In a collaborative learning environment students interact synchronously as group members sharing ideas to solve problems encountered. Even in the online environment, collaboration is seen as a vital aspect of the educational experience as it improves students' cognitive and social skills (Gulc, 2006). In this case, collaboration can be viewed as everything that engages students online, from involvement on a discussion board to working in small groups (Palloff & Pratt, 2005). This assertion confirms the earlier argument by Palloff & Pratt (2001) that online collaboration brings students together to support the learning of each member of the group while promoting creativity and critical thinking and forming the foundation of a learning community.

Palloff and Pratt (2005) further argue that collaboration brings awareness of students who resist working in groups, the struggle to create equitable teams of students, uneven participation, and the difficulty of evaluating and grading the products produced by a group. The instructor's collaboration is in the form of giving students the opportunity to work collaboratively, promoting their creativity and empowering them to deepen the learning experience throughout their work with one another (Penfold & Pang, 2008).

The uses of technologies at universities are numerous. Palloff and Pratt (2005) indicate that many institutions use technologies for curriculum development, administration, recording and collaboration. Other uses of technologies include computer-based learning, broadcast television to targeted sites, video and audio tapes, compact disks and multi-media, electronic mail and use of the Internet for online learning, intranet and extranet, research and access to other information at World Wide Web sites (Evalutech, 2004;

Herselman & Hay, 2005; McKenzie, 1996). These technologies were used initially in the development of distance education by providing the tools to improve student support services (Palloff & Pratt, 2005). Examples of these services are teleconferencing, electronic access to library services and electronic mail contact with tutors and fellow students. More recently, these technologies have supported the development of learning packages incorporating multi-media and other information based resources (Lesame, 2005).

The growing use of technologies in education is part of what is otherwise termed the information society. In this society, blended learning through the use of e-learning, such as computers and the Internet, offers new options and opportunities such as to generate, process, store and transfer information. E-learning plays a service role for information intensive enterprises, including vocational education and training institutions such as universities. The researcher discussed this broader, societal context under the following two headings: The benefits and challenges of blended learning within the higher institutions; and the use of educational technology.

2.3.2 Benefits and Challenges of blended learning within the higher institutions
2.3.2.1 Benefits of Blended learning

"The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before, and so in a sense it is all about potential (Brainy Quotes, 2009, no page)".

Globally, a great deal of research into the benefits of technologies in education has been done over the last twenty years, in order to determine the effects of technologies in learning. A study conducted at the University of Sheffield (1996) points out that ever since the technologies such as the first computers were used in teaching and learning, they brought about improvements in education and support in higher institutions. The University further contends that computers are user-friendly; and they develop successful teaching and learning due to interactions that take place between academic staff and

students through the Internet including electronic mail and computer conferencing. Therefore technologies tools provide open learning such as collaborative learning and improve direct communication as well.

Technologies have brought about high quality teaching and learning by introducing a variety of teaching and learning techniques, some of which enhance learning. This has been indicated by Badenhorst and de Beer (2004) that technologies provide a range of approaches for teaching and learning such as online learning, e-learning and practical learning. They further emphasise that these approaches improve the content delivery mode by providing students with relevant technologies that develop and ease their self-directed learning approach as opposed to instructor-led instruction. However, not all scholars concur as some contend that online learning environment cannot work for the students effectively solely due to its weaknesses such as lack of students' support, interaction with academic staff and their peers.

Furthermore Badenhorst and de Beer (2004) indicate that access can be restricted by only one teaching and learning technique. The most important thing is that in the blended learning perspective students can actively, freely and openly access learning materials without any restrictions, to avoid negative impact on a student's high order thinking skills, critical thinking skills and problem solving skills (Alvarez, 2005). Therefore there are a variety of materials made accessible to all university staff and students regardless of their environment, and there are no time constraints on viewing the said materials.

Gachago (2008) argues that a blended learning environment for full-time students allows them to meet in face-to-face seminar rooms and have access to e-learning resources and interact online as well, using a range of techniques and media prepared for suitable learning, rather than using only online learning. However Badenhorst and de Beer (2004) assert that a combination of too many techniques in teaching and learning can also make the bewildered educators and students. But nowadays education gives students opportunity to choose whatever they want to learn, they have freedom of choice and learning flexibility.

Blended learning is especially necessary for postgraduate students training due to the rapid development of technologies used in this platform. Literature indicates that an improvement in students' learning experiences can be enhanced by introducing a combination of students' involvement and techniques that match the learning resources. Thus, these new technologies benefit almost all the educators and students within the blended learning environment.

Blended learning environment

The blended learning approach to teaching and learning supports almost all the modules in EdTech discipline presently (Badenhorst & de Beer, 2004). In most institutions of higher education, blended learning is using common e-learning materials for interactive learning, learning content, assignments submission and collaborative learning matching with the instructor-led-instruction mode of delivery. This is opposed to pure traditional face-to-face environment in which students lack flexibility, instructors are there to solve students' problems, there is limited self-control due to time constrains and students' access of the learning materials in the laboratory is restricted by timetable schedules (Johnson, et al., 2006). Thus blended learning provides an informal environment for students to attend their lessons while at the same time allowing students' face-to-face contact in the seminar rooms to do course content, to acquire the material in the form of tasks, assignments, and group work investigations to achieve in-depth knowledge delivered to them (Johnson, et al., 2006).

In summary of what has been said above, most blended learning studies conducted internationally propose that blended learning plays an important role in the transformation of education and training. Blended learning can enhance educational reform by enabling educators and students to move away from traditional approaches to teaching and learning. In a transformed teaching and learning situation, there is a shift from teacher-centred to student-centred education (Dziuban, et al., 2004; Unwin, 2008). This is manifested by students engaging in the discussion forums, and working collaboratively to share ideas and engage in e-learning relevant situations to promote

creative thinking and problem-solving skills (Johnson, et al., 2006, Smart & Cappel, 2006).

Howie et al. (2005) indicated the benefits that students can get through the incorporation of technologies tools into the educational curriculum. Technologies tools can provide students with valuable manipulative experience and the opportunity to learn skills. In addition, Kumur (2004) points out that technology tools such as the Internet can improve students' high order thinking skills, while Gachago (2008) indicated that in blended learning, students use computers and the Internet mostly to acquire ICT skills. Thus van Neikerk (2008) contends that due to technologies improvements made in education, educators and students can support and enhance their teaching and learning process. Van Neikerk (2009, p. 41) also contends that "there is no turning back - the use of ICT in education has become part of the way we teach and learn". Dertouzos (1997) also shows that achievement in the incorporation of ICT into teaching and learning will guarantee that all students in future will be prepared for complete contribution in the information society prior to further education and training.

However, Heppell (1998) argues that the Internet becomes an influential means of learning only when individuals have their own identity and a clear sense of interaction with other students and content, students are able to interact with the Internet software to learn IT modules.

One of the profound benefits of technologies as Loveless (2003) points out is the beneficial interaction of students with credible information. Teaching and learning constantly require new information that acts as a necessary tool in enhancing knowledge. If blended learning approach is incorporated therein, teaching and learning will produce adequately profound effects in knowledge acquiring and projection. It will also increase the competitive ability of both the educator and the learner globally. Another benefit of the blended learning approach outside the sphere of teacher-learner relationship is that students knowledgeable of technologies can utilise e-Government processes with ease,

not only to acquire and use information, but also to implement public sector reforms that can enhance transparency in government operations (Howie, et al., 2005).

Most departments of education also share the benefits entailed in technologies which largely include improved, speedy and protected web-based communication between colleagues and other authorities at both national and international level. This effect will hasten the Department of Educations' vision of developing citizens who are active and critical thinkers exposed to everlasting learning (Pandor, 2004). Furthermore, Howie, et al. (2005) point out that the focal point of e-Education is more on the use of ICT program to speed up the objectives of educational goals. Thus e-Education is about connecting students and educators to professional support services, and to provide a learning environment that develops effectiveness of pedagogy (Wall, Ahmed & Smit, 2006).

The effectiveness of pedagogy is shown through appropriate use of e-learning resources. Therefore within blended learning programmes, there is a variety of pedagogic components, such as Learning Management System (LMS) or Course Management Software (CMS) such as Moodle, WebCT, BlackBoard, Angel and E-College, that can be used to facilitate pedagogic practices or interactions made by all parties (Young & Duhaney, 2008) and "to give structure to the blended solution" (Badenhorst & de Beer, 2004, p .6). Palloff and Pratt, (2005) point out that through the LMS, for example, computer mediated communication allows students and lecturers to interact collaboratively.

Furthermore LMS is one of the delivery modes that promote more classroom and after-class interactions "about course-related topics through chats or discussion board postings" (Smart & Cappel, 2006, p. 204). Therefore students interact asynchronously or synchronously with peers sharing ideas on how to solve the problems they encountered through videoconferencing and computer conferencing (Kirschner & Selinger, 2003; Thomas, 2006). The use of LMS provides students with additional comprehensive comments which may challenge the educators' student-assessment as per individual contribution.

Literature reveals that a well-organised collaborative assessment promotes students' independence, competence and confidence to judge their own and peers' work and help to identify their problems and get assistance on time (Unwin, 2008). This social atmosphere is advantageous that students successfully acquire self and peer assessment skills for lifelong learning. But on the other hand minimise students' workload over the educators as best judges of their own learning, which were sometimes bias, reckless and useless (Gachago, 2006).

One of the crucial benefits of educational technology through blended learning is its positive role in overcoming problems of access to university study through provision of more flexible opportunities for the study. Educational technology particularly benefits those who have work commitments and live at various distances from a particular university (Palloff & Pratt, 2005). The university may possibly use a variety of technologies for distance and Open Learning programmes, including online courses. Palloff and Pratt (2005) assert that these technologies not only allow students at a number of campuses to communicate with academic staff and to access courseware online, but also allow them to access a greater range of learning and information resources via the Internet networks developed by the university to support students. The shift in distance education programme from pen and paper correspondence courses to improved access through technologies has transformed the way students learn (Palloff & Pratt, 2005).

Technologies in education are instruments that allow educators and students to practice supplementary well-organised education since they serve multiple purposes. These technologies can be used pedagogically as the instruments for student-centred learning, problem-solving, creativity, high order thinking, critical thinking, research and information-dissemination (Akbulut, Kesim & Odebasi, 2007; Nichols, 2006). With such multiple purposes, there is no way that technologies can be ignored in education.

Technology-related tools do not only transform the way students learn but also motivate, facilitate, enhance the learning process and channel students throughout their learning experience in blended learning environment. Palloff and Pratt (2005) note that technology

is used to serve the learning process and so specific technologies are matched to achieve specific outcomes. The LMS developed by some institutions is called open learning system (OLS). The system was established to provide more flexible access to university and, to a lesser extent to vocational education and training through the use of technology. Many South African institutions use WebCT as LMS, and as a result, Badenhorst and de Beer (2004) indicate that in their institution LMS is WebCT platform whereby students access learning materials electronically. They further emphasise that the educators' work at this stage is just to ensure students' learning progress and assist them through their learning experiences. Palloff and Pratt (2001) contend that the LMS have moved into the use of online technologies because of the enhanced interactivity it can offer for students and the potential it has to develop the variety of quality resources for teaching and learning.

The usefulness of a blended learning environment is that students submit their assignments and get the scores they deserve. They no longer leave their work next door, place it under the educators' office door, or give full-time students to submit it (Unwin, 2008). Badenhorst and de Beer (2004, p. 6) state that, "some assessments and the assessment marks are managed on the LMS." It even allows students to learn in the absence of their educators, who sometimes may have attended the meetings. Gone are the days that the classes were revoked due to the educator's absence.

Furthermore blended learning recognises and accommodates individual differences (Murphy & Greenwood, 1998). This provides students freedom to learn at their own pace, which is not easy with other information delivery modes such as traditional face-to-face instruction. Palloff and Pratt (2005) indicate that technological resources cater for mixed ability and students' learning differences. For example, slower students can take more time and get more feedback and direct help from educators and fellow students. Moreover students are given extended chances and independent learning practices such that even the students who used to shy-away from asking questions in the instructor-led-instructions, have a better opportunity to raise their own views freely (Chen & Looi,

2007; Ellis, 2001; Unwin, 2008). The LMS therefore serves as a foundation on which the course is built and the lecturer can then use it to manage the learning process.

There is sufficient empirical evidence that investments in the blended learning approach yield positive results for educators and students. Studies have demonstrated improved student achievement in the use and construction of knowledge for the reality (Merrill, 1991), the capability of students to administer learning; the capability to encourage success for students who experience problems to learning; and working on information that improves knowledge inquiry and its depth.

2.3.2.2 Challenges of Blended Learning

Blended learning like other newly implemented programs has challenges faced by the e-Government, department of education, institutions, educators and students in most institutions. Howie, et al. (2005) state that the challenge is to go beyond the mere exchange of information, but to transform e-Education into a range of learning activities that meet educational objectives. E-Education is about more than just developing computer literacy. Amongst the skills necessary are these: to apply e-learning skills, to access, analyse, evaluate, integrate, present and communicate information; to create knowledge and new information by adapting, applying, designing, inventing and authoring information; function in a knowledgeable society by using appropriate technology and mastering communication and collaborative skills (Palloff & Pratt, 2005).

Furthermore e-Education considers e-learning as a resource for institutional improvement in relation to management and administration; a resource for curriculum incorporation; a collaborative tool for educators and students communication; and a learning environment that promotes creativity, communication, collaboration and engagement (Jonasson, 1991).

All that glitters is apparently not gold (Kirschner & Selinger, 2003). Although most of the authors above have indicated the benefits of blended learning approach in teaching and learning, technologies implementation has problems in higher institutions according to

Cross and Adam (2007). These authors raise an issue about the implementation of technologies, that it is externally mandated by government policy and education authority declaration. As a result, because of inadequate consultation to outside research institutions, the technology is frequently never fully utilised to support and enhance teaching and learning to improve learning outcomes the way it is expected.

Blended learning like other newly implemented approaches faces new challenges on how to put it into practice effectively (Ross & Gage, 2005). Some institutions still adhere to a more face-to-face approach, whereas others adhere to a more e-learning approach and fail time management for blended learning courses. Hartman and Moskal (2004) indicate that most of the institutions find it difficult to successfully use the hours scheduled for blended learning such as to obtain all face-to-face contact time that blended learning courses left unused.

In most cases in face-to-face contact, students learn their EdTech modules using networked computers in the computer laboratory. Gachago (2006); Thomas (2006); Hartman and Moskal (2004) emphasise that blended learning courses do need relevant e-learning resources such as networked computers for the students to have the Internet access within the rooms used for seminars. Therefore, if there is an increase in the blended learning courses, there should be an increase in the e-learning resources but the challenge is that the increment may possibly go beyond what has been provided (Hartman & Moskal, 2004).

To overcome the above mentioned institutional challenges, some institutions group topics together according to the blended approaches, whereas others can meet for two weeks in a face-to-face approach and another two weeks will be delivered online or for a semester course meet face-to-face in two successive weeks monthly and another two weeks left for online learning (Hartman & Moskal, 2004). Young and Duhaney (2008) indicate that their full class attendance for the course was for eight weeks, and tasks including activities were given and submitted online. They scheduled time in such a way that their traditional face-to-face instruction was 60% whereas online was 40%. It may possibly

happen that these techniques be fairly suitable to create a well-organised use of classroom space to achieve the objectives of the institution.

Moreover all educational parties concerned should cooperatively schedule time effectively for blended course and use it successfully as much as it is considered (Hartman & Moskal, 2004; Thomas, 2006). Thomas (2006) indicates that according to Brown's (2002) rule, the total amount of time (100%) spent in face-to-face and the total amount of time (100%) spent online is lower to blended learning courses and that the best possible blends have to be between 90-10 and 10-90. Even though the solutions to the blended learning challenges have been indicated by the authors, Chen and Looi (2007) argue that designing and putting into practice the blended learning approach successfully is still a challenge facing institutions, course designers, researchers, authors and educators. Bonk and Graham (2005) argue that the challenge is greatly administered by context with a virtually extensive range of possible activities for positive outcomes. The challenge facing the education and training system is to create a learning culture that keeps pace with these changes, and equips students with the knowledge, skills, ideas and values needed for lifelong learning (Gachago, 2006, Loveless, 2003).

Most of the authors indicate that different blended courses have different ICTs skills and knowledge of application therefore, it is necessary for the students to acquire different skills for the use of different ICT tools, to learn EdTech modules successfully and use the tools professionally in the educational field. Our education system must create graduates who use information effectively and keep abreast with technological advances. Seldom is the present technology deeply incorporated in the institutions' functioning curriculum delivery due to lack of clear direction on how to incorporate technologies into the curriculum (Di Benedetto, 2005; Gachago, 2006; Guru & Percy, 2005; van Niekerk, 2009; Zhao & Bryant, 2006).

Moreover some authors specify that only the departments with several subdivisions of blended course are authorised for planning in their institution, but these departments usually do not discuss the issues of scheduling with other equivalent departments, and thus

they use the courses for their own benefit (Hartman & Moskal, 2004). They further emphasise that the challenging part is primarily a blended education course that shares seminar rooms with non-educational blended courses due to uncooperative planning system. Therefore to conquer this challenge they suggest a cooperative classroom space scheduling to give hope for the success.

Therefore Howie, et al. (2005) indicate that the burning issue in institutions currently is educational reorganisation as the institution's demand to access and incorporate technologies for transformation of teaching and learning culture. But Cross and Adam (2007) argue that it will not be easy to incorporate technologies effectively in higher institutions due to government policy that has mislaid link in many technologies planning. There is no clear indication on how to incorporate technologies in teaching and learning in higher institutions and what has to be done with technologies in future for the benefit of students (Loveless & Dore, 2002; Kirwood & Price 2005; 2006; Cross & Adam, 2007; 2008)

Overcoming challenges of technologies has not been the prime challenge of research institutions. At present attention has been focused on technology-enhanced learning in the hope that it may offer some solutions to the challenges of education in South Africa. The draft white paper on Education and Training (Department of Education, 1995) highlights the features of outcomes-based education, including developing problem-solving skills and providing a creative environment in which new technologies are unified to produce products of knowledge. In addition, the draft white paper states that the incorporation of technology into teaching and learning advances the country's ability to adopt new technologies, and to facilitate growth and development.

The challenges faced by the selected institution and technologies include improving and shaping a new way of study and processing of information with greatest ease whilst achieving profound results. The technologies principles such as scaffolding, critical thinking, high order thinking, and comprehension, may possibly guide students to improve their learning activities and change their learning styles if they are already ICT

literate. These principles reflect the theory of constructivism which the researcher is advocating.

Comprehension of information is also another challenge which faces ICT students and this is demonstrated well in the conjunction of constructivism and ICT. Constructivism and ICT place the student at the centre of the equation (student-centred); the idea being that the student constructs knowledge rather than passively absorbs it (Rieber, 1992). Rieber (1992) points out that meaning is constructed by the student, each in his or her own way. It is based on according to how the student's understanding is currently organised. An individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events (Vygotsky, 1978). Therefore, due to their differences in their learning and understanding it is not easy to assess them because they have to be assessed differently.

Both constructivism and ICT play a major role in teaching and learning, as students are able to solve complex problems and be able to understand the reasons or methods they use to reach their conclusions (Schwartz & Reisberg, 1991). This follows Bloom's Taxonomy in that it goes from simple leaning to the higher levels of critical thinking. As education is a process, and technology is dynamic, constructivism accommodates them both, advocating for improvement and transformation (Jonasson, 1991). This is a challenge yet to be met fully if ICT is to function effectively.

The Department of Education considers that developments in ICT create access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and bring lifelong learning (Pandor, 2004). Addressing all these issues mentioned herein also poses a challenge in the ICT setting especially in higher learning institutions. Thus, the use of ICT approach in this study will provide a critical understanding on how students reflect their full potential and understanding of the pedagogic practices in the teaching of educational technology in ways that will reflect on social reality (Wink, 2005; Smart & Cappel, 2006).

2.3.3 The use of educational technology in teaching and learning

Percival and Ellington, (1984) argue that one of the principles of educational technology is to encourage intelligent and productive application of systems, environmental tools, products, and strategies that can enhance human learning and competence. Educational technology also incorporates the idea of a systems approach to developing instruction. It is characterised by an orderly process for gathering and analysing collective and individual requirements, and also the ability to respond to identification training needs.

Educational Technology encompasses three aspects: hardware, software, and underware. Each of these aspects have principles interrelated to one another but their application is a little bit different (Percival & Ellington, 1984). Therefore there is no way of divorcing one from the other because together they complement each other and are only applicable as a unit. The same concept applies to technologies and EdTech; they cannot be divorced from each other.

EdTech is all about techniques and technical ways of teaching and learning, using audiovisual aids (Rowntree, 1982). Percival and Ellington, (1984) argue that for teaching and learning to be effective the audiovisual aids, methods, approaches and techniques are used to facilitate or aid learning. Therefore Technology of education (underware) is all about how to apply the audiovisual aids to improve the teaching and learning process. It is very important for the educators to be aware of this for the benefit of the target group. The educators will thus be in a position to know how to teach effectively; using appropriate approaches; catering for students' differences and applying well-organised theories, techniques and methods of teaching with appropriate technology tools (Percival & Ellington, 1984).

Hardware refers to all technical equipments that are tangible, for example, parts of a computer such as the mouse, keyboard, monitor, printer and CPU. Meanwhile, software is the instructions that drive a computer on what to do, for example, some instructions tell computer how to write, play games, draw, add or delete, show pictures and others not mentioned here (Percival & Ellington, 1984). The computer (an electronic device that is

used to store, retrieve, and process data) is a collective term which is inclusive of software and hardware. The primary function of the software is to support and coordinate the function of the hardware. Likewise educational technology possesses the potential of being referred to as a 'computer of education' because it is inclusive of ICT which is a broader way of understanding computer-systems.

Literature indicates that a computer system is an interactive educational technology and a two way communication system, for example computer system can communicate with students and their instructors differently, exchanging their views to develop fruitful teaching and learning. Lecturers can talk to students or students to students using chartrooms or bloggers, including e-mail as a highly effective means of communication in Technology in Education (Rieber, 1992). But in many cases the affordability factor does not allow students such a benefit, to use these important tools of educational technology.

Furthermore lecturers and students can use the slide projector or Overhead projectors and transparencies for presentations of summaries and important notes. The students can write down the important points during a lecture and they can also use the overhead projectors and transparencies to present their group work after their group discussion. But literature indicates that these educational technologies are non-interactive. In fact they promote one way communication in a classroom and that may affect students negatively by not participating successfully in their learning.

In most institutions these audiovisual aids are strictly used within the classroom. They are used in the 'face-to-face' method of teaching and learning, but if they are well-organised and used appropriately, they can benefit students. They engage learners into activities that prepare them to be good leaders and promote their competitive ability (Percival & Ellington, 1984). Slide projectors and Over Head Projectors share similar methods and techniques. Micro Computers and Computer programs can be used to meet almost all the teaching and learning needs of the educators and students at the institution in 24 hours (Percival & Ellington, 1984). They motivate and promote students' independent learning;

doing their assignments and sending them through the Internet to be marked as well as to get their feedback over the Internet (Rieber, 1992).

In an institution there are different technical materials used to enhance teaching and learning. These tools differ according to different vicinities. It is for the instructors to see to it that technology in their areas adheres to aspirations and ambitions of the national curriculum so that it should cater for the students' differences and needs and make learning interesting for students (Murphy & Greenwood, 1998).

It is crucial to understand what curriculum is if one is to understand how it connects with the technical materials. Curriculum is about content, methods of teaching and learning through the use of appropriate teaching and learning materials to achieve the required objectives (Howie et al., 2005). Most teaching or learning methods and strategies involve the use of some equipment. Some teaching methods may only include the use of a chalkboard and chalk while others may make use of a television or overhead projector.

Howie, et al. (2005) give an overview of the status quo of Information ICTs across 27 countries. They argue that there is an extent to which technologies are used in education systems and also its development over time. The differences in ICT-related practices existing within systems include; the impact of the technologies on educational organisations; processes and outcomes in different education systems; the innovative practices in technologies in education; the pedagogy associated with the effective use of technologies in the classroom, aims to provide educators and institutions with indicators towards effective classroom practice. Howie, et al. (2005) further indicate that curriculum, infrastructure, staff development, management and organisation were used to describe and compare ICT-related activities in education.

There is a two-way relationship between the curriculum and educational technology in that to some extent they each affect the other (Howie et al., 2005). Typically educators and other players in the education system determine what is to be taught and learned and then on this basis the methodology (including the educational technology) to be used is

selected. Howie, et al. (2005) emphasise that the technology used is determined by the intended curriculum. The role of the educators, the physical setting and the general pedagogical views of the educators and education system are likely to affect the technology used (Howie et al., 2005).

There have been transformations in the curriculum due to changes in technology in numerous cases. For example, technologies such as overhead projectors, videos and computers brought about new methods of learning and teaching which were not possible before (Percival & Ellington, 1984). This indicates how technology changes the curriculum methodologically. Transformation in education due to technology is affecting the content and objectives of the curriculum as well and the attitudes of the society (Howie et al., 2005). For instance, surfing the Internet to retrieve and access information rather than to memorise the information.

For teaching and learning to be effective the above mentioned audiovisual aids can be used to facilitate or aid learning. Therefore technology of education is about how to apply the audiovisual aids to improve teaching and learning process (Percival & Ellington, 1984). The educator's work load that they had in traditional teaching is reduced, and now they work as facilitators. This means that both educators and the students are benefiting.

Educational technologies have the capacity to bring other considerable benefits to teaching and learning. Benefits include an enhancement in learning styles such as presentations. Students can use PowerPoint to present their group work to help them to provide simulations of corporate situations, to also allow for flexibility and freedom in learning. Students learn more effectively if their learning environment offers adequate freedom of expression and the use of better technology and facilities.

Howie, et al. (2005) state that a crucial positive input that the use of technology can bring to university teaching and learning is that it encourages lecturers, educational designers and managers to know how learning takes place. The teaching and learning process

becomes conducive for and restricted to communication and information technologies that support collaborative learning. In turn, a technology that supports collaborative learning leads to self-confident students.

In the debate of the improved, flexible access to education that communications and information technologies can provide, a crucial issue is access to equipment such as the hardware, software and network infrastructure for institutions' community (Howie et al., 2005). Howie et al. (2005) argue that it becomes even more critical as more institutions develop courses online; provide library and other information services online (Palloff & Pratt, 2001). Palloff and Pratt (2001) recommend several practical methods and techniques on how to teach online, select appropriate technology, transfer content to the online environment, teach courses developed by others, and work with distance education students.

Levin and Chandler (2001) emphasise the importance of constructing online learning environments based on the principles of constructivism. In this way ICTs are seen to promote constructivism which has observable pedagogic value because it promotes students' autonomy and engages them in independent and collaborative work. There is no doubt that the pedagogical values which most academics and researchers in this study support are that of constructivism. But the major challenge faced by educators and students is that EdTech is rather unstable because it does not have a permanent position in the university system and, as a result, its achievements are not yet refined (Davis, 2009). Davis (2009) further indicates that in future, it will be helpful to make a decisions on the modules in which technology is successfully used.

2.4 THE RATIONALE FOR BLENDED LEARNING IN INSTITUTIONS

As explained earlier, it is essential to build up a systematic rationale in advance to use blended learning in institutions and classrooms and without the rationale; it is useless to provide blended learning in institutions. The lecturers should be aware that as

improvements in technologies occur, they will be able to achieve more of their goals (Howie, et al., 2005; Loveless, 2003; Thomas, 2006; van Niekerk, 2009).

University teaching and learning have become leaders in the incorporation of technologies in courseware design and development and Lesame (2005) identifies various reasons for this incorporation. The reasons include improving technologies access and just in time learning. Recently one of the vital internationally formulated policies is to incorporate technologies in education to enhance teaching and learning (Howie, et al., 2005).

South Africa has also initiated objectives that by 2013 all the institutions should have incorporated ICT policy. The policy states that every South African learner in general, higher education and training bands should be ICT capable, (use technologies confidently and creatively to help develop the skills and knowledge, to achieve personal goals and be full participants in the global community) by 2013 (Pandor, 2004). Pandor (2004) affirms that, the policy objective is to use technologies to improve and enhance educational skills across the curriculum. Cuckle, Clarke, Jenkins (2000) states that…

> ICT can be used across the curriculum to enhance student learning. For example students can improve the quality of their written work in any subject by using word processing which allows them to reflect on what they have written and make changes easily. Difficult concepts can be made simpler to understand when illustrated with animated graphics and computer simulations. Students can access high quality information more easily using CD ROMS and to some extend the internet.

ICT is viewed by some as the solution to many problems in education since the 1960s. According to Howie, et al. (2005), learning through the use of technologies contributes to making the instructors to be facilitators and it enhances the quality of their teaching while reducing their work load such as time spent on administrative issues. They further emphasise that time saved can be used by educators to improve the quality of contact time. The rationale for technologies in institutions concerns the educational output of the institution, and focuses on the needs of students: ICT literacy and support for their learning.

Over the years, technology has been developed to solve problems, improve living standards and to increase output. Therefore, it is reasonable that educational technology should be expected to develop with similar objectives (Percival & Ellington, 1984). Within the educational context these objectives indicate an increase in output and a part solution to the problems in teaching or learning programmes.

2.4.1 Educational Output

Educational output is difficult to calculate because it is difficult to estimate the value of educational outcomes. The output is largely the quantity and quality of learning demonstrated by students, or learning outcomes. Even so it is useful to consider the concept of educational output, particularly the effect that educational technology may have (Percival & Ellington, 1984).

The processes of education and learning can be considered to be a very complex system. The input to a given educational and learning system consists of people whose performance has been improved in a preferred way. The illustration, from Percival & Ellington (1984) below clarifies the researchers' point:

THE SYSTEM

INPUT		OUPUT
Target students;		Students whose
Human resources;	**Educational or learning Process (black box)**	performance has
Financial resources;		been improved in
Information		specific areas
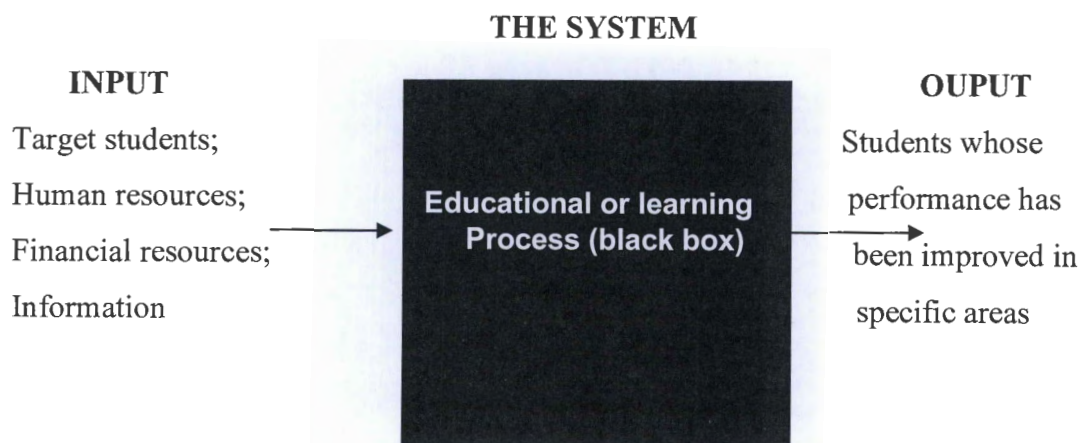
Figure 2.2

(Percival & Ellington, 1984)

The system in the diagram above indicates that the learning process is so complicated that it can be considered as an opaque 'black box' through which you cannot see

(Percival & Ellington, 1984). But a learning process should reveal its positive aspects by leaving its foot prints of effectiveness to educational technologists (Percival & Ellington, 1984). Fortunately through the research on the nature of the learning process, the problem found in the black box has been solved and the Educational technologies managed to makeup the input in such a way that it improves the output due to learning process effectiveness (Percival & Ellington, 1984). They argue that, this is a sort of a system approach whereby its main focus is on how people learn.

Educational technology should be worth what it means, that is, to support and improve educational outcomes. Therefore if the most suitable educational technology is selected, it should bring about students' enhancement, motivation, ease, hope or more success than expected in their learning. However, the use of most technologies is quite expensive to support prospective users as compared to observable outcomes (Lankshear & Snyder, 2000). Accordingly educational output should also be considered when deciding the suitable technology due to conditions that compel the use of certain technology to solve certain problems in teaching or learning (Lankshear & Snyder, 2000). If it happens that some of the desired objectives fail to be achieved due to lack of technology, there would be no observable outcomes in that case and therefore the output would be naught as well.

2.4.2 Educational Technology Improves Teaching and Learning

Basically computers are to be utilised to tackle problems which arise in the normal curriculum. If the computer is a problem-solving machine then it must be used to solve typical institution problems such as those concerning student learning, educator instruction, institution administration (Govender, 1997). Rowntree (1982) contends that Educational Technology should be selected on the basis that it has the best characteristics for the implementation of the curriculum. This requires: problems in the implementation of the curriculum; educators who know how to make use of technology effectively and educators and students who know how to operate technology (Rowntree, 1982). There are a number of potential sources of computer solvable problems in institutions and these include: learning activities which are difficult to perform in other ways and the needs of special groups of students (Howie, et al., 2005).

There are a lot of investigations that have to be done to provide a better understanding of why and how technology benefits the educational process (both teaching and learning). The body of evidence to date suggests that new technologies provide powerful vehicles for educational improvement (Kruger, 2008). With such concerns in mind, the aim of this study is to explore students' experiences of learning EdTech and to suggest changes – if necessary – to teaching and learning within the educational technology discipline taking into account the use of technologies that are available.

2.4.3 Technologies level of Literacy and support for learning within the institutions

Most educators went through a school system that did not offer technologies education. The researcher's concern is that before educators can be successful in implementing the life-skills programmes, the first thing to be done is to struggle with their own questions, doubts and prejudices about matters of ICT and policy. As available literature suggests:

> …reasons for the failure of ICT effectiveness, "While the White Paper emphasizes increased participation in higher education as a major policy goal, no reference is made about the use of ICTs as a possible resource to expand access. The strategies suggested in the White Paper only call for planned expansion as opposed to massification and do not prioritize the use of ICTs" (Kraak, 2000, p. 16). "An analysis of key policy documents on ICT, suggests that while ICT has received significant attention from the South African government at a number of policy levels and reflect general international trends, ICT policy in higher education does not have the same thrust"(Gillward, 2001, p. 177).

Cross and Adam (2007) assert that, while ICT educational policy in higher education is to improve educational practices, it seems that higher education in South Africa does not comply with the stipulated ICT policy due to unclear instructions. Cross and Adam (2007) further argue that the purpose of the White Paper is to improve educational strategies and promote quality learning, but it does not provide concrete instructions on technologies and its connection to higher education. The blended learning environment is one of the most important indicators that can accommodate and engage learners in distance learning. But Kirkwood and Price (2005) also note that effectiveness of learning achieved through technologies cannot be confirmed. The issue is that educational principles should give a guide not technologies (Kirkwood & Price, 2005; 2006; 2008).

Kirkwood and Price (2005) contend that, "Teaching and learning in higher education is unlikely to be improved simply by the application of a new technology." Similarly Bates (1995) claims that, up to date pedagogical delivery or practices may improve irrelevant application of technology, but technology in whatever way will never improve bad teaching, instead it deteriorate it. Kirkwood and Price (2005) believe that improvement in learning can be identified when the characteristics of technology, pedagogic blueprint, the environment within which learning takes place, student characteristics, experiences, and students' knowledge with the technologies are involved. Therefore it is important to bring together technologies with pedagogy to improve their educational experiences (Kirkwood & Price 2005; Wall, Ahmed & Smit, 2006).

2.5 RECENT FINDINGS OF STUDIES ON BLENDED LEARNING AND TECHNOLOGIES IN AREAS OF TEACHING AND LEARNING

Several studies (for example, Balanskat, et al., 2006; Dix, 2007; Jones, et al., 2007; Panangalage & Pasgual, 2008; Penfold & Pang, 2008; Young & Duhaney, 2008) have been conducted on blended learning and technologies used in teaching and learning in higher education mostly by academics in Western and Eastern countries. Very few have been conducted in African countries (Aladejana, 2008; Gachago, 2008; Kruger, 2008; Thomas, 2006). The focus of these studies was the use of blended learning and technologies in teaching and learning in higher education, in both full-time and part-time education context.

Western Countries Perspectives

Balanskat, et al.'s (2006) focus is on ICT impact in European institutions. Whenever students are motivated to learn, it means they have a positive attitude to learn, listen more attentively during lessons and are involved in the learning activities. ICT cannot impact positively on students and learning on its own, but rather a pedagogical approach should be considered and purposely exploited.

In their study it is proposed that each use of ICT requires a relevant pedagogical approach such as collaborative learning to improve learning. However, some studies and literature indicate that collaboration between students is not yet adequately used. The crucial research finding as per Balanskat, et al. (2006) is that, "ICT impacts most in e-mature schools and with e-confident educators, suggesting that once the foundations are laid the benefits will be considerable. The challenge is therefore to enable all educators and schools to reach e-maturity."

Balanskat, et al. (2006) indicate the research methods to disclose the impact of ICT on two main approaches used to identify impact on a larger scale. They indicate that according to the United Kingdom approach; attesting the causal relationship between ICT and improved learning outcome in national tests (measurable systemic indicators) can be ambiguous as it implies inferring a causal relationship between ICT and student attainment. The Nordic impact approach focuses on the perception of educators and students but it might happen that other factors left behind provide better learning outcomes in national tests. Therefore separating the variable impact on other aspects is problematic in education.

Dix (2007) argues that the use of ICT is recently a fundamental aspect of students' learning within and outside the classroom. The purpose of Dix's (2007) study was to investigate longitudinal change in school climate through its influence on students and teachers. It was a survey assessing the impact of ICT on student attitudinal outcomes (teaching practice and learning outcomes) as it has been a burning issue among government policy makers, managers, educators and academics at large. The data collection method used was online questionnaires suitable for follow up supervision. All educators and students from six metropolitan public primary and secondary schools in South Australia participated in the study over the period of three years of the study. The main analytical strategies employed in the study were structural equation modelling and hierarchical linear modelling in order to develop models to assess the influence of potential student, educator, and school factors on student attitudinal outcomes in a climate of change. The finding suggests that the improved use of ICT in learning is

effective to students' computer attitudes in South Australian schools. Findings from this study also indicate that a positive self-esteem has a positive effect on school attitude, and it is developed by positive attitude towards computers. Dix (2007) emphasises students' self-esteem and their attitudes towards computers:

> Students' self-esteem and their attitudes towards computers are found to improve significantly in an increasingly ICT-rich learning environment. However, as computers became the norm rather than a perceived highlight in daily school life, the influence of technology on students' attitudes towards school becomes less important (Dix, 2007, p.xix).

Dix argues that incorporation of ICT in schools develops noteworthy changes in teaching practice and improves students' confidence. For successful ICT incorporation into the curriculum, educators require a computer with the Internet access for themselves with at least few computers within the classroom for their students, in addition to presentation software and data show facilities. Computers located within the classroom impact on student's motivation, Trucano (2005) highlights that,

> Placing computers in classrooms enables much greater use of ICTs for 'higher order' skills than placing computers in separate computer laboratories (indeed, fewer computers in classrooms may enable even more use than greater numbers of computers located in separate computer labs).

Teacher training should adhere to aspirations and needs of school educators when developing their ICT knowledge, skills and confidence (Dix, 2007; Gachago, 2008; Howie, et al., 2005; Balanskat, et al., 2006; van Niekerk, 2009). The application of regular ICT tasks like files management and surfing the Internet by educators in the lower classes are important, while additional importance is advanced administrative tasks for higher institution educators. Conversely, educators' designed utilisation of ICT in their facilitation does not meet their needs for having ICT-rich teaching practice. According to Trucano (2005), ICTs use differs according to different school subjects and:

> Uses of ICTs for simulations and modelling in science and math have been shown to be effective, as have word processing and communication software (e-mail) in the development of student language and communication skills.

Panangalage and Pasgual's (2008) study highlights the impact of ICT on learning and teaching in secondary schools in Sri Lanka and assesses the use of modern ICT in schools. Their research revealed that there was no exact correlation between the computer

practice of students and their perceived impact of ICT on learning. There are statistically-significant and positively-related students' and educators' attitudes to their perceived impact toward the usage of ICT for learning and teaching purposes. Conversely, the correlation between ICT skills and their perceived impact of ICT on learning was comparatively more considerable for students than educators.

The interventions made by the government on training are irrelevant to the perceived impact of educator's ICT. Besides that, research found that there was a mismatch between the ICT infrastructure found in schools and students' learning since the ICT infrastructure did not contribute towards the learning skills of students. Trucano's (2005) claims that there might be a mismatch involving the techniques applied to determine consequences and the nature of the learning encouraged by particular ICT uses in several studies. Some studies focused merely on developments in traditional approach practices rather than new approach practices and awareness related to the ICTs use.

It might be that further constructive analyses of the impact of ICT can simply emerge when the techniques applied to determine achievement and results are closely connected to the active learning and practices supported by the ICTs use. Therefore Panangalage & Pasgual (2008) recommend that an inclusive majority of evidence emerging from diverse perspectives is required to notify policy makers and find ways to explore unpredicted results. However, to get data that increases the validity and reliability of the body of evidence, mixed-mode methods should be employed such as quantitative and qualitative (Panangalage & Pasgual, 2008).

The major relevance of Balanskat, et al.'s (2006), Dix's (2007), Panangalage and Pasgual's (2008) studies to this study is the incorporation of ICT in teaching and learning for active and successful learning. The common difference of these studies to my study is that they are surveys and their participants were educators and students from different schools, and their studies used statistical measures to collect data, except for Balanskat, et al. (2006) who used measurable systemic indicators and Nordic impact approach. This

study simply wants to understand where the problems students' actually encountered lay, be they remoteness, geographical factors, lack of ICTs?

The current studies have contributed considerably to the field of educational innovation. Key aspects in the field of policy making are to develop and maintain the transformation process and supervision of change related to ICT use. Pedagogical practices plus ICT are part of a new education context for critical thinking, higher order thinking collaborative and independent learning skills and should be part of the curriculum to improve professional development of educators such as training for ICT incorporation to support lifelong learning of educators. Educators' high quality digital content, motivation and support services are essential and highly valued in this respect in institutions. According to the findings of the above cited studies, ICT impacts most on e-developed institutions. Therefore policy makers should develop ICT related programs that will improve and assist the majority of institutions to attain this position.

Jones, et al.'s (2007) case study sought to explore blended learning innovations on Business School students enrolled on the final stage of their Masters degree, at the University of Glamorgan in United Kingdom (UK). The major objective of the study was to provide information on innovative pedagogical practices and technologies used in blended learning, to assist postgraduate Business School students for the improvement and achievement of their quality dissertations.

The findings reveal that full-time students had access to dissertation support in blended learning platform provided through a range of courseware, learning styles, lecture notes sent on the web, methods, techniques and all learning materials accessible in the CMS via the virtual learning environment (VLE) to assist them construct their dissertations successfully and submit them online. However, part-time students had access to dissertation support as well, but most of the time they did independent learning through the Internet, e-mails, or via an announcement on the VLE in relation to system and type of lessons, and student's appropriate choice of the system.

The authors indicate that the targeted innovation was to improve student's learning experience, and disseminate improved, reasonable and reliable learning experiences for students globally in spite of vicinity. They further emphasise that proof for innovation was given on how the dissertation was proposed, managed and developed using the blended learning approach, and this as well can be used as a guideline that may possibly build the strong foundation for a far-reaching university approach to postgraduate dissertation support.

There are similarities between Jones, et al.'s (2007) study and this study in terms of its methodology and participants. Both are cases of postgraduate students in the final stage of their Masters degrees using blended learning approach to learn their modules. The difference is that their focus is on Business School whereas the focus of this study is on EdTech.

Young and Duhaney (2008) conducted a survey on Hybrid Learning and the Principles of Good Practice in Undergraduate Education. The objective of the study was to explore students' perceptions and experiences of blended learning in the Business Department in a private university in south-eastern United States. About 150 of 1000 participants were surveyed. The findings revealed that students appreciated the use of blended learning to have improved their learning. This is in light of Cuckle, Clarke & Jenkins' (2000) study that students using computers for the first time use it to learn how to use it, that is why the EdTech students considered it useful enough to be appreciated tool for their learning. Thus competence with computers at beginning of the EdTech training compelled the students for more personal use than classroom application, Murphy and Greenwood's (1998) study in support to Cuckle, et al.'s (2000) idea, assert that students without prior experience of access to computers, have that encouragement to use it personally, and this is the major indicator of computer incompetence.

Students indicate that blended learning played a vital role in their learning with respect to authentic learning, learning flexibility, content accessibility, collaborative learning, active learning, cooperative learning, autonomous learning and time management including peer

assessment made online and immediate feedback. The blended learning is seen to be a platform of multi-pedagogical approaches and technologies for students' freedom of choice on what to learn, when to learn and where to learn (learning in 3Ws). The results also showed that technologies have improved student-technology, student-student, student-instructor and student-content interactions. They further indicate that these social interactions improve learning by giving students the opportunity to share their own views, ask questions and forming a learning community. In addition blended learning through e-learning tools allows them to submit their assignments, research work and also get immediate feedback.

Young and Duhaney's (2008) study is related to this study in that its focus was on perceptions and experiences of the students using blended learning to learn. The difference is that students use blended learning in Business studies not to learn EdTech modules. Another difference is that their study is a survey of 150 students, thus the participants were surveyed using a quantitative data collection whereas this study was a case of twenty four EdTech postgraduate students and used qualitative forms of data collection.

These studies from western countries, especially United Kingdom, have connections with South Africa and its status in the world. America has been chosen because of its membership in the United Nations and due to the rapid growth of technologies economy within the country. Most of the western countries are technologically developed and these technologies can be used to attend to the changing demands within the institution of higher education services to national and global markets. Another crucial reason is that it is a global calling to improve education to meet the growing demand in higher institutions therefore South Africa is not alone on the issue.

Eastern Countries Perspectives

The study by Penfold and Pang (2008) on blended learning techniques used in a hospitality and tourism management course at the School of Hotel and Tourism Management, Hong Kong Polytechnic University was explored how one hospitality

course was transformed into student-centred, blended learning using independent and group learning methods to engage and motivate students, and to evaluate the success or otherwise of this approach. The study adopted a quantitative approach and surveyed 180 students both part-time and full-time, using questionnaires on their experiences and perceptions of the transformed course. The study is guided by the social constructivist learning approach. The findings revealed that students appreciated the blended learning approach. They claimed that a blended learning environment exposed them to a variety of techniques, technologies and activities for active learning.

The part-time students in particular showed their satisfaction with active learning techniques to have reduced and coped with the problems they experienced in their studies before. They were able to collaborate and interact with peers online and appreciated the way they submitted their group work online to be appropriate to their learning styles. Furthermore, some of the students who had experienced e-learning before were used to it and it seemed boring to them, thus they supported the face-to-face learning approaches more than using e-learning tools. They were more inspired and attracted to blended tutorial activities and interactive techniques to their learning such as more face-to-face interactive group discussions or problem-based learning activities that promote their learning, role play exercises and oral presentations that are supportive for them to backup their knowledge of the subject-matter. They were also attracted to more games that make their lessons more attention-grabbing.

As per findings, blended learning with a variety of active learning approaches in a course benefited both the full-time and part-time students by providing more improved learning flexibility and accessibility to course content. Penfold and Pang (2008) indicate that blended learning has a learning platform for e-learning group projects with peer assessment using collaborative e-learning tools such as LMS and WebCT, and emphasise that it assisted them with the process and provided both assessment as well as an extensive learning experience. They further indicate that instant feedback can improve students' learning process.

The study by Penfold and Pang (2008) is related to this study in that its focus is on perceptions and experiences of the students using blended learning to learn their course modules. The participants were a blend of full-time and part-time students and the study is guided by the social constructivist learning approach. The difference is that Penfold and Pang's study is a survey, thus180 students participated in study, using a quantitative form of data collection whereas this study is a qualitative case of twenty EdTech postgraduate students. Another difference is that the students used blended learning approach to learn hospitality and tourism management course modules not EdTech modules.

The reason why Hong Kong was chosen is that it is developed and produces a lot of the technological equipment. Therefore it is important to know how students in that country use the relevant new technologies in blended learning approach and pedagogical practices to learn EdTech modules, besides that not only the developing countries that are struggling with the use of new technologies. Thus developing countries like South Africa can learn from these countries on how to tackle similar problems encountered when implementing the blended learning approach.

The general issue for international perspective

The use of blended learning and technologies may possibly assist South African higher institutions accomplish competitive improvement in international markets. Thus these western countries have been chosen to understand how South Africa participates progressively in competitive overseas markets for its education balance.

Literature on all the studies conducted in the international countries stresses the importance that each use of technologies needs a pedagogical approach to improve learning. Alternatively it has been confirmed by the overpowering body of evidence that most of the educators are unable to use new pedagogical practices up until now. Educators are not confident enough to apply new approaches when using technologies in teaching. The majority of educators are struggling to the point of desperation to use technologies on improving current pedagogical practices. Current pedagogy uses

technologies in isolation and for project based teaching in a more highly improved way; therefore it is subject-centred not student-centred. Collaboration between students is not yet satisfactorily practiced and this might be due to subject-centred pedagogical approach used by the educators. Literature also shows that ICT has an impact on majority of schools that have reached e-maturity including e-competent and e-confident educators and poses challenges for the educators who are supposed to incorporate ICT into teaching and learning.

Literature further indicates that the blended learning approach with new technologies and pedagogical practices has eliminated students' and educators' negative attitude towards ICT use in some institutions. It has, instead, developed students' autonomous learning, flexibility, collaborative learning and accessibility of content, and thus reduced educators' workload such as assessment. Students submit their assignments online for peer-assessment whereas educators' work is to facilitate and moderate their work.

African Perspective

Aladejana (2008) conducted a survey and experimental study on assessment of blended learning and improved Biology teaching in the Nigerian Secondary Schools. The objective of the study was to assess the teacher-trainees and their educators' technologies basic skills and find out if there is any change in the performance of students who learn in the traditional face-to-face environment as compared to those who learn in the blended learning context. Statistical data for the study was collected from 312 teacher-trainees and 75 educators through questionnaires and pre and post-test control group design. The findings reveal the use of blended learning to be appropriate to learning as it has noticeably improved the performance of students as compared to students in the traditional face-to-face context. The students participated fruitfully in collaborative learning, group discussions and technologies-aided learning. But in some cases both the students and their educators still lack ICT skills even though they were able to do basics like logging on computers and using spreadsheet to type their work. Aladejana (2008) argues that this might be due to Nigeria being a developing country that is running short of technologies and technological innovations.

Aladejana's (2008) study is similar to this study in that its focus is on improvements that can be made by blended learning to benefit students and transform the way they learn. The differences are that the study is a survey dealing with Biology students whereas this study is case study dealing with EdTech students that learn EdTech modules.

Gachago's, (2008) study on assessment of the potential of e-learning in developing lifelong learning skills of Adult Education Masters Degree students at the University of Botswana, was conducted to understand how students can apply these skills in their studies, workplace, at home and in their community lives, guided by Walter's horizontal dimension of lifelong learning (1999). The author conducted in-depth interviews with seven mature full-time combined with part-time students. Questionnaires were administered to the same group of students as well as the observation of documents and narrative form of qualitative data collection.

The findings of this study show that most of the students appreciated the benefits of the blended learning approach that allow for social interaction and support. Thus students were successfully engaged in collaborative learning and concentrated more on group work and shared experiences; interacting with peer members, sharing ideas to solve problems together realistically. Moore, et al. (2006) argue that students are required to interact time and again and remain enthusiastically involved in their learning. They did not only learn cooperatively, but were also exposed to the concept of lifelong learning skills such as acquisition of skills for their community, discussion and presentation skills, time management skills, self-directed independent learning skills, ICT skills, research skills, student-centred learning skills developed by high quality resource access and learning flexibility.

In general students felt the skills acquired through the blended learning approach were of benefit to them throughout their lives. They also showed their satisfaction of exposure to new technologies and new skills acquired from the blended learning platform that can be used in their workplace with advanced techniques to make well-organised work.

In support, Graham (2005); Thames Valley University (2006) emphasises that blended learning is resourceful because it incorporates enhanced learning experiences into university-based courses such as flexibility, access to technologies, autonomous and self-managed learning options due to its setting. Moreover blended e-learning is the significant approach when coupled with pedagogical principles such as active learning, student-student learning, students' autonomous learning (student-centred) for the improvement of lifelong learning skills (Burgess, 2008; Graham, 2004; 2005; 2006; Wall, et al., 2006; Zhou, et al., 2007).

Students expressed their views on how blended e-learning improved their ICT skills and literacy in their everyday life and how it changed their negative attitude towards the use of technologies. Gachago (2008) argues that although the findings reveal that the above mentioned skills are very much valued by students and used on regular bases, they are still ICT-semi-literate as compared to Western countries students due to lack of access to technologies at their homes and in some cases at their workplace.

The similarities between Gachago's (2008) study and this study are the following: Gachago's study is a case study, participants are seven mature full-time students combined with part-time students. He used interviews, questionnaires, observations and narrative forms of qualitative data and its focus was on potential of blended learning approach in improving learning of their modules. The difference is that Gachago's study is guided by Walter's (1999) horizontal dimension of lifelong learning and the participants are not EdTech students and their course is also different.

Nigeria and Botswana are chosen as examples of the developing countries in Africa, particularly as the countries which may possibly have laid a strong foundation on their education for students to acquire survival skills. These countries are working to understand blended learning innovations in their education systems and South Africa should keep abreast with them as a country within the same continent.

South African Perspective

Kruger (2008) studied on linkages between emotional intelligence and the ability to cope with mastering new educational technologies (EdTechs). The study consists of ten 2004 participants in the Partner@work programme at the Department of Telematic Education at Tshane University of Technology. It is a case study encompassing mixed method approach, that is, the use of both qualitative and quantitative data, in order to get in-depth understanding of how participants cope with the mastering of new educational technologies in blended learning environment.

The study employed an interpretivist approach for studying the experiences, emotions and coping strategies of the participants, and constructivists grounded theory approach for analysing and interpreting the data. The findings reveal that most of the participants have mastered new educational technologies using blended learning. They apparently experienced less stress and coped effectively with particular technologies in the blended learning environment. They expressed their knowledge and ability to deal with the situation in terms of high self-esteem, self-efficiency, self-paced, self-confidence and successful independent study. They have acquired meta-cognitive high thinking skills in creatively using different ways to solve the problems, and reasoning power skills in suggesting alternative ways of supporting the Partner@work programme and reasoning about the soundness of using a particular technology. They developed a strong resourceful collaboration and interactions with peers, content and educators. Thus they perceived e-learning resources in blended learning platform as user-friendly with extra positive outcomes.

Thomas's (2006) study on experiences of post-graduate students in using blended learning in a first-year Economics class at the University of Free State (UFS), was undertaken to understand how students experience the use of blended learning in their class and to address the challenges, improving the learning experiences of Economics first-year students in ever-increasing class size by facilitating interactions via the use of e-learning. The study was a case study guided by grounded theory in an interpretivist

paradigm. Qualitative data was collected from 648 participants using focus group interviews, questionnaires and observations.

The findings reveal that students generally prefer a blended learning approach that allows them to access LMS to the pure traditional face-to-face approaches because they enjoy making use of the LMS and pointed out that it supplements their learning experiences. In addition, this learning environment like blended learning within moodle provides students with additional choice of learning experience (Burgees, 2008). They knew how to make sense of the content and apply their knowledge and skills they acquired in real life. They furthermore claimed that they enjoyed collaborating with their peers and appreciated the feedback that they received from both tutors and peers as it assisted them to improve their knowledge of content. Bonk and Graham (2004) point out that the blended learning platform improved accessibility, flexibility in learning and cost efficiency.

Issues such as the quizzes and class notes inspire students to know more therefore they learn persistently to acquire lifelong learning skills and use well-organised methods that support intervention (Gachago, 2008). Thus these issues positively allied to the pedagogical value of the LMS within teaching and learning field. Burgees (2008) also indicates that the blended learning approach gave students access to high quality technologies that brought about pedagogic changes to their module for maintenance of an extensive improvement of skills. Bonk and Graham (2004, p. 7) and Graham (2005, p. 8) emphasise that, "one of the most commonly cited reasons for blending is more effective pedagogical practices." Furthermore, blended e-learning has pedagogical aspects coupled with the learning principles such as the use of multimedia that have possibilities of learning practices and activities that give students the opportunity to use the notions in real life (Smart & Cappel, 2006).

Kruger's (2008) and Thomas' (2006) studies are related to this study in that they both are case studies, using the same instruments for data collection, guided by the interpritivist paradigm, and Kruger's study supports the theory (social constructivism and the

principles) used. The focus of Kruger's study is on experiences of students, how they use the blended learning approach to learn new EdTech. Kruger's study is slightly different to this study in that the participants were not EdTech students but from the Partner@work programme. Thomas's study is similar to this study in that it focused on experiences of students using blended learning approach to learn their course modules. The difference arises on the course and the participants (first year Economics class), and another difference is that his study used grounded theory.

The reasons for selecting these studies is that they are within the South African context, and they help to understand how they use these new technologies and blended learning contextually under a similar educational system. Therefore it is important to know whether the educational rhythm or process of KwaZulu-Natal Province on implementation of blended learning is the same as other Provinces in context. Context is the most important issue because educational systems differ according to the contexts.

Overall Discussion

All the above mentioned studies conducted in South Africa and internationally from 2006 to 2008 propose that technologies play an important role in the transformation of education and training. Technologies can enhance educational restructuring by enabling educators and students shift from traditional practices to appropriate pedagogical practices. In a transformed learning situation, there is a shift from teacher-centred to student-centred education, whereby students work as a team, group or collaboratively to share ideas, engage in significant situations and promote creative thinking and problem-solving skills. But a difference between Western and South African counties in relation to pedagogical approach is that the majority of the Western societies, advocate for new pedagogical practices that are more subject-centred rather than student-centred practiced in South African context.

According to the literature that the researcher read, a gap she identified was that although some researchers have conducted this kind of study, there is no one has explicitly linked blended learning to EdTech students and the modules learned in relation to all the sources

visited. The researcher thus felt very interested and challenged to take an adventure of exploring the probable postgraduate students' experiences in using blended learning to learn EdTech modules.

2.6 CONCLUSION

The initiatives and problems mentioned in this chapter demonstrate that there is a need for a study to explore how blended learning approach and EdTech relates to ICT and that there has to be a theoretical framework that regulates ICT use in institutions of higher learning.

As noted, Chapter 1 introduced all chapters and key issues such as blended learning approach used in the higher education institutions to learn EdTech modules; its value being to improve students' access and to enhance the quality of teaching and learning regardless of place. In Chapter 2, the review of the literature reveals benefits, challenges and problems that were experienced through the processes of implementing blended learning in the course. The use of blended learning can support and encourage universities to address the problems and challenges of the information society with changing demands for education and knowledge. The next chapter explains the conceptual and theoretical frameworks within which this study was conducted.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

Every theory is a self-fulfilling prophecy that orders experience into the framework it provides (Ruth Hubbard, 2009, p.1).

3.1 INTRODUCTION

The previous chapter interrogated literature related to Blended learning in higher education institutions. This chapter goes on to identify and explain the conceptual and theoretical frameworks for this study. The major concern of this chapter is to make it clear that beyond the delivery of content, we need to take into account interaction and activity, the learning contexts, and the social and cultural frameworks that our education is calling for. Therefore, this chapter describes the theory and a model used to analyse findings in Chapter 6 and to understand learning within the context of blended learning and Educational Technology. Eventually a conceptual model was presented to frame this study.

3.2 CONCEPTUAL FRAMEWORK

In order to make sense of the data collected and to be able to answer the research questions, a conceptual framework is needed. A conceptual framework implies the identification and explanation of the major concepts, which form the basis of the study. Thus, this study is founded on four related major concepts which are: Learning, E-learning, Instructor-led learning and Blended learning.

3.2.1 Learning

Before one tries to understand the concept of Blended Learning, there is a need to understand the concept of learning first. Learning is a social change in behaviour in terms of the way one speaks and/or does things. It can also refer to knowledge gained through

reading and studying. This kind of knowledge is gained through the use of the different learning styles, strategies, techniques and methods of delivery. The illustration below represents the components of blended learning and how they bring about learning.

Learning Concept Design
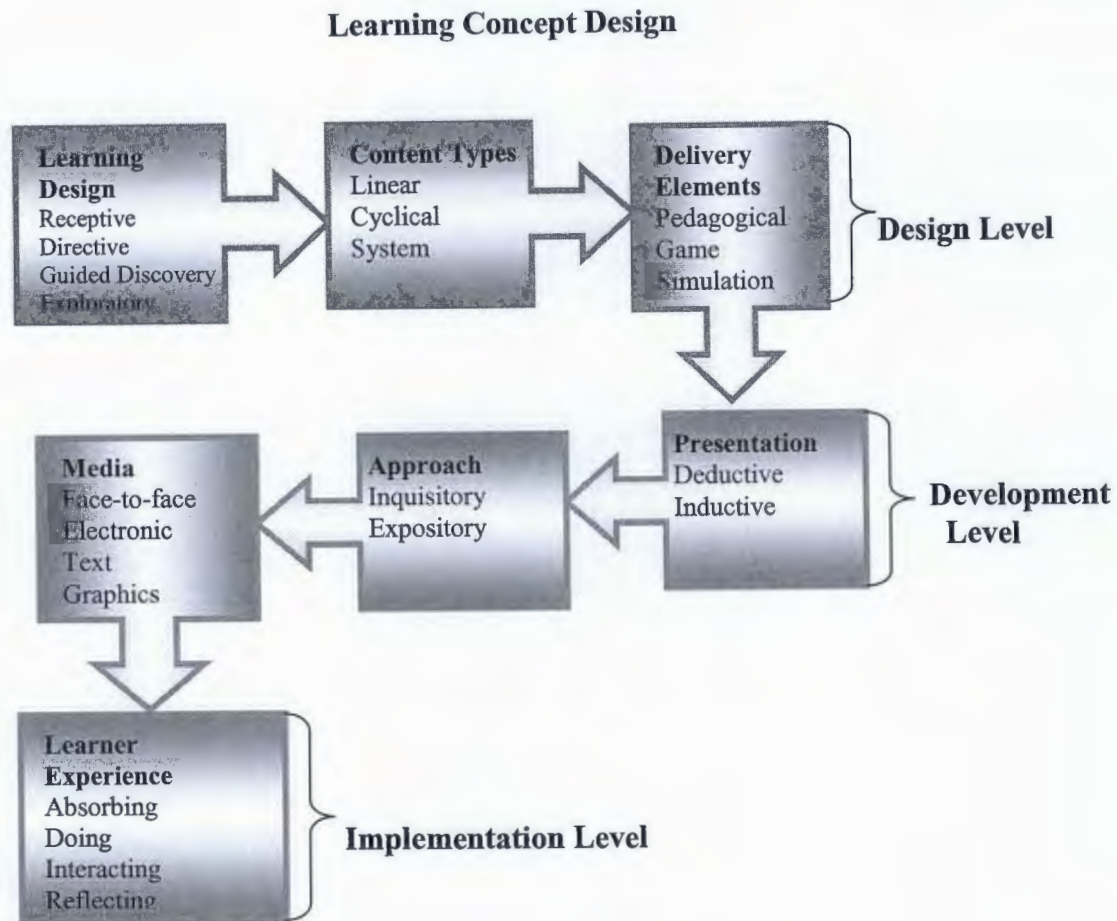
Figure 3.1 (Clark, 2009: Learning concept design modified)

Clark's (2009) learning structure is divided into three major levels; design level, development level and implementation level and each level has subtopics with categories. The learning design level can be summarised as such:

Learning Design Architecture determines the depth of the learning and this in turn has four categories:

> **Receptive:** absorbing information,

> **Directive:** frequent responses coupled with feedback (behavioural roots),

> **Guided Discovery:** active constructive process mediated by problem solving and

> **Exploratory:** finding and processing information.

Content Types describe directional *flow* of the content. *Linear content* is presented with one event or step following the next. It is perhaps the most widely used type of all as it provides a solid background (and it is simple to build). *Cyclical content* addresses physical memory; that is, learning by doing such as typing. While linear content is more or less academic, in that it helps to describe a task; cyclical content goes beyond this to actually learning a skill. *System content* deals with compound connections. Below is how Clark's (2009) content types can be applied pedagogically, for instance, when learning via e-learning resources like a computer:

> **Linear:** Putting on a computer by plugging it on, logging in, and accessing information from the Internet, etc.

> **Cyclical:** Students use a keyboard to type their work on a computer, but having them actually learn by doing is cyclical in that it has to be done physically.

> **System:** Using a computer in a real situation, typing following the Microsoft Word format such as spacing, paragraphing, font size, font style, and navigating and manoeuvring the Internet, interacting socially, etc.

Delivery Elements determine the interface. Clark (2009) argues that, normally, the most successful educational experiences are built on three delivery elements: simulation, game, and pedagogical. Pedagogical or didactic elements ensure that the student's time is productive. Game interactions provide familiar and entertaining interactions, while simulation elements provide reality. Referring to the typing example again, this is how delivery elements work:

> **Pedagogical:** testing students on Microsoft Word format when typing (basic skills).

> **Game:** Using puzzles, jumbled words or sentences games to teach students how to link words, construct sentences and paragraphs.

> **Simulation:** simulated typing or Microsoft Word course.

The Development level encompasses three categories:

- **Media** – defines how the program will be delivered
- **Approach** – defines how the learner will search through the content
- **Presentation** – defines the starting point or abstraction.

There are two main methods for presenting instructional content in the development level:

> **Deductive:** having students work from general information to examples
> **Inductive:** giving students examples to abstract

In addition, there are two main techniques for assisting students to learn:

> **Inquisitory:** having students find examples or general information
> **Expository:** explicitly giving examples and general information

There are four major media (channels or technology), and thus four main learning approaches to cater for students' differences in the blended learning platform.

> **Face-to-face,**
> **Electronic,**
> **Text, and**
> **graphics**

The implementation level consists of only one aspect, which is learner experience. This aspect determines the means by which the student learns. The following four constructions are subcategories of the implementation level and they assist students to learn by various experiences:

> **Absorbing** – read, hear, feel
> **Doing** – activity
> **Interacting** – socialize

> ➤ **Reflecting** – discuss on what they have read, heard, felt and activities done, their success or failure, and what to do next.

When put together, all the above design considerations have to develop a type of media, such as web, classroom, text, combination (blended learning). Thus, when constructing a learning programme, the design assists educators to think of an extensive learning framework and of the context that will support it rather than simply pushing the content (subject matter) to students (Clark, 2009).

The reason why the above mentioned learning concept design has been used in this study is that most of its components together build strong learning pillars of the blended learning platform. Based on this learning concept design and its categories, it was easy to observe how students learn in their learning context.

The last part of the design (implementation level) allows the students to reflect on how, when and whatever they learn in EdTech discipline. Their reflections can be in group discussion during the individual and focus group discussion, revealing their learning experiences, understanding them and finding solution to the problems encountered.

When students are engaged practically, they first apply their prior knowledge and they slowly transform from what they already know to something new reflecting conceptual change. This transformation occurs very gradually, and depends on the social practices of the practical work of society. It might be through the use of categories mentioned above such as delivery elements in the design level and media. Only over a long period of time and through extended conversations with their colleagues do they do practical works and shape theories that are distinct from their commonsense roots (Potter, 1998; Clark, 2009).

Collaboration processes can transform prior knowledge into refined concepts that can be applied consistently. Practical knowledge is a refined end product in that prior knowledge is improved and advanced to new knowledge that suits current social life, which allows social interaction through the use of modern tools (Dillenbourg, 2008). Therefore, new

knowledge is prior knowledge being restructured to be used in the structure that encompasses the social conversation norms that exist within societal practices. The way learners make their interpretations in most cases supports prior knowledge and question educator's views. Therefore, there is a need to view learning not as assimilation of knowledge, but as conceptual change.

Learning as conceptual change implies that, over time, learners accomplish a paradigm shift in their basic assumptions about the natural world, and the accompanying ways they see, conceive, and talk about the world. Conceptual change is a process of transformation of ordinary ways of perceiving, directing attention, conceptualising, reasoning, and justifying ideas. Consequently, slowly learners transform prior knowledge to accommodate new practical ideas (Tuncer, 2007). Educational experiments that work with prior knowledge have realised considerable success in providing and supporting conceptual change. Therefore to overcome the irony of continuity, we should study success, see prior knowledge as providing building blocks, look for learning as long-term transformation knowledge into larger, more systematically coordinated wholes (Tuncer, 2006).

According to Tuncer (2006), a significant learning concept for social constructivists is scaffolding, which guides the learner from the known to the unknown. Scaffolding enables students to execute problem solving technology skills that they cannot perform on their own and deal with tasks beyond their understanding. Scaffolding thus bridges the gaps in students' learning and as such is an effective mode of student's support in social constructivist learning.

3.2.2 E-learning Concept

Electronic-Learning has been used mostly in developed countries for a significant number of years. The development of the Internet has greatly contributed to the immense improvement of e-learning in recent years to enhance their learning, mostly due to better understanding of the e-learning concept. A brief overview is presented as an introduction below.

In the 1960s, immediately after computers were pioneered, educationists acknowledged the educational potential of computers. Initial computer-based training was merely on computerising quite easy concepts of learning and teaching. Nonetheless, the first panel of computer-based training technologists can be divided into two groups: the engineers (applied scientists) and highly developed investigators (social scientists). It was the applied scientists that concentrated much on automating the implicit concepts of learning and teaching. But as time passed, they improved their tools as well, by incorporating the complex educational constructs. Nevertheless, e-learning costs were a primary barrier to the pervasive use of computer-based training.

At first, the innovations of computer-based training were made by designers and researchers in relation to use of minicomputers, personal computers and laptops in teaching and learning. These technological improvements brought about learning potential and enhanced the technological assisted learning process. Ever since the tools improved and personal computers flourished, expenditures were logically examined and improved. Present educational process possibly introduced potential multimedia and refined initiatory traits. These computer-based trainings are differentiated by compelling educational content and common sense (Namahn, year unknown).

Introducing E-learning

E-learning is a term extensively used in universities and business and, just like most concepts, is differently defined by different authors. To get a clear picture of e-learning, it is very important to present a number of definitions of terms associated with the e-learning concept as has been done in Chapter 2. But in this study, e-learning should not be confused with blended learning as some authors termed 'blended learning' as 'blended e-learning' (Thomas, 2006).

Numerous authors such as Chew, Jones and Blackey (2006), Chew, Jones and Turner (2007; 2008), Thomas (2006) provide evidence of how the realistic and possible accessibility by technologies are being defined and used by universities and their

community (staff and students). All the cited definitions are appropriate to this study due to e-learning related terminologies used.

This study does not construct a definition of its own; instead it uses the most appropriate terms throughout the study such as online learning, web-based training, technology based training and computer based training or instruction, pedagogical learning, delivery via technologies and human resource support emerging from the definitions visited. One can say e-learning means pedagogical learning and delivery via technologies and human resource support.

3.2.3 E-learning opposed to Traditional-face-to-face instruction

E-learning, in most cases, is judged against traditional face-to-face instruction or instructor-led instruction. An effective comparison can be easily made through benefits and weaknesses of the two (Ellis, 2001; Chen & Looi, 2007). To get an in-depth understanding of these two approaches, it is important to examine each of them with consciousness and find out how both approaches have been used in the EdTech discipline and how best both can be blended.

Traditional-face-to-face instruction / Instructor led training

According to Thomas (2006), and Namahn (year unknown), in traditional-face-to-face training, an instructor is at the centre of learning, the standard blueprint being that of an educator in front of a big number of students in a seminar room. This approach has successfully been used at some point in the past, and thus is definitely not becoming outmoded. However, Namahn (year unknown) indicates that currently there are advanced automated learning situations that question the use of the instructor-led training based on the problems mentioned below:

• Instructor-led training has the power to enable interactions between the instructor and the students, and between students. But in case of part-time students, it is costly and time-consuming to attend such tutorials. Due to and the increasingly costly life that we live today, such costs can be minimised by using online learning resources, only to meet face-to-face at certain times.

• Traditional classroom-training for both large and small classes requires an instructor, and infrastructure. In cases of big classes, the traditional instructor-led training is not an efficient approach. Even with infrastructure and an educator at hand, the traditional training methods require planning of resources and infrastructure. It is often difficult, and it may be impossible to set up *ad hoc* training when the training needs are there.

• Instructor-led training does not accommodate instructors since at some point or the other instructors might be off their jobs. In some cases, there are no additional human resources required to replace students attending the instructor-led training. This might put instructors' jobs at risk.

Based on the above mentioned hindrances, one can conclude that in comparison, e-learning is better than instructor-led training, because of the latter's extra costs (Hameed, et al., 2008). An example of this is of the full time students in some cases who have to leave their homes due to distance and stay close to the institution. Blending instructor-led training with e-learning compensates for the weaknesses of both approaches. E-learning allows students to acquire skills used in real life situation through hands-on activities and their engagement with computers and the Internet (Hameed, et al., 2008). It enhances peers to collaborate, be assessed online and to get immediate feedback. In fact, if ever the intention of e-learning could be merely the cost reduction, thus the outcomes of e-learning might be comparatively pointless (Namahn, year unknown).

As per the literature, students learning in an e-learning environment progress in high speed than those in an instructor-led context (Hameed, *et al*, 2007). Even if the students in instructor-led instructions are skilful, their speed ranges lower than that of students learning in e-learning (Namahn, year unknown). Moreover, students in e-learning contexts, due to learning flexibility, are free to ask and respond to as many questions as possible, even those who would shy away in the traditional classroom (Hameed, *et al*, 2008); Nutt, 2009; Unwin, 2008).

3.3 Blended learning Concept

This section presents a short overview of blended learning, presenting positive and negative views on these concepts as per different authors, in relation to pedagogical practices such as instructor-led learning, students' autonomous learning and online scaffolding.

3.3.1 What is blended learning?

Blended learning has been alternatively referred to as mixed mode learning, e-learning, the Internet virtual learning, flexible learning (Graham, 2005; Smith, 2004), synchronous and asynchronous learning (Ellis, 2001; Gulc, 2006), web-based learning and hybrid learning (Garnham & Kaleta, 2002; Young & Duhaney, 2008). All these conceptualisations are similar it is the matter of terminology, and sometimes interpretations. These terminologies are therefore used interchangeably throughout this study.

'Blended learning' or 'hybrid learning,' which refers to the equal use of two separate learning concepts such as e-learning and traditional instruction, without reducing time spent in an instructor-led seminar, is widely used in UK universities (Chew, Jones & Turner, 2008; Garnham & Kaleta, 2002; Oakridge, year unknown). In this case, the activist delivery method (e-learning) works in conjunction with the conformist (traditional). As such, in the EdTech discipline, students may be using the Internet-based multimedia e-learning program in combination with normal classes.

In distance learning, students can pursue courses from well-organised reading materials, encompassing the Internet-based conversations and other online educational methods and meeting for face-to-face seminars scheduled for vacations (Oakridge, year unknown). Thus both educators and students can benefit a lot from the hybrid learning platform social interactions in the blending of synchronous and asynchronous methods.

Therefore, blended learning implies combining components such as pedagogic processes (student-centred with teacher-centred learning), techniques of learning (individual with

cooperative learning, self-directed with instructor-led learning, receptive with explorative learning or passive with inquiry-based learning), theories of learning (cognitivism, behaviourism, constructivism and others) and related technologies (like computers, the Internet, video, TV, printed texts like textbooks and others) (Oakridge, year unknown; Procter, 2003; Zhou, et al., 2007).

According to St. Clair (2008) the concepts distance and blended learning are, in most cases, used synonymously with online training or tutorials delivered via the Internet. Many authors refer to e-learning as electronic learning, although it refers particularly to computer-based instruction, of late to the Internet-based instruction (Nutt, 2009; Oakridge, year unknown; St. Clair, 2008; Tulloch, 2000). In fact, it is the foremost delivery means used in EdTech course and the contemporary society at large. Although Oakridge (year unknown) views e-learning as referring specifically to computers and the Internet, there are other educational technologies such as overhead projectors, slideshows, audio-tape resources, video cameras. Alas, resources at the core of traditional face-to-face education such as printed texts and exercise books are a neglected and underrated element of blended learning (Oakridge, year unknown).

Even if e-learning does not incorporate some of the educational resources, they are still considered as the possible components of the blended learning approach. Likewise, e-learning resources other than human resources are excluded in several blended learning solutions (Oakridge, year unknown). It does not mean the human element of a blended learning collection can only be technologically advanced. Therefore, communication with people in blended learning solutions is usually disseminated via real-time, blogspot, chatroom and e-mail, but these electronically mediated interactions usually reduce the tones of verbal communication and exchange of ideas present in face-to-face conversation (Hameed, et al., 2008). Nonetheless, the plausible remedy is to reinstate the tones through educators' contact with students over the phone.

Since educators have always blended materials when teaching, it can be argued that blended learning is not a recent concept as might be misconceived; rather, it is only a

matter of a new name. In the past, institutions using blended learning made use of less-developed electronic learning tools such as radio lessons. Such a traditional training environment was guided by social constructivist practices such as self-directed learning, interaction between educators and students, among students as well as between students and content (including take home tasks done in groups, pairs and individually). However, content structuring, class activities, social interactions and students' support were strictly under the educators' management (Clark, 1999; Hameed, et al., 2008; Oakridge, year unknown).

Chew, et al. (2006) and Oakridge (year unknown) reiterate the idea that blended learning may possibly be not new, as educators have always been using it. This view is further strengthened by the fact that many authors prefer to use the term hybrid learning or blended resource instruction to depict such related ideas. Thus, the notion implies mixing of instruction and/or assistive mechanisms, learning modes, resource designs, various technologies and various proficiencies into a learning puddle.

Summarily, blended learning is essentially a blend of instruction and learning techniques, resource designs, technologies and proficiencies together with learning theories' guiding principles. It has played a huge role in fundamentally renewing traditional face-to-face learning concepts.

3.3.2 How Blended Learning Improves E-Learning

Blended learning does not necessarily make the learning process easier than traditional classroom training. Many scholars consider e-learning to be unfriendly, as it may be appropriate for students who are motivated to learn and have a very high potent independent learning drive (Hameed, et al., 2008; McConnell, et al., 2002). Indeed, a lot of students experience problems in self-governing learning as they have no chance to know their learning performance and progress (Jones, Simonetti & Vielhaber-Hermon, 2000). However, in the case of blended learning, the self-governing learning improvement is supported.

Blended learning can be highly successful ongoing learning, especially if students get e-support from e-educators, e-facilitators, e-supervisors and mediators in whatever learning situation (Chew, et al., 2006; Salmon, 2002; 2003; 2004). If blended learning supports only e-learning with more instructor-led training, the use of e-learning resources tends to be reduced. Thus, it might not be easy for some students to engage in noteworthy and creative work within an e-learning platform (Jones, et al., 2000; Trapp, 2006). But if high quality e-support services via e-moderation are presented, there might be no necessity for instructor-led seminars in most cases. However, these can be arranged for students and their educators on the initial day or week of the course training as a welcoming and motivation (Salmon, 2002; 2003; 2004; Trapp, 2006). Besides that, e-support services can support students in virtual learning, motivate them to learn, help them to work collaboratively; solve problems together and assist them with technical problems (Chew, et al., 2006; Jones, 2006; Maslow, 1943; Salmon, 2002; 2003; 2004; Trapp, 2006).

Stille-support services for students in remote areas are crucial for students' feeling of belonging, happiness, and better learning performance and achievement (Chew, et al., 2006; Jones, 2006; Maslow, 1943; Salmon, 2002; 2003; 2004). One can therefore say that online learning has been overrated than traditional face-to-face learning in blended learning whereas they might actually be of equal value.

3.3.3 How Blended Learning Empowers Students and Educators

From traditional face-to-face classroom training, blended learning benefits through the educator's support and choice of pertinent content, social interactions, student and educators' discussion. At the same time, from e-learning, it benefits from the components of autonomous, self-efficacy, directed, governing and paced learning (Unwin, 2008; Nutt, 2009). Because of the learning flexibility and content accessibility, anytime and everywhere, students have the opportunity and freedom of choice to learn (Unwin, 2008). Another benefit is the opportunity of the virtual groups formed to use the virtual environment or LMS (Badenhorst & de Beer, 2004; Shemla & Nachmias, 2006; Unwin, 2008).

According to Badenhorst & de Beer (2004), individual educators and professors are finding the LMS invaluable and easy to use for blended instruction within the classroom. However, the course's computerised learning environment (CLE) usability standards, navigational flexibility, and design principles for hypertextual learning environments (Balcytiene, 1999).

3.3.4 Blended Learning Concepts Overview

A blended set of courses with a variety of technologies has the efficacy to motivate worker output than only instructor-led seminars (Walmsley 2003, Nutt, 2009). There is no way that learning process can be separated from current learning and online learning as that may possibly lead to teacher-centred learning dominance, and thus neglect the student's learning independence, denying their learning responsibility at the same time. Teacher-centred learning caters for students who choose to acquire knowledge and skills passively, rather than the active, flexible and self-confident students who necessitate problem-based learning. This happens in most institutions that cater for more traditional face-to-face learning (Conrad, 2004; Precel, et al., 2009).

In some cases, particularly in the EdTech modules, such as IT, students may possibly use the computers as their training device within a traditional context. Thus the presence of the educator throughout the instruction may turn down this type of training to be e-learning, even if it can be fully delivered online via chatrooms, bloggers, communication boards or e-mail, it is a lone training process, and it cannot be acknowledged as blended learning either (Oakridge, year unknown). This means that students should engage in e-learning activities without the educator's presence in this context.

The straight forward blended learning may be the blend of the instructor-led instruction and online training practices using relevant devices such as the online interactions performed through the most refined online interactive boards (Smartboard, E-board or Whiteboard) (Oakridge, year unknown; Unwin, 2008).

Well-organised and fruitful learning usually takes place when students are deeply dedicated, involved and engaged in the learning process. They can be compelled by project-based and inquiry learning methods to be engaged due to their thought provoking technique of learning (Entwistle, 2003a&b; Trapp, 2006). Incredibly, Internet-based course instructions have been built on task-based investigations – their layout is that of a book with permanent sequence, but it is not easy to read academic text from a digital presentation due to its complex course-plotting (Eshet-Alkalai & Geri, 2007; Trapp, 2006). This could be one of the reasons why the course textbook is offered to students both in digital and print structures for students' opportunity, flexibility and freedom of choice for their preferred style of learning for each or part module (Eshet & Geri, 2007; 2009).

In the case of the part-time students, current studies reveal that working groups respect their working hours and do not learn during those hours. The same thing applies to online learning courses as workouts are done, in most cases, after working hours, or during free time, (Trapp, 2006). However, according to Donoghue, Singh and Singh (2002), working part-time students using e-learning will recruit more employees learning online while at work. The most significant issue is that students, managers and universities are aware that, by blending work and study, in-depth learning and a reflective level of knowledge and skills occurs and thus students will more successfully apply their knowledge. If this is the case students will enjoy their studies as well as their jobs.

In the light of current research, students who have been exposed to online learning mostly prefer a text course and spend quite more time on other learning styles such as role play exercises, oral presentations and face-to-face interactive group discussions rather than online (Penfold & Pang, 2008). This can strongly be interpreted as a serious sort of set-back for e-based training courses, which do not seem to provide significant added value as compared to textbooks.

Thus, the e-based training courses should be designed in such a way that they allow students' access with ease or at least have similar high-quality and easily navigable

aspects to that of textbooks (Eshet-Alkalai & Geri, 2007; Spencer, 2006; 2009). Searching for the information from one web page to another for the whole day instead of quickly going through textbook pages looking for important points can be a waste of time. Ackerman (2009) condemns e-based courses as pedagogically valueless, more awkward and low level as compared to reading a textbook. On the contrary, Guri-Rosenblit (2005) indicates the importance of blended learning by explaining how videoconferencing or instruction by the course designers incorporated in the e-learning context, are said to solve the above-evidenced problems.

In blended learning, students should be a focal point in the instruction and learning process. Thus, educator support mechanisms and the use of relevant technologies are fundamental issues for the successful delivery of instruction in this mode (Young & Duhaney, 2008).

3.3.5 Blended Learning and Change Management

As already alluded to, there are some compelling arguments on the failure of the introduction of e-learning in many institutions over the years. The blended learning approach is argued to solve the following setbacks: lack of pedagogical practices that support e-learning (Andrews & Haythornthwaite, 2007; Bonk & Graham, 2006; Eshet, 2007; Graham, 2006), lack of support like the one experienced by students in traditional face-to-face learning contexts (Blass & Davis, 2003; Hameed, et al., 2007); high expectations on students' self-inspiration and independent-learning skills (Salmon, 2002; 2003); lack of technologies skills (Eshet-Alkalai & Amichai-Hamburger, 2004; Eshet, 2007), lack of social interactions and direct feedback (Bates & Khasawneh, 2007; Blass & Davis, 2003; Coates, 2006; Kurtz & Amichai-Hamburger, 2008) and finally, no monitoring of entry requirements in e-learning (Trapp, 2006). This is an indication that both the traditional face-to-face learning and e-learning approaches have serious weaknesses when being used without the other.

The introduction of blended learning is a change process that has to be explicitly designed and directed. The success in institutions which managed to introduce blended

learning productively is due to transformed methods of training that were accepted and actively supported, like the one gained from Salmon's (2002) e-moderating and e-tivities model. Usually part-time students have to be set in a special way if they are to be blended with students on full-time learning processes. To create an atmosphere conducive to learning at the institution, a well-organised and effective weekend seminars have to be attended to by both parties to collaborate with peers, educators and other academics invited to bring ideas together and gain competence and knowledge from others who are knowledgeable on certain issues (Dangel & Matthews, 2008; de Beer and Mason, 2009; Gulc, 2006; Jones, Skinner & Blackey, 2007); Schümmer & Schmolitzky, 2008).

The institutional culture has to achieve a state in which individual knowledge and competence is used in daily learning processes, work and life at large. In case of the part-time students, if there is consensus on objectives and achievements for learning set up between educators and students, the latter have to manage time effectively for them to study (Thomas, 2006). They have to shift their study time and seminar practices into their relaxation time.

Like has been said in the debate earlier, some of the institutions using blended e-learning concepts fail to use it effectively, as their blended learning practice is sometimes more of traditional face-to-face. Whereas others are still engaged more in the e-learning approach, it does not mean traditional face-to-face has been totally replaced; some of its elements if not all are blended with e-learning elements, thus traces of traditional training elements are still at hand (Trapp, 2006). This is normal as transformation takes time. Besides that, the issues are weighed in on transformed administration to identify those that are worth keeping due to their benefits.

Blended learning can work advantageously if it can be well-implemented and successfully handled, and used taking notice of any successful training technique implemented earlier. Individual e-students need technical support just like what is offered to students in instructor-led seminar (Trapp, 2006).

The e-learning practice has to be attended, examined and gradually enhanced. Thus both educators and students may benefit if the notion of blended learning is rooted in the pedagogical training process and Salmon's (2004) blended learning model as well as students' support gained in Vygotsky's (1978) ZPD. It is then that competence and educational output of the institution will be improved and thus improved enrolment as well in higher educational institutions.

3.4 THEORETICAL FRAMEWORK

There are several authors who present valuable information on blended learning models in the educational system and these include Salmon (2004), Chew, et al. (2006), Littlejohn and Pegler (2007), Allan (2007), and Garrison and Vaughan (2008). The learning theory supporting this study is aligned to the theories of Vygotsky (1978). The popularity of blended learning brought about the variety of its definitions, models and debates thereof. In higher education, there is neither standard nor simple framework to scaffold blended learning for all disciplines (Thomas, 2006).

The different processes of blended learning are often modified according to diverse individual's needs and necessities. There are numerous techniques and models of blended learning in relation to particular contexts. But this study concentrated particularly on Salmon's (2004) e-learning model. The reason for choosing this model is that it advocates for blended learning basically as the blend of two noteworthy worlds such as education and educational technology (Chew, et al., 2006; Chew, et al., 2007; 2008). Thus to get the gist and clarity on effectiveness of blended learning and its acknowledged authors, the easiest way is to revisit their models and learning theory emphasised.

3.4.1 An Overview of Vygotsky's Theory

Social constructivism falls under a collection of cognitive constructivism that emphasises the collaborative nature of much learning (Jonassen 1991; Gredler, 1997). Social constructivism was founded by post-revolutionary Soviet psychologist, Lev Vygotsky in 1978. Vygotsky was a cognitivist, but did not admit the supposition made by other

cognitivists that it was possible to separate learning from its social context. He argued that all cognitive aspects are part and parcel of social constructivism and have to be described as products of social interactions. He further argued that learning is not merely the assimilation and accommodation of new knowledge by students; it is the process by which students were incorporated into a knowledge community.

The social constructivist general idea as per Vygotsky (1978) is that knowledge is a human product that is socially and culturally constructed. Thus social constructivism highlights the issue of constructing knowledge based on knowledge of what is taking place in society in relation to culture and context (Billet, 2002; Derry, 1999; Duffy & Jonassen 1991; Ernest, 1999; Gredler, 1997; McMahon, 1997). Students interact with peers and the environment they live in to construct their own knowledge by creating meaning out of their interactions, whereas the educators' role is to facilitate the learners rather than being sources of knowledge (Yilmaz, 2008). Moreover, it is important for students to interact with more well-informed community members globally to acquire social skills and understand how to apply them in real life learning experiences (Eadie, 2001).

Social constructivists view learning as a social process that encourages students to engage in social activities, such as collaborative learning and metacognitive practices, for sound learning to take place (McMahon, 1997 Swan, 2001). Thus, students are also encouraged to present their group work (Azevedo, 2002; Cuevas, Fiore et al., 2002; Tuncer, 2006). Neo, et al. (2005) explains that social constructivists views learning as social, collaborative practices and problem-solving of practical and real tasks in real life. They further emphasise that this learning approach allows for students' self-governing learning and involvement in learning activities. Thus, this research was based on social constructivist learning theory, focusing on its guidance to explore students' experiences towards a real active learning context, such as LMS in blended learning, as explained earlier (Thomas, 2006).

3.4.2 Social Constructivism in Context

Within the current educational context, constructivism, blended learning, technologies and pedagogy play a prominent part. Constructivism is an applied learning theory, which explains how people learn to learn and the nature of knowledge. Constructivism owes its key concepts to John Dewey and these concepts are supported by new research in cognitive psychology.

The term constructivism is an umbrella term referring to certain theories of learning such as cognitive, cultural, critical, radical, moderate, social constructivism and others not mentioned here (Vygotsky, 1978; Jonassen, 1994; Atherton, 2010). Constructivism particularly social constructivism, refers to the idea that students construct knowledge and meaning for themselves (Swan, 2004a, 2004b). This is one of the reasons why this study is founded on social constructivism since, as a qualitative study, it had to deal with students in their learning environment, how they interacted with their environment and each other and learned EdTech modules using blended learning.

According to Vygotsky (1978), the following are some guiding principles of constructivist thinking that must be kept in mind when considering educator and student roles. But only the first three principles of this theory have been elaborated to highlight the readers on how they enhance learning.

3.4.3 Vygotsky's (1978) Principles of Social Constructivism
- Learning in multiple perspectives and presentations
- Learning as an active process
- Collaboration in the learning process
- Learning situations, environments, tools, skills, content and tasks are relevant, realistic, and authentic and represent the natural complexities of the 'real world' and
- The Zone of Proximal Development.

Multiple perspectives

Multiple perspectives and presentation styles give students opportunities to effectively use various blended learning tools such as LMS in the planning, development, or presentation of their projects. Students also learn to accommodate multiple perspectives on an issue. According to Gredler (1997), there are four common perspectives within a framework of social constructivism that enlighten educators on how learning can be facilitated and one of these perspectives is cognitive tools perspective that focuses on the cognitive learning practices and skills. It allows students to participate in social learning activities that engage them in project-based learning (Gredler, 1997). Thus students are offered multiple techniques to tackle their assignments projects. Project-Based Learning is a teaching and learning strategy that engages students in complex activities as it comprises multiple phases. Students are provided with examples of multiple learning contexts as options if they do not have their own. Therefore, explanation of multiple learning contexts offer students' different ways to solve the problems encountered. Getting comments through presentation and discussion gives students an opportunity to rework their projects.

Learning as an active process

Social constructivism views learning as an active process in which the learners use their senses to construct meaning from their environment; they interact with the world to learn (McMahon, 1997). This means that learners do not passively wait for the educators to pour information and understanding in their heads as would be advocated for, for example, by behaviourists.

Active learning implies students engaging in hands-on activities whereby they manipulate learning tools relevant to the ones used in life (Burgess, 2008; Graham, 2006; Zhou, et al., 2007), getting first hand information themselves. Active learning is thus less conceptual, but more concrete and this is the case in blended-enhanced learning as it supports students differences, as they have freedom of choice in their learning and allows them to learn at their own pace (Palloff & Pratt 2001).

Authentic Learning

Learning situations should reflect realistic authentic and 'real world' complexities. This principle encourages lifelong learning, with genuine goals, aims, objectives, problems encountered and activities applicable in real life (Burgess, 2008; Gachago, 2008). Students engaging in authentic real-world tasks are responsible for their learning, have choices and are provided with chances to participate in real-world tasks that are meaningful for them (Yilmaz, 2008). Communicating with the world outside the learning context, via the Internet or collaboration might also make real world connections with community members and educators (Eadie, 2001).

Collaboration in the learning process

The social constructivist context focuses greatly on collaboration among students. The reason why collaboration contributes to learning is that it exposes students to alternative viewpoints. Students learn about learning not only from themselves, but also from their colleagues and effectively provide thoughtful comments to others (Jackson, Karp, Patrick & Thrower, 2006).

Students may do individual projects, but the context supports them helping and teaching one another rather than hindering, competing and ignoring others as student researchers. Rather they use "diverse resources available in the groups to deepen understanding sharpen judgement and extend knowledge" (McConnell, 1994, p. 13). Moreover, students can catch up techniques and methods from one another and also acquire collaborative learning skills (Johnson, Johnson & Smith, 1991; 1998; 2006; 2007), such as group decision-making, critical thinking, problem solving, interdependence and social communication skills. Collaborative learning is thus an effective and noteworthy style of social learning, which suggests joint goals (Chan, 1995; Damon, 1984; Johnson, et al., 2005; Salmon, 2003; 2004; Vygotsky, 1978).

Collaborative learning is at the heart of Vygotsky's (1978) social constructivist theory and it gives students an opportunity to get comments from colleagues and also from the educator, whose role is of a facilitator. Thus it is noteworthy for the educators to structure

students' collaborative environment by preparing authentic tasks that require collaboration to encourage social interactions exceeding what is intended for by the educators. As an example, students can break into manageable working groups in relation to project-based learning, and may do investigations on topics of their own choice. Therefore, they are held accountable for exploring the topic and then presenting their findings to colleagues.

The major feature of collaborative learning is the process of interactions, such as peer-peer, student-educator, educator-student, and student-content structured and supported by the educator (Thomas, 2006). Discussions can be improved by the presentation of explicit concepts, problems, solutions or settings guided by well directed inquiries, preambles and explanation of concepts and information, and references to previously learned material.

When designing thought provoking tasks for collaborative learning, educators should be able to differentiate collaborative learning from cooperative learning (Larsen & Hole, 2009; Thomas, 2006). The illustration below clarifies the point.
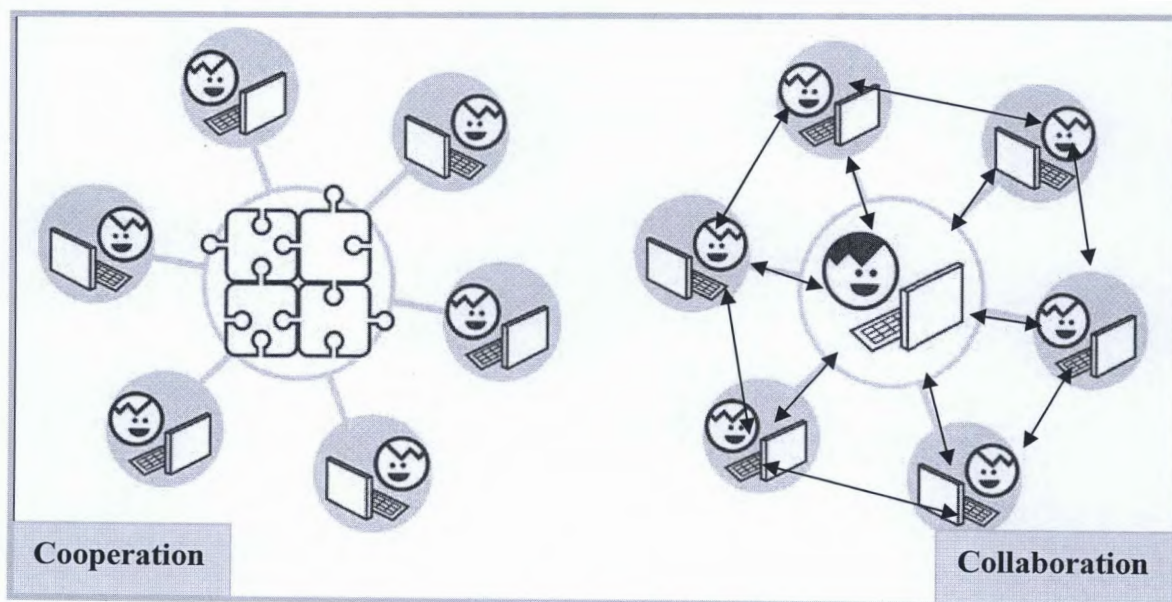
Figure 3.2 (Adopted from Larsen & Hole, 2009, p. 1)

Figure 3.1 shows that, on one hand, cooperative learning is experienced by students when they solve small tasks, such as a jig-saw puzzles or magic squares, jointly. On the other hand, in collaborative learning students are given authentic tasks where they have to share knowledge and come to consensus towards the same goal, then present their work. Within this context, they discuss, and construct new knowledge that may help them to develop their understanding (Taylor, Marienau & Fiddler, 2000; Salmon, 2004; Johnson *et al*, 2005; Larsen & Hole, 2009).

Lichtenberg (2009, p. 1) indicates that," Some theories are good for nothing except to be argued about". The weakness of social constructivism is that, it allows the learners with more flexibility in their learning whereby they learn on their own way, pace and space. In this case, it is not easy to assess the learners learning in different directions to what has been intended for by the teachers, besides that it is time consuming (Schuman, 1996). When it comes to cooperative and collaborative learning as cited above, few learners' views are likely to dominate the group's conclusions by having been compelled to agree to their dominators' brilliant consensus (Hirsch, 2001). Moreover learners should have prior knowledge to the topic to construct the new knowledge. Thus without prior knowledge, it won't be easy for the learners to cope with new knowledge.

But Hirsch (2001) asserts that group dominance can happen co-incidentally as it is not the policy of social constructivism. Its policy is to empower learners, thus empowered students are confident and competent thinkers, well-informed of principles governing the institution and forms of communication. Therefore, they are able to learn fruitfully due to their involvement in school cultural activities (Kathryn, 1998). Kathryn (1998) further contends that in interactive power associations, none of the individuals has power on top of others; it is not constant since it is produced in the interactions amongst the group members.

However, to overcome the above mentioned weaknesses, the most significant social constructivist author supporting Vygotsky (1978) has been Salmon (2004). Her model shows stages of becoming an e-student clarifying the educator's role and accountability

to meet student's needs and to develop their learning process. In the initial stage, there are two concepts, access and motivation, meaning that students should be inspired to learn, and thus they have to be socialised in the virtual environment (VET), and they are able to initiate discussion with others. This allows for knowledge construction and development of competences (Larsen & Hole, 2009).

3.5 Overview of learning theory with blended learning Models

As alluded to above, Vygotsky's (1978) learning theory is supported by Salmon's (2004) e-Moderation Model which is relevant to blended learning. Vygotsky (1978) contemplates social and cultural aspects in cognitive educational culture. For this reason, his idea is increasingly adopted as guidance for classroom practice. Vygotsky (1978) considers social interactions to be crucial to students' knowledge construction development. This is the reason why the e-moderating courses acknowledge the social constructivist approach and its social interaction as a crucial pedagogic aspect (Anderson, 2006; Jones & Peachey, 2005; Laurillard, 2002). These interactions encompass student-instructor (community inquiry), student-student (paced collaborative learning), student-content refers to student's independent study (search and retrieval, tutorials, simulations and games, virtual environments and e-Books), teacher-content (structured learning resources), peers, family and professional support (Aldrich, 2009; Burgess, 2008; Potter, 1998; Thomas, 2006). The illustration in Figure 3.2 below summarises the social interactions:
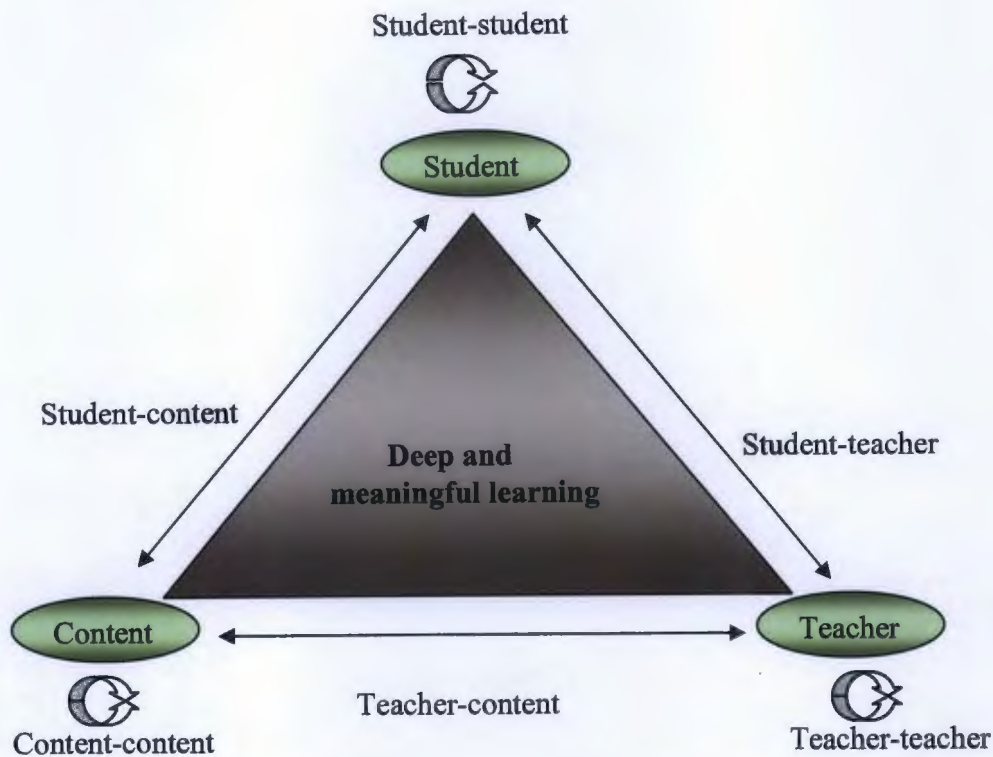
Figure 3.3 (Anderson, 2002, Channels of Interaction modified).

The channels of interaction involve pedagogical and cultural procedures that engage students in school, at home, and in the community (Potter, 1998; Vygotsky, 1978). Thus, Vygotsky (1978) hypothesises this as Cultural-Historical Theory due to incorporation of historical and mental processes into theory of human being awareness. This social and cultural construction of knowledge is under a big umbrella of Vygotsky's social constructivist theory.

The Zone of Proximal Development (ZPD) is one of Vygotsky's phases of complexity of tasks for students to grasp on their own but can reasonably be known with support from a well-informed educator, proficient classmates or even associates. Vygotsky's (1978) viewpoint is that students' actual learning improvement takes place if they can have support from experts. He indicates that the major key principle of ZDP is that, a high quality of students' philosophy and learning improvement is gained through assistance of well-informed educator rather than learning independently. He was aware that ZDP caters for students differences to develop new skills and concepts. He emphasizes that there is

communication. Within this interaction, the discussing colleagues work together and try to find out what has been said so as to come to consensus and it is important that the members, via the social learning process, share their skills and knowledge, and bring about meaning to it (Schweizer, Paechter & Weidenmann, 2003). According to Vygotsky (1978) and Swan (2004), learning is socially enacted in nature and thus knowledge is socially constructed via interactions, whereas Damon (1984) and Salmon (2000) indicate that peer teamwork is of great value for acquisition of knowledge and basic skills in the learning process.

3. 6 Critical Review of the Blended Learning Model based on Vygotsky's theory.

The use of the above mentioned models by the educators may be appropriate to be a support system when teaching students from known (Student's current achievement) to unknown concepts (beyond their acquired knowledge and skills) in ZPD (Dirckinck-Holmfeld, 2002; Karagiorgi & Symeon, 2005; Chew, et al., 2006; Tuncer, 2007; Atherton, 2010). Below is an illustration of ZPD:
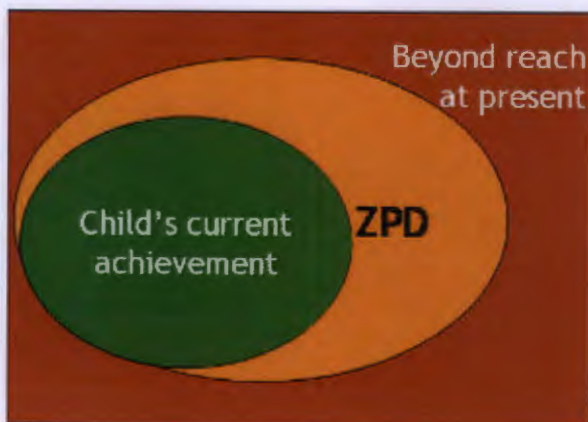
Figure 3.4 (This ZPD presentation, adopted from Atherton, 2010)

Referring to Figure 3.3, the most important issue is to inspire students to study well ahead of their knowledge, and it is the educators' crucial facilitating process that promotes and motivates students to get to the higher level of ZPD or self-actualisation (Maslow, 1943; Salmon, 2003; Vygotsky, 1978;). In few points, Vygotsky highlights the students' social interactions with the professionals' and skilful peers' support in students' ZPD. Martinez-

no understanding, knowledge or any improvement, attainment and acquisition of skills without students' intellectual support. Referring to Figure 3.2, Vygotsky's ZDP has elements of student-teacher interaction.

Student-teacher interaction

High quality student-teacher interaction in teaching and learning allows students to learn in the virtual learning environment using real and relevant resources to the concept to be learned. This applies when there is sound and fruitful discussion between students and educators in relation to activities students engage in (Laurillard, 1993). This kind of interaction acts as a motivation to students (Bandura, 1986; Gruender, 1996; Hein, 1991; Kesley & D'souza, 2004; Piaget, 1926; Piaget & Inhelder, 1969; Vygotsky, 1978). Student-teacher interaction is more of traditional face-to-face rather than student-student interaction. Instructors act as facilitators, thus guiding and assisting students to construct knowledge and skills rather than acting like experts (Anderson, 2004; Copley, 1992). The educators get involved in the students' authentic problem solving context (Collins, Brown & Holum, 1991; Rogoff, 1990).

Student-content interaction

The interaction in Figure 3.2 occurs when students interact with self-motivated learning resources such as reading textbooks, e-books, searching and retrieving information from the Internet (Anderson, 2004; Kesley & D'souza, 2004). Students should not interact with the content for fun's sake, but it should be fruitful and in line with what they are supposed to learn, know and understand, such as skills and meaning (Kesley & D'souza, 2004). Ally (2004) indicates that the effectiveness of this approach can be shown when students are in a position to apply what they have learned for life and it should be for lifelong learning (Burgess, 2008; Gachago, 2008; Graham, 2006; Zhou, et al., 2007).

Student-student interaction

The third type of interaction in Figure 3.2 refers to interaction between peers, whereby exchange of ideas takes place between students working jointly. Before they initiate their discussion, they establish a rapport and ground rules for effective learning

Torres, et al. (2007) emphasise the idea that when students are actively engaged their interactivity improves.

The ZPD is acknowledged as a guide and support for students' learning improvement and educator's tutorial preparation. Students may reach a level of learning experience without knowing certain tasks, but these can only be mastered with appropriate educators' support. It incorporates educators' sympathetic guidance and fruitful conversation sessions with students to e-information resources (Taylor & Maor, 2000) such as CD-ROM. In addition, the educator may assist students to go via difficult tasks with ease by chunking the problems into simpler forms. Subsequently, as their knowledge and skills improve, the ZPD increases. Thus, an increase in ZPD is an increase in task complexity for students to move beyond what they are expected to know.

In relation to motivation, Maslow (1943), a renowned theorist, suggests the hierarchy of needs model, which contributes greatly to students' learning process. His theory helps the educators to motivate students to achieve the desired goal (Salmon, 2002; 2003; 2004; Chew, et al., 2006). Maslow's model guides the educators on how to motivate and support students to achieve self-actualisation and thus achieve their total potential as human beings (McNaught, 2003; Roblyer & Edwards, 2000; Salmon, 2002).

Salmon (2004), the author of the book titled 'E-moderating: the key to teaching and learning online.' conducted noteworthy studies on blended learning or online learning in the United Kingdom and provided a model to support the theory of this study. She discusses e-tivities and e-moderations, and how they have transformed e-learning to e-moderator as a new model to replace e-learning instructor. She intended to give an easy, but realistic guide for educators who are engaged in blended e-learning instructions based on pedagogical concept. Many higher educational institutions globally have put into practice Salmon's e-moderation model in teaching and learning (Chew, et al., 2006). The term 'e-tivity' is not a familiar word; it refers to a conceptual framework for discussing interactive learning activities (Muirhead, 2002). Salmon's e-moderation model is based

on Maslow's hierarchical needs model and it caters for students' motivation (Chew, et al., 2006).

The social interactions amongst students bring out cooperation amongst them, and also promote the feeling of being loved and belonging to the peer learning community. The role of educators at this stage is to make students' engagement and connection in the community socially and instructionally enacted. Salmon's model for e-moderation illustrates the 5 stages in Figure3.3.
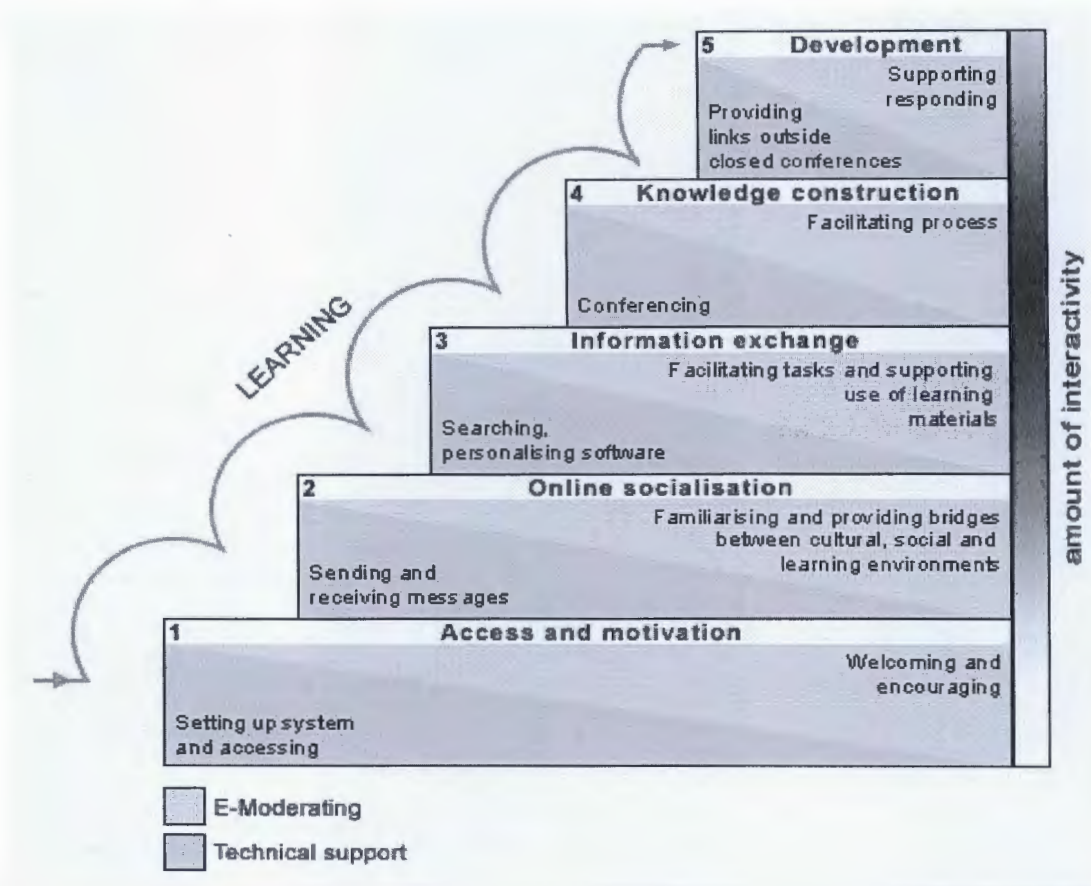
Figure 3.5 (E-moderation and e-tivities, Adopted from Salmon, 2000, 2001, p. 29).

Access and Motivation

In first stage of the model in Figure 3.3, there is a welcoming initiation, motivation and accessibility. At this stage, some new students experience substantial frustration in

logging on computers; thus e-moderator has to ensure that students get the required encouragement, accessibility and support to use e-tools successfully. As Inglis and Cutlack (2009, p. 6) note, "Individual access and the ability of participants to use computer mediated conferencing are essential prerequisites for conference participation."

Motivation is crucial for students at the very beginning. As a result, e-tivities should offer an exciting introduction to the use of technologies such as computers. They should also respect students' emotions towards the use of technologies and their exposure via the e-learning context, since even the most self-confident students also need support at an early stage (Muirhead, 2002; Salmon, 2002; 2003; 2004). They can then be expected to post their first contributions to the discussion board (Precel, et al., 2009).

Online Socialisation

Stage 2 of Salmon's model is about e-learning socialisation with peers and e-moderator (micro-community) via active interactive e-tivities, which are the most crucial learning activities and opportunity in this stage. It is at this stage where students familiarise with each other and develop bridges for cultural, social and learning environment obstructions. Thus, sharing and dissemination of information starts at this stage through the well-built bridges. Students socially interact with peers, content, materials and with e-moderator to encourage self-directed and own pace learning as opposed to reading only from e-learning tools (Salmon, 2003; 2004; Swan, 2001; Taylor, & Maor, 2000).

Information Exchange

In stage 3, information can be exchanged through students' collaborative learning that smoothes their learning progress and supports them to solve and achieve tasks together via the well-organised learning materials, and thus building a learning community where they feel loved and belonging. This stage allows students to search for information on their own and make their understandings before exchanging their information with others. Thus students interact with content and e-moderators or colleagues. The most important issue at this stage is that educators should make use of e-learning e-tivities that promote discovery learning (Salmon, 2002; 2003; 2004).

Knowledge Construction

In stage 4, students start to build their independence and self-directed learning by constructing their knowledge through conferencing or discussion and supporting each other. It means students have to manage their own knowledge construction assisted by e-moderators where assistance is needed, especially on how to handle their group discussions actively. This will facilitate students to construct knowledge via e-learning interactions and to productively handle their own group as they learn. Thus, students' own knowledge and confidence is built and enhanced as they move on. The most crucial issue at this stage is knowledge development or discussion (Salmon, 2002; 2003; 2004).

Development

In stage 5, the last stage, students are accountable for their own learning because they have reached self-actualisation and they show competence and confidence in assessment. They will also have developed high order thinking skills and become critical thinkers and be self-reflective. They then use knowledge and skills acquired via e-tivities according to their individual perspective (Salmon, 2002; 2003; 2004). Thus, it is at this stage where development of knowledge-related exchange of ideas and the noteworthy situation for the constructivist approach are plainly discernible in the program (Jones & Peachy, 2005).

Salmon (2002) confirmed that this e-moderating model is appropriate due to its focused design for blended e-learning. The most important aspect about e-moderating model is that it successfully addresses students' learning experiences in virtual or authentic learning platforms and its credibility has been vouched for by many authors. Due to its simplicity, e-moderating can be used by the educators as a constructive scaffold guide to assist students using the blended learning approach. This is one of the reasons why it is used in this study.

Maslow's (1943) concern is that not all students reach the self-actualisation stage, and thus he perceives self-actualisation as the noteworthy difficulty of his model. But students who manage to reach this stage more especially in the education context, become experts, have developed intellectual skills and able to solve even the ambiguous

problems. They are also able to connect to issues above their self-esteem and discover new knowledge that they may use to assist others discover self-achievements and appreciate their potential. Thus it is a requirement for students to reach self-actualisation stage; e-moderators are faced with this utmost challenge to assist students to stage 5.

As per Precel, et al. (2009), the weakness of Salmon is that her expectation is that the contributors should post their contributions to the discussion board even if their contributions are not effective enough to be posted. But the argument behind this is that there are various means of assessing students besides social interactions or collaborative assessment. However, e-moderating is still an interesting and practical attempt for modelling blended learning based approach on a profound didactic theory.

Although the Five-Step Model offers an excellent model for combining theory and practice into the educational process, and substantiates the significance of having the educators who are well-equipped, ready and enthusiastic to share meaningful activities in a student-centred context (Chew, et al., 2006), there is silence in relation to the use of ICTs by both students and the educators.

3.7 BLENDED LEARNING CONTINUUM

Due to the above limitation, Jone's (2006) Blended Learning Continuum was used to fill the gap in the theory for this study. The aim of Jone's (2006) model is to improve students' learning experiences and educators' content delivery in both traditional face-to-face and e-learning via technologies. The burning debatable issue was the rejection of the normal models for blended learning, and thus Jones (2006) chipped in with his proposal of the continuum of blended learning that is a well-organised model rather than a podium-like model implementation across the institution. The successful use of the continuum by the University of Glamorgan is illustrated in Figure 3.4:
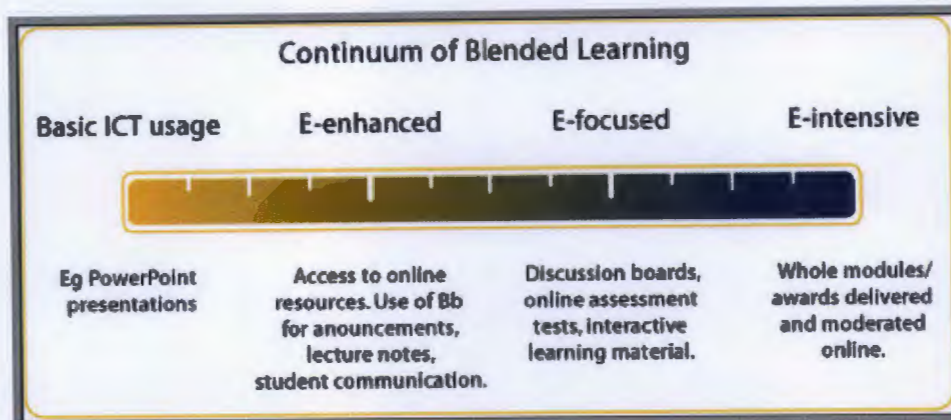
Figure 3.6 (Learning Modalities Adopted from Wenger and Ferguson, 2006).

According to Jones (2006) 'Basic ICT Usage' and 'E-enhanced' learning are well used for PowerPoint presentations and e-learning learning resources. Another step is "E-focused" where students interact with each other through discussion boards, get assessed and get feedback online and use interactive learning materials. More online facilities are used extensively and creatively here. The last step in the continuum is e-intensive, where the teaching and learning is delivered online with face-to-face instructions.

The rationale for Jones's (2006) continuum is that many scholars deny students the opportunity and flexibility to conduct their learning. Therefore, a continuum allows students more flexibility and opportunity to make a decision on what and how to learn, to cater for the individual's difference, needs and self-control. This continuum is clearly defined and directed for the users. However 'e-intensive' stage is not emphasised to be an effective solution. The continuum is a flexible model and depends mostly on modules, used as guides. It offers an explicit technique to the higher educational institutions that have not used blended learning before. Vaughan and Garrison (2005) indicate that the Blended Learning Continuum is straightforward and more pragmatic model than some of the models in relation to practical implementation of technologies. They further emphasis that it demonstrates an improvement and balance of blended learning for a university where there are gaps in other models.

The weakness of the continuum is its silences about pedagogical practices, such as, instructional activities, student-centred learning and social interactions as indistinctly stated in the continuum (Chew, et al., 2006). Rather it has a strong influence on technology (Conrad, 2004). Moreover, there are also silences on the educators' and students' roles as described in the Salmon's models. The most important issue is that the focus of education is that pedagogy should provide a lead in learning not technology. Therefore, the researchers emphasise that practitioners with pedagogical awareness, practice, and technologies support, are the primary principles of blended learning model. The main challenge is possibly to encourage the intellectuals that this continuum is not a recently pioneered program altogether, but just an effort to advance professional development logically. Eventually, it operates as a driving force for scholastics to advanced apparent pedagogical practices and their ICT's skills.

3.8 CONCLUSION

Social scientists achieve their position by advantage of their knowledge of what the field has to offer in terms of its theory as well as its methodological theory. Thus, this chapter explained the blended learning models and the theories used in this study. These theories formed the basis for the case study conducted at selected higher institution which dealt with EdTech students' experiences of using blended learning to learn EdTech modules. In the next chapter, the researcher provides the description of the methodology that was used in collecting data for her study.

CHAPTER FOUR

RESEARCH DEDSIGN AND METHODOLOGY

No context is value-free. Academic disciplines promote particular ways of observing, dissecting, measuring, interpreting, and otherwise making sense of the phenomena under investigation. One's decisions may emerge within or resistant to these disciplinary structures. One's decisions also derive from one's research goals, which are seldom acknowledged in research reports but which meaningfully affect the design, process, and outcome of a study (Markham, 2006, unpaged).

4.1 INTRODUCTION

The choice of methodology used to conduct research is important because it significantly determines the research outcomes. This chapter discusses the research design and methodology that was used in the study in order to address the research problem and respective research questions. The chapter also describes and explains the methods through which data were collected and analysed.

The chapter is divided into four sections. The first section is an outline of the interpretivist paradigm, while the second section is an overview of the research design. The third section is a discussion of the case study approach that was specifically adapted as a methodology for this study. The fourth section provides a description of the research instruments, which were developed to find out student's experiences of using blended learning to learn EdTech modules.

4.2 AN OUTLINE OF PARADIGM INFLUENCES

A paradigm can be thought of as a viewpoint through which the world is viewed. Diverse viewpoints entail diverse assumptions about the nature of the world and the ways in which one should try to understand it. There are diverse perspectives that exist for viewing and understanding the world, and these will be discussed in order to illuminate my choice of the intepretivist paradigm.

According to Henning, et al. (2004), there are three paradigms usually used by the researchers in the field of education, namely; the Positivist, Critical and Interpretive paradigms. To explain, Neuman (2006) states that within the positivist paradigm, knowledge is assumed; rooted from prior knowledge and experiments through our senses to verify observational data, and the verification itself leads to scientific knowledge. The positivist view of the world is seen as a way to get the truth and know the world so that it can be controlled by a process of prediction. The operation of the world in the positivist paradigm is by the law of causal and effect that can be detected by means of scientific methods applied by the researchers (Henning, van et al., 2004).

Conversely, the research in the critical paradigm is a means of empowering the oppressed, whereby the critical researcher explicitly takes sides by studying second best groups, those facing oppression, suppression, powerlessness, in order to give voice to the victims (Henning, 2004; Neuman, 2006). Critical researchers aim to be normative and create change in that they believe that the way societies are constituted imply a large number of injustices; "focused on what is wrong with the world rather than what is right" (Walsham, 2005, p. 112). Likewise, Wilson & Howcraft, (2002) speak of failures in life. Therefore, the critical researchers' main objective is to empower societies and reduce injustices in the world.

However, intepretivists have nothing to do with power and experiments, but emphasise that social reality is viewed and interpreted by the individual according to the ideological positions he/she possesses. Therefore, knowledge is personally experienced rather than acquired from outside. The core of this paradigm is the need to see and understand the world from the perspective of participants.

Although the definitions of the paradigms overlap between the viewpoints, dissimilarity can be made between current approaches based on the physical sciences. Hence, Lynch (2003) and Phillips (1990) differentiate between the paradigms as positivist paradigm and alternative paradigms (i.e. constructivism, interpretivism, critical theory and phenomenology). Kincheloe and McLaren (2000), Lynch (2003), Pennycook (2001) and

Schwandt (2000) refer to these alternative paradigms as the interpretivist paradigm. Therefore, according to these authors there are only two paradigms; positivist and interpretivist/phenomenology. Table 4.1 below depicts the different characteristics related to the two paradigms; they can be used possibly in each of the research paradigms, depending on the nature of the research.

Features	Interpretivist /Phenomenological Paradigm	Positivist Paradigm
Knowledge	Knowledge is socially constructed	Knowledge is existing reality
Truth	Multiple truth	Only one truth
Believe	The researcher have to believe as they see	The researcher have to see and believe
Theories and hypothesis	Generating theories	Hypothesis testing
View of the world	Understanding the world	Knowing the world
Reality	Reality is subjective and constructed	Reality is objective and found
Context	Natural	Neutral
Reliability	Low	High
Validity	High	Low
Methodological Approach	Qualitative	Quantitative

Table 4.1: Methodological Approach adapted from Hussey and Hussey (1997).

In this study the focus is on the interpretivist paradigm, concentrating mainly on social constructivism theory. The discussion below elaborates the features of the intepretivists aligned to the summary of paradigm features presented in Table 4.1 above.

Knowledge

The first distinctive feature in Table 4.1 is knowledge. According to Kincheloe and McLaren (2000), knowledge in the interpretive paradigm is seen as something that is socially constructed, rather than the discovery of a separately existing reality as in the positivist research. The concept of causality is also differently defined. From the interpretivist viewpoint, causal relationships are simply another probable structure or justification of certain aspects of the social world that the researchers are researching (Lynch, 2003). Causal relationships are not seen as worldwide parameters governing

individuals' deeds in whatever way (Hussey & Hussey, 1997). Rather than following causal relationships, interpretivists are aware of the flexible differences, multidirectional and ever changing rather than rigid, unchanged and single-directional (Lynch, 2003). Some of the social world relationships, such as language, are not observable; they are internal; therefore, it is not easy to understand them. That is the reason why the interpretivist paradigm supports the issue that the truth has to be constructed through interpretation and pursuit of knowledge and realities can differ across time and place (Kincheloe & McLaren, 2000; Lynch, 2003; Pennycook, 2001; Schwandt, 2000).

Truth

The second distinctive feature in Table 4.1 is truth. The interpretivist paradigm has the same philosophy as constructivism (Gergen, 1999), as both are engaged in sense-making on an organisational and individual level. The criteria of truth, and thus of good research, are basically different (Introna, 1997; Trauth, 2001). This extends to the role of the researcher, who, in positivism, is an external observer, whereas in interpretivism has to be an internal observer (Introna, 1997; Moran, 2000; Trauth, 2001; Varey et al., 2002). As a result, interpretivists would here be seen as differing strongly from positivism (Weber, 2004). Thus, the interpretivist paradigm is relevant because when trying to understand the experiences of the participants, the researcher has to try and understand their perspective of reality in doing that the researcher is engaged in sense-making.

Beliefs

The third distinctive feature in Table 4.1 is belief. The researcher believes that it is important to understand human behaviour in relation to these paradigms. Belief is an experienced reality that shapes behaviour. According to Kincheloe and McLaren (2000), the positivists assert that they have to see and believe, humanists assert that they believe as they see, while interpretivists assert that:

- The methods of the natural science are inappropriate to the study of social life.
- Sociologically significant behaviour is meaningful.
- Humans are active, conscious beings, they make choices.
- Understanding cannot just be descriptions it must involve reasons.

- People do not simply respond to external stimuli but actively interpret the world.

- Data has to be interpreted; it does not 'speak for itself'.

- Human behaviour is intentional.

The beliefs above were useful as guidance for this study. This was especially so for the data analysis, where I needed to make sense of the findings.

View of the world

The fourth distinctive feature in Table 4.1 is the view of the world. Interpretivists deny that humans can be studied using the same philosophical base as used in studying physical objects or other animals. They assert that there is a difference between the subject matter of sociology and natural science (Schwandt, 2000). Humans are active, conscious beings, and they make choices. Interpretivists assert that people do not simply respond to external stimuli but actively interpret the world-meaning 'causes' of behaviour (Miranda & Saunders, 2003). Students act on the basis of their subjective understanding of the implications of phenomena of which they are consciously aware. Data has to be constructed and interpreted as it does not 'speak for itself' (Kincheloe & McLaren, 2000).

The interpretivist studies are qualitative. The interpretivist researchers first have to study and understand human actions in real life contexts, what those actions mean and why participants act the way they do through their constructions and interpretations (Denzin & Lincoln, 1994; Henning, 2004). Lynch (2003) argues that for the social researchers to understand what the participants' meaning to their actions give, they should take their positions to find out the reasons provided by their actions.

Reality

The fifth distinctive feature in Table 4.1 is reality. The interpretivist paradigm disagree with the issue that there is an objective reality self-governing of the frame of the observer allusion. It may possibly be reliant on mind, and the practices that influence observation (Lynch, 2003). As an interpretivist researcher, in this study, the researcher was searching for in-depth rich information through expressive and interpretive understandings of social

behaviour rather than use of general laws and rules (Kincheloe & McLaren, 2000). Therefore, "rather than seeking a 'true' match between research observations and reality, the interpretivist paradigm understands reality as being constructed in and through observations and pursuit of knowledge" (Lynch, 2003, p.1).

The interpretivist analysis approach is used to understand a person's life experiences and sense embraced by those experiences (Cohen, Manion & Morrison, 2007; Smith, 2004; Taber, 2006). Thus, the researcher chose the interpretivist paradigm because it supports her study on students' experiences of learning EdTech modules through the blended learning approach.

Context

The sixth distinctive characteristic in Table 4.1 is context. In the interpretivist study, habitat is the most important phenomenon. According to Hussey and Hussey (1997), context denotes background in which the study is undertaken. The interpretivist researchers habitually conduct their studies in a natural setting rather than the positivists' artificial setting controlled by the researcher (Klein & Myers, 1999; Kincheloe & McLaren, 2000; Yin, 2003). Therefore in this study, the setting was natural. The empirical study was carried out in the participants' real situation (Cohen, et al., 2007; Creswell, 2003; Denzin & Lincoln, 1994; Henning, 2004), that is, in the EdTech discipline at the selected higher education institution.

Validity and Reliability

The seventh distinctive characteristics in Table 4.1 are validity and reliability. An interpretivist paradigm, as selected specifically for this research, focuses on subjective and rich data from diverse perspectives, and its soundness and consistency might be high (McMillan & Schumacher, 2001; Suter, 2006). If ever choice and use of the instruments is wisely made, the study produces trustworthy, accurate, reliable and dependable data allied with the research objectives, key questions and purpose (Caison, 2006). However, there is always the danger that the reliability will be very low. In this study, reliability was improved by the employment of questionnaires and instruments mentioned above as

a triangulation technique (Caracelli & Green, 1997; Cohen, et al., 2007; Merriam, 1998; Patton, 2002). The interpretivist approach emphasises validity, possibly at some cost in terms of reliability and representativeness (Pennycook, 2001).

Theory and hypothesis

The eighth distinctive characteristics in Table 4.1 are theory and hypothesis. Interpretivist researchers usually bring in theory to guide the study rather than focusing on hypothesis practiced by positivists (Hussey & Hussey, 1997). Thus, this study incorporated the theory and models explained in Chapter 3 of this dissertation to work collectively as a guide for the study. The three learning theories usually used by academics in educational research within the interpretivist paradigm together with social constructivism guided this study (Mason, 2002; Taber, 2006). In relation to hypothesis, due to exploratory nature of this study, no assumptions have been made.

Qualitative approach

The last but the most distinctive characteristic in Table 4.1 is methodology. Interpretivist analysis employs qualitative methodology. It generally leads to the use of qualitative research methods that enable the researcher to gain a descriptive understanding of the values, actions and concerns of the subjects under study (Denzin & Lincoln, 1994; Patton, 2002; Henning, 2004).

Qualitative methodology is flexible and open to variety of instruments for data collection such as observations, interviews, document analysis, diaries and even questionnaires to get in-depth and trustworthy information (Bertrant & Hughes, 2005; Denzin & Lincoln, 1994; 2003; McMillan & Schumacher, 2001; Patton, 2002; Suter, 2006). Although the interpretivist qualitative methodology was adopted for this study, quantitative instruments such as questionnaires were used to collected data for a purpose of compensating for the limitations of qualitative data and get in-depth data (Bertrant & Hughes, 2005; Reesves & Hedberg, 2003; Maree, 2007). Qualitative data was collected to gain more information on students' blended learning experiences, perceptions (Cohen, et al., 2007; Creswell, 2005; Taber, 2006), and their expectations on EdTech modules, whereas questionnaires were

employed to carry out statistical dimension to identify additional elements not identified by the Qualitative data.

Due to above mentioned reasons, the current study employed mainly qualitative methodology and this smoothly tallies with the interpretivist paradigm which guided the study. More detailed information about the research design and methodology is presented below in this chapter.

4.3 CONCEPTUALISATION

From 2006 to 2008, the selected institution's postgraduate enrolment ranged from 10 to 20 students and there was a high dropout rate, especially of part-time students, few of which survived to reach the level of Masters of Education Degree. The result is the marked decrease in the number of students in the EdTech discipline. This leads to a number of questions: How can students use blended learning to learn EdTech modules successfully without sufficient resources? And how can the lecturers be accessible to students with inadequate resources? Or is the dropout rate caused by to poor student support or student-student and student-lecturer's interactions? However, LMS as OMS have the capacity to solve the latter problem (Birch & Burnnett, 2009; Koshy, 2005; Olufemi, 2007; Wooddill, 2007). Yet, the major critical question emerges: What are the experiences of postgraduate students in using blended learning to learn EdTech modules at the selected institution? Thus, has blended learning achieved its aim of improving students' experiences of learning? This study there attempts to respond to the research objectives and questions as discussed in Chapter 1.

4.4 RESEARCH DESIGN

In figure 4.2 below a summary of the research design and implementation of the project is illustrated. The design is a combination of three phases namely: Phase1: Database establishment; Phase 2: Piloting and implementation, and Phase 3: Collections and analysis of data from the instruments employed.

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                    ┌─────────────────┐
                    │ Establishing  a │◄──────┌─────────┐
                    │ Database        │       │ Phase1  │
                    └────────┬────────┘       └─────────┘
                             │
                    ┌────────┴────────┐
                    │ Piloting and    │◄──────┌─────────┐
                    │ Implementation  │       │ Phase 2 │
                    └────────┬────────┘       └─────────┘
              ┌──────────────┼──────────────┐
       ┌──────┴─────┐ ┌──────┴─────┐ ┌───────┴──────┐ ┌─────────┐
       │ Interviews │ │Observations│ │ Administered │ │ Phase 3 │
       │            │ │            │ │Questionnaires│ └─────────┘
       └──────┬─────┘ └──────┬─────┘ └───────┬──────┘
              │              │               │
       ┌──────┴─────┐ ┌──────┴─────┐ ┌────────┴─────┐
       │  Results   │ │  Results   │ │   Results    │
       │ collected  │ │ collected  │ │  collected   │
       │    from    │ │    from    │ │    from      │
       │ Interviews │ │Observations│ │questionnaires│
       └────────────┘ └──────┬─────┘ └──────┬───────┘
                             │              │
                      ┌──────┴──────────────┴─┐
                      │    Data Analysis      │
                      │    and discussion     │
                      └───────────────────────┘
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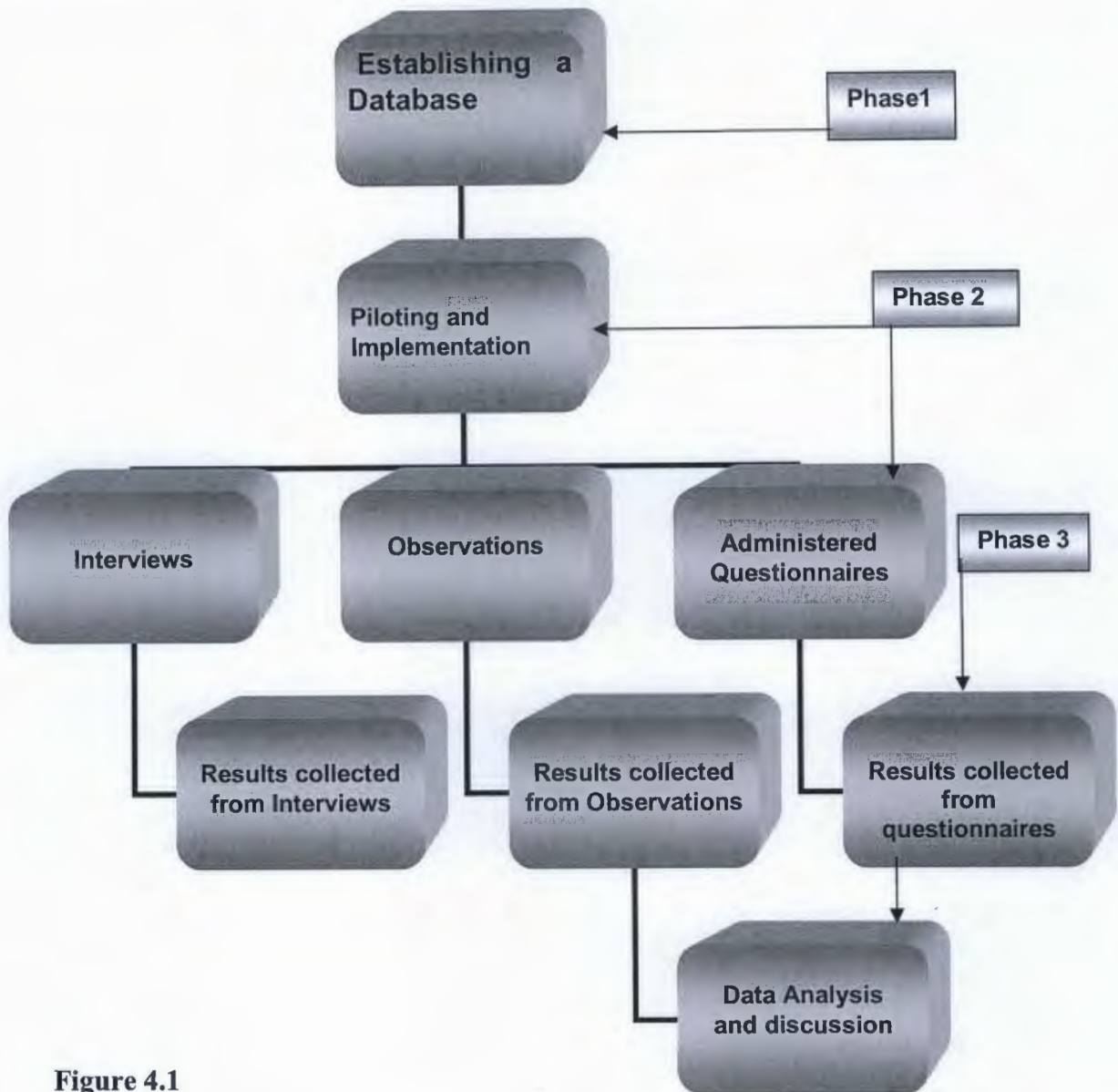
Figure 4.1

The first phase: In this phase a database was established consisting of profiles of the twenty selected postgraduate EdTech students who participated in the study. Some of them were studying on a part-time basis and others were full time. Their background details were captured. The selection of the participants was based on the following criteria:

- Postgraduate students registered for the EdTech course
- The sample represented the whole of the EdTech Postgraduate population

The second phase: In the second phase; design was mapped out, taking into consideration the use of research instruments such as observations, interviews (i.e. semi-structured, face-to-face, focus group, and in-depth individual interviews) and self-administered questionnaires with the selected participants. Welman and Kruger (2002) state that one of the functions of research design are the instructions and guidelines that allow the researcher to foresee what the suitable research decisions could be so as to maximise the validity of the ultimate results. Thus, the following are the reasons why self-administered questionnaires were used as one of the guidelines used in this study:

- The interviewer was able to explain any question that the interviewee did not understand.
- It enables the interviewer to do a visual check as to whether interviewee fitted the sample population.

The questionnaires and interview questions were designed, piloted and adjusted before implementation in order to obtain the desired information (Cohen, et al., 2000; 2001; 2007).

The third phase: This phase involved the actual implementation of the research design. Information was collected using the instruments mentioned above. Prior to entering the institution, it was essential to conceptualise the perfect implementation of the research project. Karagiorgi and Symeon (2005) argue that according to social constructivists, metacognition allows the researcher to plan, set time lines, check the instruments by pre-testing them (Blaxter, Hughes & Tight, 2004; Lincoln & Guba, 1985;), and allocate resources for her research implementation beforehand to avoid unclear and inappropriate questions (Blanche & Durham, 2002), that might bring about unconstructive data. McMillan and Schumacher (2006) argue that defectively planned, designed and implemented data collecting instruments produce unconstructiveness results.

This research was implemented with the intention to follow the format that addresses the questions effectively. A number of related concerns were projected prior to implementation of the research project. For example, the researcher required planning time in advance for unanticipated events such as block sessions (i.e. lecturing sessions), and public holidays. The next section outlines the methodological approach that was adopted for this study.

4.5 A CASE STUDY APPROACH

In order to understand student's experiences of blended learning on learning EdTech modules at the selected institution, a case study approach was chosen. The phenomenon under study needed a perceptive understanding of the real context (Creswell, 2003; Denzin & Lincoln, 1994; Henning, 2004), from which data has to be gathered over a period of time (Merriam, 1988). It was necessary to get in touch with the lecturers and students if the researcher was to establish rapport and trustworthiness, two basic factors that could influence the information received (Lincoln & Guba, 1985). In light of these concerns, the case study appeared to offer the best possibility of understanding student's experiences (Cohen, et al., 2007; Creswell, 2005), of blended learning in learning EdTech modules. For instance, it enabled an in-depth investigation of definite issues over a continuous period of time (Merriam, 1988), within a clearly defined context (Bertrant & Hughes, 2005; Henning, 2004).Thus, the researcher in this study required a long period of cooperation with the lecturers and regular observations of the same sample of students. To understand the employment of the case study method for the current study, justification of necessary characteristics of case studies is offered in the next section of this chapter.

4.6 THE CASE STUDY RATIONALE

According to Yin (1988), a case study is an empirical inquiry that studies a current phenomenon within its habitat; when the boundaries between the phenomenon and situation are not evident; and in which multiple sources of evidence are used. The current

case study was conducted in a natural setting (De Vos, 1998). Thus, the EdTech programme using blended learning that was provided by the selected institution, took place in a natural setting of a real computer seminar room and it was regarded as a case. The case study approach is of great value since in qualitative research, the researcher selects a particular case and goes deeper in understanding issues of that selected case (Patton, 2002), rather than a variable, through which the researcher gains an understanding of a broader phenomenon in the positivists paradigm.

According to Cohen, et al. (2001, p. 181), "case studies can establish cause and effect... one of the strengths is that they observe effects in real context, recognizing that context is a powerful determinant of both cause and effect." Strauss & Corbin (1998) and Creswell (1994) regard a case study as a study whereby the researcher investigates a single phenomenon bounded by time, activity and gathers in-depth data using a range of data collecting methods throughout a sustained period of time. In addition, Smith (2004) asserts that social constructivism understands reality as being constructed in and through our observations and a search for knowledge. Social constructivist theory entails trying to understand the experiences of an individual in real life situations, logic and suggestions they make through their experiences (Fosnot, 2005; Vygotsky, 1978; Yang, 2008).

As per Miles and Huberman (1994, p. 25), a case is "a phenomenon of some sort occurring in a bounded context." They contend that if the phenomenon being studied is not intrinsically bounded, then it is not a case. One method for reviewing boundedness is to ask how limited the data collection will be in relation to the number of participants who could be interviewed. If ever the data collection is boundless in relation to the number of participants who could be interviewed or observed, then the phenomenon is not bounded enough to qualify as a case. Educational Technology postgraduate computer seminar room and students met the criterion of boundedness of a case study.

Unlike other forms of research such as experimental and surveys, a case study does not claim any particular methods for data collection or data analysis. In case studies, multiple methods of data gathering, from testing to interviewing, can be used, although certain

techniques are used more than others. Henning, et al. (2004) state that case studies allow the researchers to use different methods to capture the case in detail, based on this, this current study used various methods of data collection. By concentrating on a single phenomenon or the case, the researcher aims to explore the interaction of significant factors, characteristic of the phenomenon (Creswell, 1994; Strauss & Corbin 1998; Patton, 2002). The most important benefit of a case study is that it gives a researcher an opportunity to expose the way different factors complement each other to give the unique character of the entity; (i.e. the subject of the research study) (Thomas, 2003).

As per Yin's (1988, p. 24) observation, "the case study is a design particularly suited to a situation in which it is impossible to separate the phenomenon's variables from the context". The implication of this is that the case study researcher is not necessarily looking for findings that are generalisable to wider populations (Bell, 1997; Stake, 1995). The aim was therefore to focus on exploring the factors that brought about student's experiences of blended learning on learning EdTech modules either positively or negatively.

Social constructivism generally leads to the use of qualitative research methods that enable the researcher to gain a descriptive understanding of the values, actions and concerns of the subjects under study (Patton, 2002). The approach emphasizes validity, possibly at some cost in terms of reliability that is interpreted as dependability and representativenes (Cohen, et al., 2000, 2001, 2007; Lincoln & Guba, 1985; Pennycook, 2001). The choice of such an approach stems from the research questions stated in the introduction of this chapter. Questions (a) and (b) in particular, require a qualitative focus since it is not possible in a real life institution situation to isolate variables affecting learning. Social constructivism is based on the premise that all the participants construct their own perspective of the world, through individual experiences and schema (Bodner, 1986; Duff & Jonassen 1991; Fosnot, 2005; Rieber 1992; Vygotsky, 1978; Yang, 2008).

The researcher opted mainly for qualitative research because McMillan and Schumacher (2001) show that the qualitative researcher views reality as multi-layered, interactive and

a shared social experience that can be studied from the participants' perspective with either interactive technique, such as, observations and interviews or non-interactive techniques, for example, use of historical documents. While there are different qualitative techniques that can be used to provide verbal descriptions of this study, Bodner (1986) and van Niekerk (2009) indicate that the goal of each is to capture the richness of data and complexity of behaviour that occurs in the natural setting.

4.7 CONTEXT

Contact with the institution was initiated in November 2007, although the formal implementation of this study began in April 2008. Formal access to the selected institution was gained through a series of preliminary meetings with the lecturers of Educational Technology (EdTech). The selected institution was a Faculty of Education situated in South Africa and offering a diverse number of disciplines. The researcher is a full time student specialising in Educational Technology at the selected institution. This enabled her to establish a rapport with the students over two and half years at the institution. The institution was an obvious choice as a site for this research because of the researcher's familiarity with and access to the institution (Wolcott, 1988; Yin, 1988; 2003). It is also served as a pilot institution in April 2008.

4.8 SAMPLING

Purposive sampling is a sampling method that allows the researcher to choose the sample that relates to a special case or situation under study. It does not represent a wider context or population, and therefore the findings cannot be generalized (Henning, et al., 2004). For this study, purposive sampling was used as the researchers' focus was on a particular case for in-depth investigation. The purpose is to get deeper understanding of blended learning experiences on EdTech student's learning. Through purposive sampling, the researcher to chose a sample with specific rationale in mind as used in the students' profile is explained in phase 1 earlier in this chapter.

Postgraduate EdTech students were selected because they had the experience of blended learning and EdTech. The sample group used for this study, comprised eight males and twelve females aged between twenty and fifty-two, of mixed ability from EdTech postgraduate discipline.

4.9 METHODS

As explained above, this study employed a methodology that permitted the application of several methods in the data collection process, namely semi-structured interviews, participant observation and structured questionnaires. This aimed at yielding research findings with a greater degree of consistency and accuracy (Babbie, 2001; Henning, et al., 2004; Krefting, 1991; Syvitski, 1991; Verma & Mallick, 1999).

4.9.1 Semi-structured interviews

Interviews were used so that an in-depth understanding of the phenomenon would be gained (Allison 1996). The two types of interviews for this study were focus-group and individual interviews. The interviews were tape recorded and transcribed verbatim. The researcher had to go to the participants to check if findings are reliable (Oka & Shaw, 2000) and then subjected to detailed qualitative analysis; attempting to obtain key themes from the participants' talk (Cohen, et al., 2001).

4.9.1.1 Focus group interviews

According to Kreuger (1988, p. 18) a focus group interview is a "carefully planned discussion designed to obtain experiences in a defined area of interest, in a permissive, non-threatening environment." Morgan (1988) asserts that deciding on the size of the group needs careful planning. For example, if too small, intra-group dynamics exert a disproportionate effect; if too large, and the group can become unwieldy and hard to manage. Thus, according to Morgan (1988, p. 43), the group should consist of between four to twelve participants. Thus, in this study, there were four focus groups of five participants in each group.

There are a number of advantages of group interviews. Literature suggests that groups have a 'synerginistic effect', suggesting that participants can build on each other's responses (Morgan, in Cohen et al., 2001). The responses are in-depth and in students' own words. It is from the interaction of the group that data is obtained. However, one of the disadvantages of focus groups interviews is that groups may be subjected to an opinionated individual who may dominate the group. Bearing this disadvantage in mind, and in keeping with the central concern of the study, focus group interviews were chosen as just one of the instruments for data collection. Focus groups allow one to bring together a specially chosen sector of population to discuss a particular given theme or topic. Morgan and Krueger (1988) suggest that focus groups interviews are useful to triangulate with individual interviews, questionnaires and lesson observations of all the participants to be at researcher's reach to gain the information.

4.9.1.2 Individual interviews

From four focus groups, four participants were selected, one from each group for individual interviews. The criteria used for the selection of the individual interviewees were to choose the individuals who provided the most required and detailed information (Cohen et al., 2001). These participants are referred to as key informants. They were informative in the sense that they were found to possess more relevant information needed for the study than the other participants in the group. Thus, they were subjected to in-depth individual interviews. An interview schedule was designed and the main purpose was to augment information that would have been collected during the focus group interviews. There is a detailed explanation in the next section of this chapter, under implementation phase on how, when and where interviews were conducted.

4.9.2 Observations

Observation is defined as a mode of data collection through watching or listening to incidences, then recording what occurred (Thomas, 2003). In this study, data was collected by recognising and noting the students' activities and attitudes towards the use of blended learning. This observation was employed as a primary method of data

collection to provide an accurate description of how students feel about blended learning (Merriam, 1988; Mason, 2002; Taber, 2006; van Niekerk, 2009).

Social constructivist theory provides a general explanation for observations made over time. Since this study was aimed at investigating classroom dynamics and blended learning usage, participant observation was needed (Cohen et al., 2001; Kotela, Toivonen & Viikari-Juntura 2001; Robert, 2003). According to constructivists, to understand participants' actions the researcher has to, first, understand those actions in the way that the participants act (Smith, 2004). Wolcott, (1988) argument is that social researchers should take the position of their participants to get what meanings of their actions, reasons for their actions and purposes they think are served by their actions. This meant that the researcher's role was to observe the application of technologies in blended learning and participate to a minimum (Wolcott, 1988). Due to the researcher's participation in the whole computer seminar room process, her observation was an 'active' one; she managed to listen, observe and capture their interactions as they disclose conspicuously in the computer seminar room (Freebody, 2003; Lynch, 2003; Smith, 2004; Wolcott, 1988).

According to Wolcott (1988) there are three types of participant observation styles: active, privileged and limited. For the purpose of this study, the researcher opted for both a privileged and active style. A privileged observer is someone who is known and trusted in the setting and has easy access to information about the context. In the current study, the researcher was a participant observer because she was one of the students who have experienced the EdTech training using blended learning. Bell (1997, p. 110) defines participant observation as "transfer of the whole person into an imaginative and emotional experience in which the fieldworker learned to live in and understand the new world." Thus, the researcher was able to observe and record respondents' attitudes on how they respond to the training and the practical work engaged in (Freebody, 2003).

During observations, only student-student interactions and student-interface interactions were observed. Students' attitudes and perceptions also formed the basic part of this

study as indicated earlier. The students at the selected institution were observed from day one to day five of the block session since the session lasted for five days. Thereafter students were observed again in practice when they used the computer seminar room on their own while engaged in work to be submitted in the last week of the block. During lecture sessions (block session), students were observed on how they achieved the computer skills presented to them and how they applied the acquired skills practically.

The purpose of the personal observation was to determine students' level of technologies skills and knowledge and computer literacy in using blended learning. In this way the researcher aimed to construct an in-depth understanding of EdTech seminar dynamics in order to ascertain what was valid and consequential for the study. The data collected during observation assisted the researcher to interpret the findings that were genuine since she did not have to rely on the willingness and the ability of the participants to report data accurately (Denzin & Lincoln, 1994; Lincoln & Guba, 1985; Wolcott, 1988).

Structured observations within the classroom were conducted using a systematic format of recording data, which were verified and extended beyond the classroom by means of questionnaires requiring students to report on their ICT literacy skills and use of blended learning. Data gained from this process served as a starting point from which to explore student's experiences of blended learning in learning EdTech modules. The other research instrument designed to obtain information on students' attitudes towards the use of blended learning in learning EdTech modules was the questionnaire.

4.9.3 Questionnaire

The questionnaires were given to twenty students engaged in the EdTech programme at the selected institution to determine skills and perceptions of blended learning in learning EdTech modules. In this study, the meaning of questionnaire is limited to printed forms on which participants are asked for information regarding blended learning experiences in EdTech module's learning. The questionnaire consisted of quantitative type of questions because participants were requested to choose from answers provided. Hence,

the questionnaire consisted of closed questions referred to as structured questionnaire (De Vos, 1998).

A decision was taken before the study to make the questionnaires as short as possible so that students would be able to complete them. The questionnaire was designed in such a way that the participants would take about ten to fifteen minutes to be complete it. According to De Vos (1998) it is important to consider time factor when conducting questionnaires if respondents are to be inspired to communicate their information. The respondents were asked not to write their names on the questionnaire and were assured of anonymity when analysing data. The researcher was available to clarify what was required in completing the questionnaire. All participants returned the completed questionnaires.

The data collected from the participants was useful in providing the researcher with sufficient information to enable her to formulate a reasonable account of students' perceptions regarding experiences of blended learning in learning EdTech modules.

4.10 ETHICAL CONSIDERATIONS

Researchers should abide by the ethical conventions when collecting data from the participants in research. The ethical issues in the study are as follows: attaining permission from institution concerned; from the Dean of the Faculty of Education to conduct a study and collect data from its students; attaining informed consent of the participants that give them freedom of participation in the study. The consent encompasses assurance of confidentiality of information gathered from the participants correspondingly. That is, all the participants' responses were treated with strict confidentiality and the raw data were not used for any other purposes. Rather, for anonymity the study used symbols such as P1, P2, P3 (P stands for participant) instead of real names of the participants. Participants were made aware that their participation in the study was voluntary and they were free to withdraw from the research at any time without any negative or undesirable consequences. Additionally, the participants were

not, under any circumstance, forced to disclose what they did not want to disclose. The participants were told that the data would be stored in a securely locked cup-board of the selected institution for a period of five years, after which such information would be destroyed. Ethical clearance certificate to this study was granted by the same selected institution.

4.11 VALIDITY AND RELIABILITY OF INSTRUMENTS

Reliability and validity are important aspects of research design considered by both qualitative and quantitative researchers. The study's integrity depends on relevant instruments such as lesson observations, interviews and questionnaires in measuring the phenomena under study (Gronlund, 1982; Lincoln & Guba, 1985; Krefting, 1991). To increase validity and reliability of this study the researcher was a participant observer. As one of the EdTech students she was able to get valid and reliable information from students in whatever they did during the EdTech class. The participants were informed but they forgot that they were being observed. This was good since according to Struwig & Stead (2001) they may behave differently if they know that they are being observed.

Krefting (1991) points out that, unlike reliability, validity is concerned with authenticity of data and the data-gathering tool. Oppenheim (1992, p. 145) argues that, "validity is more important than reliability because a measure can be highly reliable and yet poor in validity." Similarly, a measure cannot have excellent validity if it is not also reliable. However, Verma and Beard (1981, p. 87) propose that even though validity is important, "there is no absolutely valid technique." In this study, it was important to strive as much as possible to enhance the validity of the research methodology and data-gathering techniques. One way to achieve validity is to triangulate the methods of data collection (White, 2000, p. 67). The researcher also triangulated instruments for data collection. This is discussed in the next section.

Triangulation of instruments

Neiuwenhuis (2007) and Patton (2002) argue that triangulation helps reveal the richness and diversity of information collected and increases the sophistication and rigor of data collection and analysis. As the researcher in this study is a social constructivist, the study used three of four most commonly known types of triangulation which are:

- Data triangulation: It uses a variety of data sources in a study. Participants are interviewed in diverse positions such as semi-structured interviews; focus groups and in-depth individual interviews.

- Methodological triangulation: It employs various techniques to study a single problem such as interviews, observations, questionnaires.

- Theory triangulation: It applies several perspectives to interpret a single set of data.

Inputs attained from these various instruments of data collection were cross-referenced to establish the convergence of data and its reliability. To ensure validity on each item on questionnaires and interview questions, the data collection instruments were first piloted. The next section describes the pilot phase.

Piloting the instruments

In order to assess the validity of the questionnaires and interview questions, and check the nature of the instruments themselves, Anderson's (1990) recommendation is that piloting of instruments should be carried out. Oppenheim (1992, p. 147) argues that "wording is particularly an important factor in attitudinal questions rather than factual questions." Meanwhile, Silverman (1993) suggests that it is important for each interviewee to understand the question in the same way. He further suggests that careful piloting of interview schedules can enhance the reliability of interviews.

The pilot stage was carried out in April 2008 and the session lasted only for a week. Questionnaires were administered to EdTech students at the institution under study. Since Anderson (1990) recommends that a group of six to twelve volunteers be chosen to pilot questionnaires, the researcher chose twelve respondents, bearing in mind that these

represented the target group. From the first trialling it became clear that there were a number of questions on the students' assessment questionnaires that had to be changed because they were ambiguous. A similar procedure was followed with colleagues, who took roles of critical mentors, and hence the questions were modified.

4.12 IMPLEMENTATION PHASE

An application for permission to carry out study at the institution was made to the research offices and the department of EdTech. The application was conveyed to all the lecturers but more importantly to the EdTech lecturers who were invited to examine the questions on questionnaires. To ensure the full involvement and commitment of the lecturers and students, the researcher pointed out some of the anticipated positive outcomes of the research project for the selected institution and the students.

The researcher was able to meet with students during the block session (for two weeks) for four hours daily. Initially, twenty four students were selected for the study and in April they all participated and these would serve as the population in this research project. The researcher observed the lessons. This was in order to gain an understanding of the computer laboratory dynamics with reference to students' use of blended learning to learn EdTech modules.

The interviews were conducted from April to May 2008. The researcher managed to secure a private and quiet room on campus. According to social constructivism, as students get interviewed they are reflecting on their own experiences and reflection allows the students the opportunity to develop, assess, and organise their thoughts. These interviews were conducted during non-lecture times and students were interviewed in groups of six (four groups were interviewed). The interviews lasted for an hour for each group. Three key informants were selected from the above mentioned focus groups and interviewed individually the next day.

Questions that were not clear were immediately clarified for students. The questionnaires were distributed during class time to each student. The researcher emphasised that there were no correct or incorrect answers and that the participants should give responses, which best suited their positions. The students were told that their names and answers would remain anonymous and confidential so that they could complete the questionnaire in confidence. The researcher remained in the computer laboratory with the students in case of any queries or need for clarity until every student had completed the questionnaire. The twenty students completed and returned the questionnaires. Students took approximately twenty minutes to complete the questionnaire as the researcher had asked them not to hurry through the paper but go through it very carefully.

4.13 DATA ANALYSIS

According to Yin (2003), data analysis in a case study consists of examining, categorising, tabulating, or otherwise recombining the evidence to address the initial propositions of a study. In the process of this method, verbal data obtained from observations and all the audio-taped interviews were transcribed for processing purposes. The transcripts were reread, to ensure that nothing was unnoticed, and the data was combined as recommended by Maykut and Morehouse (1994, p. 128). Graphs were generated from the questionnaire results, so that the essence of the data was clearly presented.

According to Strauss and Corbin (1990, p. 72), generating categories early through line-by-line analysis is particularly important because categories also become the basis of theoretical sampling. The responses provided by the respondents were subjected to content analysis to produce reliable evidence for the current study, which assisted the researcher to have a focus on specific ideas and be able to categorise them correctly. Grouping concepts into categories was noteworthy as the researcher was able to reduce the number of units which she was working on; "Categories are concepts, derived from data that stand for phenomena" (Strauss & Corbin, 1998, p.114).

The data analysis employed in this study was through the open coding method whereby themes in the transcripts of the interviews and observations that occurred regularly were grouped together. According to Miles and Huberman (1994) and Strauss and Corbin (1990) in open coding, the researcher has to break down data into discrete parts, closely examine, compare for similarities and differences, and ask questions about the phenomena as reflected in the data to identify the main patterns and themes. Once the particular phenomena in the data collected were identified, the researcher grouped some concepts around them. This was done because in a case study, organization and communication are done after developing clear conceptual categories for the empirical data, which provides a focus for the findings (Babbie, et al., 2001, p. 283). The research questions were useful in identifying themes from the data collected. Quotations taken directly from the transcripts were used to illustrate and support the claims made.

4.14 CONCLUSION

Exploring blended learning experiences on learning EdTech modules among the EdTech students in the selected institution who participated in the setting was not easy. It posed certain difficulties as indicated in the section of implementation in this chapter. Since the questions requiring investigation contained a qualitative component, the researcher was obliged to develop a range of instruments that could be triangulated. The researcher considered it relevant to explore student-student interaction in the computerised classroom context through the use of lesson observations. Questionnaires were designed to provide the insight into students' perceptions of blended learning. The interview technique was employed because of its capacity to generate issues and engage students in in-depth discussion of topics related to the investigation. This chapter provided an outline of the research design and a detailed methodology used in this research project. The rationale for the approach used was also presented. The next chapter presents the analysis of the data and results of the findings.

CHAPTER FIVE

RESEARCH FINDINGS

Attempting to undertake online data collection is far easier than successfully accomplishing it. For those who chose to perform it, they must do so deliberately and cautiously (Best & Krueger, 2004, p. 85).

5.1 INTRODUCTION

This chapter discusses the findings of the study on how postgraduate students experience the use of blended learning to learn EdTech modules at a selected institution. As discussed in Chapter 4 of this study, after having reviewed the literature, compiled field notes and comments (from five data sources, that is, transcripts for semi-structured interviews studies, face to face focus groups, in-depth individual interviews, self-administered questionnaire, and observation records), this study produced a preliminary set of codes from a piloting analyses phase. These preliminary set of codes allowed this study to reduce and append the relevant data and to bring about the new emerging patterns. Thus the new emerging patterns assisted this study to construct new codes and thereafter combine some codes to form new categories and several categories emerged from the data. These categories were used to formulate the themes. The themes were supported by related Salmon's (2000-2002) model and social constructivism principles. They were further delineated into categories. The themes and categories addressed the research question.

Twenty four students participated in the study. The findings are organised into the following three themes:

- Appreciating the tool than application of the tool
- Transformative e-learning course design practices underpinned by technologies
- Limited resources for e-learning activities

The relevant themes are presented with a claim of evidence from the data which is in the form of quotations and in some cases graphs. The quotations from the data are referenced as P1, P2, and so on, where P represents participants and the number represents the identity of the participant.

5.2 Theme 1: Appreciating the tool than application of the tool

Students should have advanced computer skills in order to benefit in the use of technologies for pedagogy. If they do not have these skills, they get excited to discover what the computer can do in terms of access to knowledge rather than its pedagogical function.

The findings show that the students who had low level of computer skills tended to be pleased about having access to educational technologies rather than focusing on actually making use of them to make education better. The appreciation was especially so for the computer and the Internet and this can be explained by the fact that most of the students undertook the EdTech course at their initial stage of gaining computer literacy.

Most participants responded that like most other advanced technological tools, they understood how useful and wonderful the computer is. When exposed to the computer for the first time, the users tended to have a feeling of pleasure as they realised its value and usefulness. The computer novices were encouraged, and this led to improved familiarity and improved competence that, in turn, builds a strong confidence in computer use (Murphy & Greenwood, 1998). This means that regular use of computers in learning boosts familiarity thus enabling students to gain a lot more confidence to work with computers in the classroom.

Participants experienced EdTech as a hypothetical area under discussion, and regularly they found it particularly difficult to understand it fully (Davis, 2009). They showed their contentment with computers and were so excited to learn EdTech modules. Some were not even aware that they missed the subject matter of their training due to their excitement.

Almost all the participants acknowledged the benefits that they get as one of the most exciting consequences of using computer tools such as the Internet and LMS, resulting in a marked improvement in students' enthusiasm to learn (Penfold & Pang, 2008). They raised the issue of the effectiveness of LMS or OLS in their learning, where they can access information independently on the World Wide Web and read the notes, engage in activities and attempt the learning tasks, assignments and the quizzes prepared online by the lecturers,

> *It is actually about getting information online, whatever information those learning tasks, activities, assignments, quizzes are there P18,*

> *Yes, there are quizzes P20,*

> *dealing with the quiz and other parts that are interesting, very interesting indeed P19.*

Another way in which LMS was said to be supportive to the students was through the display of lecture notes uploaded by lecturers on the web. This enabled the students to work within their own time, pace and space. This is supported by these comments, the first from the focus group and the second from individual interviews:

> *Open Learning system is very, very beneficial because you can work on your own, you don't need the lecturer to be there, they just tell you what to do and then you go on your own looking for resources and this Open Learning system also we need the Internet and is the whole web yah P19.*

> *"You are free to push yourself because information is there for you, you don't have to wait for the lecturers to tell you what to do, everything is there yours is to push yourself and do the work P18,*

> *Yah, you have no problem because you have a lot of work to do P18.*

The above statements from the participants indicate the convenience of e-learning as they were exposed to autonomous learning that builds their competence, confidence and responsibility at large. This is also evidenced in the statement below.

> *Very useful, it promotes sort of some responsibility, ones responsibility in learning, yes, independent learning P18,*

When asked about the part of e-learning management system that is most exciting, some of the participants in the individual and focus group interviews pointed out the opportunity to chat and post their questions and getting different opinions from their

colleagues via the OLS platform. They were conscious and excited about the benefit of the extra support they got from their colleagues and lecturers, as the following comments from some participants in the individual interviews and the first focus group indicate:

Mm...you know when, when you chat yah, it's very interesting because it was just like a play, you find that you really ask important questions where you get the different opinions from the colleagues as you chat **P18**.

Yes, really our lectures were available for us, the only thing is that they seem to be overloaded, I wish the the university could add some more, they are available but they work under pressure **P18**.

For sure, we get help that we don't even doubt **P18**.

Also you will find that if we don't get the lectures face-to-face, you could e-mail him your problem to solve it **P16**.

They were, they were always available yah, unless in the case where now they give us some work online and then we work that one and then submit through the Internet **P17**,

to add on that, I can also say that there were Learning Management System, because you find that before we could start particular module there is information on the Open Learning System where we go through some notes to find some additional information from websites so we can't do such things without identifying a good website that we want to use, so I think they were supportive **P16**.

I remember one case when designing the web I keep on referring to him, I shed tears one time find that I don't know what went wrong when you open your files you find that they can't open, until we finally went back to the lecture, really he was of great help, everything was smooth with his help **P18**.

Participants further indicated their appreciation of the tool by claiming that e-learning promotes their active social interactions, such as online student-student and student-lecturer interaction. They also noted that they would interact with content convenient to everyone anytime and anywhere.

I think LSM is...promotes active collaboration, it's about social learning, also it has some individualized instruction like we have the information; we access it at anytime, convenient to everyone **P18**.

One of the participants pointed out that in some cases the lecturer would post a thought provoking question for them to discuss amongst themselves, share ideas and come to a

consensus, before posting their response to the lecturer. Evidence of this is provided in the excerpt below from one of the participants in the second focus group interview:

> *Well... I can say ehmm... working on your own, and the particularly a discussion part of it where a student would eh...be asked to... respond you know to the some the students, the lecturer would pop in and say may be ask a question then all of us will contribute to that and would share ideas and upon that very interesting because you get even the things that you wouldn't know if you were taught in other modes of teaching* **P19**.

> *Open Learning System, where our lecturer would give work to... do... and to then join us later* **P19**.

The training that was provided by the selected institution was viewed by the participants as being very important and interesting as it gave them basic computer skills. This is corroborated by the responses below from participants in the individual and second focus group interviews:

> *It is all about reading, writing, web-designing video production, surfing the net, you know many skills that one is acquired including basic computer skills* **P18**.

> *other very fascinating for me especially the Internet, I couldn't stop mentioning because I am very good interested in that you know, so when you, when you log in, there is a lot of materials that even your course mates may not know about that, is highly assisted learning process* **P20**.

In short, the responses from the participants in this study show that rather than learning to make use of e-learning for facilitation, the EdTech students took time just appreciating it. As has been noted above, competence in the use of computers right from the start can be correlated with personal use of the e-learning resources during the course, but not allied to computer use in classroom teaching (Cuckle, et al., 2000). This shows that it is important for students to enter their EdTech training course with computer basic skills.

The computer is the basic tool in the EdTech training course and this is the reason why the minimum entry requirement into EdTech course is computer literacy. A participant from the first focus group interview confirmed the same concern below:

> *One needs to have computer literacy skills in order to register for the course because most of the courses here are done through the use of computer* **P17**.

Students in the EdTech course who have high levels of computer skills go beyond computer literacy, and learn how to use the tool in teaching and learning. The EdTech specialisation is about methods or techniques of using e-learning resources to teach, equipping students with the skills and knowledge on teaching the learners through the use of e-learning tools. However, some participants did not seem to have an understanding of this notion. The way the programme was viewed by the participants showed that most of them had entered the programme being computer illiterate and others semi-literate. This is indicated by the responses below from participants in the first focus group interview:

When I entered into Masters course in fact when I like to go for my postgraduate I had only basic computer it was fine but the only thing...problem I encountered is that I ...I wasn't able to use the Internet there were so many things that I need apart from the skills that I already had, it was interesting to surf the net, to use different search ehm... engines, are to communicate with others, I remember we communicate amongst ourselves through the computer, it was very, very interesting so I really learned a lot **P17.**

Yes, but you need to be computer competent in order to be connected to the Internet **P20**.

The comments below that were made by some of the participants from focus group interviews confirm the point that most of the EdTech students were computer illiterate when they arrived at the selected institution:

For me, no no no I didn't use it before **P2.**

I didn't know even how to touch a computer **P1**.

The data from the questionnaire substantiates the participants' lack of exposure to computers. According to one of Jone's (2006) principles; E-enhanced which is all about the access to online resources, therefore lack of access promotes students' learning frustrations when using e-learning resources such as the computers (Salmon, 2004). The statistics of the EdTech students' access to computers at the schools they teach is represented in the table below.
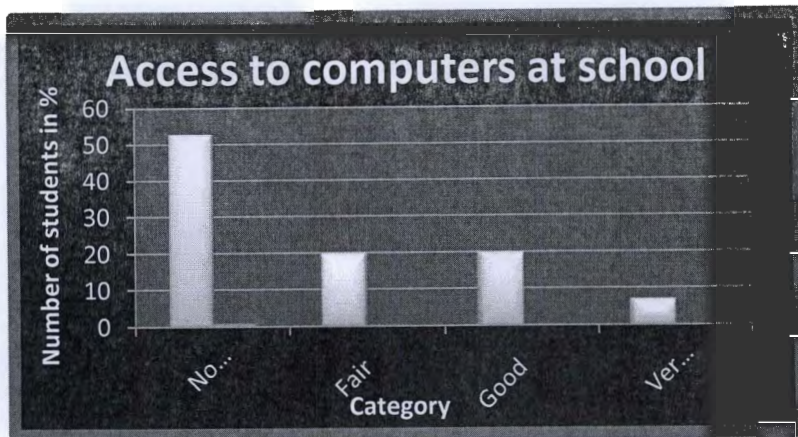
Figure 5.1: EdTech students' access to computers at school they teach

As shown in Figure 5.1 more than half of the participants (53%) indicated that they did not have access to computers at school. Others said that the schools had computers, but they were reserved for administrative office use only. About a quarter of the participants (20%) who had good and 7% very good computer access (27%) were satisfied with the access that they had at their schools.

Having full access to computers for the duration of the course enabled some of the students to acquire the necessary skills and knowledge required of them. This was evidenced by the participants' comments when asked to explain how they used technologies before coming to the selected institution. The following quote clearly indicates this:

> *We eh...we use computers for administrative purposes at our school such as examination preparation; examination questions, worksheets, mark sheets and reports eh... that's all* **P2.**

Many participants (73%) did not have access to the computer at home. This had implications in their computer competence in terms of:
- Familiarizing themselves with the technology
- Using the technology for teaching purposes
- Easing the administrative burden

Incidentally the participants who had no access to computers at their schools were the same participants (73%) who did not have access to computers at home. This evidence emerges from the questionnaire and is illustrated below:
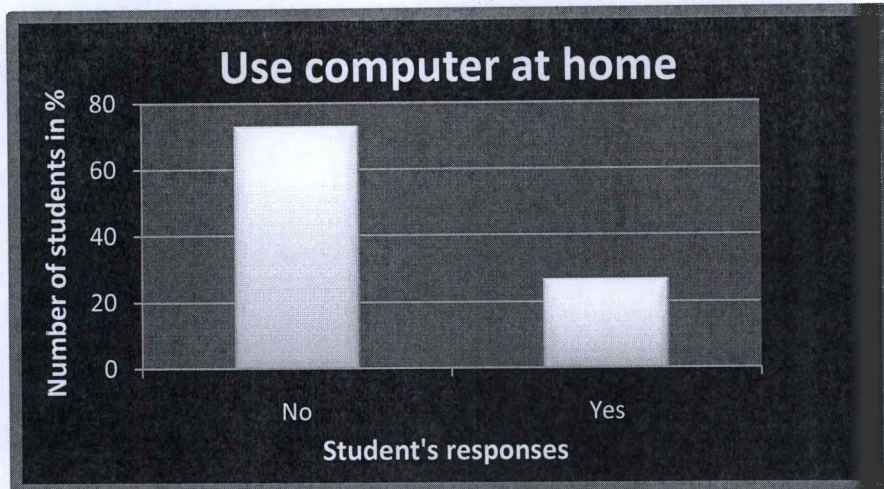
Figure 5.2: EdTech students' access to computers at home

Almost one-third (27%) of the participants indicated that they had received computer education before registering at the selected institution. Therefore, most of the participants (73%) got their first computer training at the institution when, in fact they were supposed to be learning how to use the computers to enhance their own practice as teachers.

It was noted in Chapter 2 that Dix (2007) and Trucano (2005) argue that most of the students who have access to computers with the Internet at home, stand a better chance to master their learning (they do their homework and a lot of practice supported by family members) than the students without computers at home. This claim is corroborated by the data produced from the questionnaires. The illustration below shows that 73% of EdTech students gained computer experience from the EdTech training. But, 27% of the students with computers at home had better computer experience than students who had no computers at home. This agrees with the constructivist theory by (Vygotsky, 1978) that experience is the source of knowledge and success in learning, students constructs their knowledge.
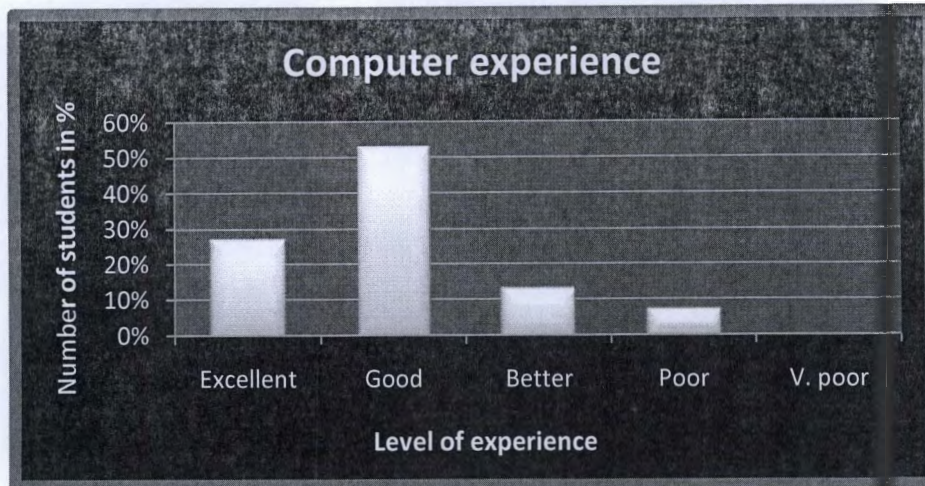
Figure 5.3: EdTech students' levels of computer experience

It is evident in Figure 5.3 that more than half of the participants (53%) had gained good levels of experience in computer skills through their studies. It is clear that an improvement had occurred, and in that way, participants could access computers more frequently than before. The reason for this improvement was that they learned collaboratively and engaged in computer practices. The students who had computer experience (have computers at home) helped those who had no computers through collaborative learning. The work of lecturers was just to facilitate them.

However the training equipped them with some skills and knowledge on how to use the tool as noted by the participants from focus group below:

> *Well of course for me really because what I could not do earlier I am able to do now yah; I am able to... log into... so many programs, I am able to... e-mail* **P2.**

> *I think create files, can search the web for... are using different search engines which we did not know, and then we know about the websites where we visit to get* **P3,** *a lot of information* **P2.**

> *To me now computer is not just a box; is something that can be used to access information* **P1.**

Most of the students acknowledged computer literacy to be the most valuable basic skill they have acquired. The Information Technology (IT) module helped them to acquire basic computer skills and this was more important to them than learning how to teach

with electronic resources. In support, according to Jones's (2006) e-intensive' stage that emphasised to be an effective, flexible solution and depends mostly on modules used as guide just like IT.

Most participants shared the views that they were pushed by the IT module to spend several hours a day doing their work in the Local Area Network (LAN), and that this practice helped them to acquire computer literacy and competence. The quotations above draw attention to the fact that most students were computer illiterate when they first arrived at the selected institution and gained computer skills and knowledge through their everyday practice at the institution. Some of the LANs were accessible for twenty-four hours a day, which increased practising sessions. Thus the participants who were interviewed claimed that the EdTech modules (such as IT) that were provided by the institution gave them basic computer skills.

> *The most appropriate sh... module I think of was IT, that is...in... information technology that is where we covered most of the things that are used in the specialization because we focus on the overall of the use of technology devices* **P19**,

> *Information technology, IT* **P17**,

> *that includes multimedia, so that she mentioned information technology eh...has been very good, has been very appropriate* **P20**,

> *where we design our websites, that's interesting, very interesting* **P17**,

> *yah, video technology, media, eh...what else* **P16**?

> *I think all the modules, all the modules were relevant to the programme, eh...multimedia, video technology and Information technology were very appropriate* **P18**,

> *because we were using all of them in the programme, we have learned all those modules through computer literacy, everything we did on the computer that's why I said all of them are appropriate* **P18**.

Some of the participants identified access to the Internet as one of the major benefits they acquired through the IT module as they interacted with peers, sharing their views and information. This is evidenced by the first participant's comment from individual interviews and supported by one participant from the focus group interviews below.

Also in the area of ehm...policy and practice in IT especially the Internet is very good help you know for delivering because we get a lot of materials and that we can need for exchanging of ideas and opinions which actually help in learning **P20**.

Well eh...as far as I can remember in... information and sh...in information technology we used to use some of the...mm... technology devices like ehm...Microsoft Word, the Internet and others and in multimedia so we did **P19**.

There are no comments indicating the use of computer in teaching as the central part of the EdTech training. Therefore, it can be concluded that one of the major themes emerging from data is that while technologies were seen as essential in the learning of EdTech modules, the students' excitement over their newly developed computer literacy led them to appreciating the tool more than they actually applied it.

While the findings indicate that the students seemed to enjoy their experience, the findings also show that they were actually celebrating what was not the purpose of the course. Students should have advanced computer skills in order to benefit in the use of technologies for pedagogy. If they do not have these skills, they get excited to discover what the computer can do in terms of access to knowledge rather than its pedagogical function. However, it should be noted that the EdTech students were at different levels of computer literacy and therefore responded differently for the course. Still the majority were those who valued ITC literacy rather than pedagogical advancement.

5.3 Theme 2: Transformative e-learning course design practices underpinned by technologies

Even though the entry requirement in EdTech programme is computer literacy, computer literacy is the acquisition of basic skills that can be used for various purposes in various situations, some of which are not relevant to e-learning activities without pedagogical practices and theories of learning. It was explained in Chapter 2 that a practical and efficient constructivist learning environment often combines functions such as discussion boards, chat rooms, online assessment, tracking students to the use of the Internet, and course administration (Levin &Chandler, 2001). Technologies therefore enable the students to collaborate on projects and share information.

The Internet has a collection of information that has links to learning; it promotes students' effective communication and their capacity to work collaboratively and interact easily (Rieber, 1992) and successfully thus promoting interpersonal skills. The Internet also develops students' e-learning responsibility and accountability for the way they use it to learn. It also builds students' competence in assigning, transmitting, accessing and understanding information. It promotes students' capability to prioritise, plan, manage programs and projects to achieve the preferred results, to apply what they learn in the classroom to real-life contexts to create relevant, high-quality products. It promotes students' autonomy and self-discipline as learning is centred on the student.

The participants contended that computer had transformed the way they learn. There is no more rote learning and educators are no longer the only sources of information whereby they pour information into the student's head. Instead of traditional face-to-face instruction, the learners also do self-study, independent learning and student-centred learning, in the process promoting their self-confidence. This is evidenced by the quotations below from some participants in the first and second focus group interviews:

> *Yah, it has changed, we have, we have moved from whereby we would sit in the lecture room waiting for the lecturer to come and tell us, yes, give us information but now we can find information by ourselves* **P1**,

> *As far as I can remember when we were dealing, were dealing, were this started were eh... our work in Honours at Bed Honours, where we used to ...Open Learning System, where our lecturer would give work to... do... and to then join us later* **P19**,

> *Open Learning system is very very beneficial because you can work on your own, you don't need the lecturer to be there, they just tell you what to do and then you go on your own looking for resources and this Open Learning system also we need the Internet and is the whole web yah* **P20**.

In this way of learning, participants construct and interact with their own learning environment. They are able to work on their own and find solutions to their problems. The participants indicated that learning through technologies is an advanced learning style since they are now living in the digital era. They therefore want to be prepared to use technologies found in their work places and to fit in the digital society.

A student-centred context allows students to construct their knowledge. Knowledge is based on the premises that all students construct their own perspective of the world through their individual experiences as a basis (Denzin & Lincoln 1994). Therefore, such learning environment should be suitable for students' knowledge construction.

The participants provided evidence that they were more comfortable in their computer laboratory more than in any other place when doing their EdTech work. This was because of the availability of computers to all participants. It has already been explained that a computerised classroom impacts on students' motivation, and promotes greater accessibility of technologies' higher order skills (Trucano, 2005). All the EdTech modules were conducted using computers and the learning style was active and student-centred. They utilised group work, collaborative project work and application of instructive methods of learning as is maintained by Jones, *et al* (2007) and discussed in Chapter 2.

Computers greatly transformed the students' learning style as they all agreed that they did not have experience of learning with technologies. They confirmed that computer tools play a major role in EdTech. The EdTech programme has reached higher levels of e-maturity and reveals rapid increase in performance (Balanskat, et al (2006).

Computers improve the quality of teaching and learning in numerous ways. For example they increase students' inspiration and commitment to learning, assist in the achievement of basic skills, and improve teacher training. E-learning activities when appropriately applied with relevant e-learning resources to learn EdTech modules, promote a student-centred learning approach. EdTech is all about methodologies, strategies, techniques and theories and therefore without good application within classroom perspective, technology becomes meaningless (Govender, 1999).

All participants in this study responded that they were trained on the methods and techniques of using some of the technologies in teaching and learning employing the theory of constructivism. This view tallies with Balanskat, et al.'s (2007) proposal that

whenever each form of ICT is used, a relevant pedagogical approach to improve teaching and learning should be employed. Pedagogy and educational technology intertwine as both of them assist in enhancing quality teaching and learning (Schrittesser, 2004). In this regard, the participants indicated that they were trained to be aware of the importance and benefits of knowing the target group when preparing work for teaching and learning.

Educators should be well-informed to teach effectively; using appropriate approaches; catering for students' differences and applying well-organised theories, techniques, and methods of teaching with appropriate technology tools. The students are likely to have a poor educational experience if the focus of the design has been technological as opposed to pedagogical. Balanskat, et al (2006) argue that, *"ICT investment impacts on educational standards most when there is fertile ground in schools for making efficient use of it"*.

In this study, pedagogically, the participants' training was based on constructivist principles, using research-based, project-based, collaborative methods of learning. This is evidenced by the first comment which is from the participant in the individual interviews and the participant last three from focus group interviews below.

> *Ehm... we were engaged in mini projects and independent research to acquire skills of project and research-based learning* **P3**.
>
> *You just go there, this issue of constructivist learning or learner-centred instruction, it was also well done* **P16**,
>
> *Pedagogical practices* **P17**,
>
> *And pedagogical practices you see, yah, yah* **P16**.

The EdTech course has increased the participants' competence in learning in several ways, but the most important issue is that computer and the Internet promote more of project-based learning. Therefore, most of the students engaged in the research project have gained the skill to use computers for their research studies due to the more frequent use of computers in their Information Technology module. They used computers and the

Internet to get the current and past information or literature to support their investigations.

Student's enthusiasm about the major pedagogical practices they have acquired such as collaborative learning methods (Palloff & Pratt, 2005; Wall, Ahmed & Smit, 2006), was seen from their body language together with the laughter heard from one of them whose comment below supports the above cited comments.

(Crackling with laughter), *hei, interesting* **P17**.

The participants noted that EdTech is student-centred, and uses computers to enhance teaching and learning and project based learning in more advanced ways only if it is effectively employed (Percival & Ellington, 1984; Rowntree, 1982). Computers were argued to have the capacity to bring other considerable benefits to deal with e-learning activities and learn EdTech modules successfully. The benefits include an enhancement in learning through presentations in which students' use Microsoft PowerPoint to exhibit their group work as highlighted by the comment from individual interviews.

> *PowerPoint, yes, yes, in most cases we actually present using PowerPoint reflecting on the screen* **P18**.

The above mentioned comment proves that computers provide increased opportunities for interaction (Rieber, 1992), which can usefully provide for joint problem solving, shared learning and enhance face-to-face contact.

There is evidence emerging from interviews indicating that computers offer major opportunities to the selected institution to enhance the quality, accessibility and cost effectiveness of university teaching. Electronic mail, computer conferencing, and the World Wide Web as indicated in literature are strengthening contacts between students and their lecturers or the ones in authority (Jones, et al., 2007). All the above mentioned activities are accessed through the Internet. The following comment from the first focus group interviews briefly recapitulates the general level of the Internet satisfaction experienced by most students.

> *Now you see ehm…what what we also learned here is the using of this Internet and eh…the resources, electronic resources eh…that brought the e-mails as well, promoting a sort of accessibility* **P16**.

Evidence from participants shows that students who attended the EdTech programme gained advanced computer skills. Moreover, the use of computers has improved students' creative thinking skills, such as creativity, problem solving, higher-order thinking and reasoning skills, along with improved effective communication. Improvements in interpersonal skills, such as writing, public speaking, teamwork and collaboration, and improved productivity skills, including creating high-quality products (Akbulut, et al., 2007; Nichols, 2006), have been part and parcel of quality e-learning activities to learn EdTech modules. This student appreciates the use of the Internet and especially the collaborative learning to be functional in his progress.

> *Yah, it ranges, it ranges eh...from eh... one individual to group eh... as an at large, we were able to collaborate, sometimes you could also do your own work, but when we need help, it was easy for us to connect with other members of the group* **P16,**

The constructivist view, explained in Chapter 3, is that students interact among classmates or group members as they expand their horizons. The quotations below from the first two participants in the focus group and one from individual interviews indicate the effectiveness of student-student interactions:

> *Yah, it ranges, it ranges eh...from eh... one individual to group eh... as an at large, we were able to collaborate, sometimes you could also do your own work, but when we need help, it was easy for us to connect with other members of the group* **P16,**

> *I remember we communicate amongst ourselves through the computer, it was very very interesting so I really learned a lot* **P17.**

> *When you chat yah, it's very interesting because it was just like a play, you find that you really ask important questions where you get the different opinions from the colleagues as you chat* **P18.**

The last comment above implies that student experiences of the contributions from their colleagues are positive since other student s' ideas add to productive learning (Kirschner & Selinger, 2003; Thomas, 2006).

Participants indicated that their face-to-face or public interaction in the LMS was very valuable especially if learning took place among the peers as is pointed out by Kirschner & Selinger (2003), Palloff & Pratt (2001) as well as Thomas (2006). They would share

and grasp each others' contributions, comments, ideas and suggestions through discussion groups. This has been highlighted in the quotations below from participant in the first and second focus group interviews:

> *Basically we work in groups, yes, whereby we share ideas amongst ourselves and present what we produced especially when it is prepared for our presentations, we have topic and then divide it amongst others* **P17**,

> *We use to meet as a dream team (group members) whenever tackling some assignments, we would really try to meet, and it was very good because people also come even over the weekend and then we meet and do our work in the absence of the lecturer* **P16**.

> *As far as I can remember when we were dealing, were dealing, were this started were eh... our work in Honours at Bed Honours, where we used to ...Open Learning System, where our lecturer would give work to... do... and to then join us later* **P19**.

The positive implication of these responses is in the constructive nature of face-to-face interaction, which affords students an opportunity to voice out their views and to express their perceptions while, at the same time, their lecturers have a chance to intervene and correct whichever doubt that may occur.

As explained in Chapter 2, student-lecturer interaction is one of the valuable learning features of LMS as it develops student-lecturer relationship, thus improving students' motivation, and resultantly improving students' learning outcomes (Palloff & Pratt, 2005). Most of the participants reported the availability of the lecturers through means other than just face-to-face.

This student-lecturer interaction experience is supported by other students from the focus group interviews, who commented on the use of cell phones and the e-mails to contact the lecturers when there was a need as opposed to traditional face-to-face contact. When the e-mail is available, lack of personal contact is not a crisis.

> *They gave us their cell numbers, e-mail addresses everything we need to call on at anytime* **P18**.

> *Really they were approachable* **P18**.

The participants' comments imply that their lecturers were approachable, helpful, and supportive and they claimed that their lecturers really appreciated interaction with them. However, the e-mail method was more useful as the face-to-face method was sometimes hindered by lecturers being overloaded with work. The comment below is from a participant in the second focus group interviews showing that interactions with the lecturers could be made without necessarily meeting them face-face.

Also you will find that if we don't get the lectures face-to-face, you could e-mail him your problem to solve it **P17**.

This participant appreciates the idea that she could interact with the lecturers and her problems get solved by the lecturers in an easier, advanced and quicker way. Thus, the student could save time and energy that could be wasted unnecessarily when visiting the lecturer's office, sometimes only to find them out for workshops or for other commitments.

Some participants indicated that lecturers were accessible for them to give extra support through the LMS platform. The participants acknowledged the assistance they received from their lecturers to be a very inspiring LMS practice due to its role in the improvement in students' performance and learning encouragement. This is evidenced by quotation from participant in the individual and focus group interviews whereby participants showed how much they kept requesting for assistance that would be helpful to them:

I remember one case when designing the web I keep on referring to him, I shed tears one time find that I don't know what went wrong when you open your files you find that they can't open, until we finally went back to the lecture, really he was of great help, everything was smooth with his help **P17**.

The input made by the lecturers and peers on EdTech students' work before contact lectures was very valuable to students. They were able to make corrections before it was too late and went on smoothly with their modules.

For sure, we get help that we don't even doubt **P18**,

to add on that, I can also say that there were Learning Management System, because you find that before we could start particular module there is information on the Open Learning System where we go through some notes to find some additional information from websites so we can't do such things

without identifying a good website that we want to use, so I think they were supportive **P17**.

From the above mentioned quotations, it is clear that students shared their views about the support they received from their lecturers. They indicated that the intervention by lecturers, such as in-depth clarification, the sending of quality information to LMS for their studies and the considerable care that they received merge constructive in their learning.

The findings also show evidence of student-content interaction. Chapter 2 and 3 explained that for student-content interaction to fulfil its aim, students should meaningfully engage in e-learning activities through interaction with meaningful information, notes, assignment, tasks and quizzes (Precel, Eshet-Alkalai & Alberton, 2009). The comment below made by one participant from individual interviews and focus group, confirmed this argument:

> *I can also say that there were Learning Management System, because you find that before we could start particular module there is information on the Open Learning System where we go through some notes to find some additional information from websites* **P17.**

> *I e-mail yes, and I can type, I can use blogger, I can design webs* **P18**.

> *Eh... I find OLS an easy and well-located tool to utilize. Labels employed for the diverse of tasks. For example; reading mm...materials, assignments, communication such as eh... chatting and collaboration are clear and not confusing; it is too easy eh... to navigate* **P3,**

> *Yah, I think LSM is...promotes active collaboration, its about social learning, also it has some individualized instruction like we have the information, we access it at anytime, convenient to everyone yes, yes* **P18,**

> It (LMS or OLS) is a matter of playing words because *it is actually about getting information online, whatever information those learning tasks, activities, assignments, quizzes are there* **P18,**

> *Yes well of course, yes, we should, you know in a computing we have so many things, we have got, there are so many features or ICTs we get from computers that we can , we discuss with other colleague, can chat with other colleagues and, and, and lecturers everywhere* **P5.**

Participants from the focus group and individual interviews indicate the convenience of the computer in their learning through LMS. They argue that the availability of the course through LMS assists them to work effectively and independently because such notes that assist them with the readings for discussions, quizzes, tasks and assignments to be tackled, supported by E-focused principle of Jones (2006), where students interact with each other through discussion boards, get assessed and get feedback online and use interactive learning materials. The participants found that they actually gained more self-confidence as they engaged in activities in the absence of their lecturers. The following comments from some of the participants show:

> *I can also say that there were Learning Management System, because you find that before we could start particular module there is information on the Open Learning System where we go through some notes to find some additional information from websites* **P17**.

> *It is actually about getting information online, whatever information, those learning tasks, activities, assignments, quizzes are there* **P18**,

> *There are quizzes, yah* **P19**,

> *dealing with the quizzes and other parts that are interesting, very interesting indeed* **P19**.

> *Other very fascinating for me especially the Internet, I couldn't stop mentioning because I am very good interested in that you know, so when you, when you log in, there is a lot of materials that even your course mates may not know about that, is highly assisted learning process* **P20**.

The above quotations confirm that exposing students to information, quizzes, tasks and the lecture notes including the feedback from the lecturers via LMS, promotes students' independent learning. This is the reason why students said they can access information anytime as they were highly motivated to learn. The information posted by the lecturers to LMS worked as guide for students in terms of what to draw attention to. As a result, when students studied for collaboration and PowerPoint presentations, they were conscious of the key points to focus on, as per Basic ICT usage and E-enhanced principles of learning are well used for PowerPoint Presentation and e-learning resources (Jones, 2006). The participants evidently understand that when using the LMS as a

learning platform, their ways of learning and knowledge would develop, as the following quotations indicated:

> *Yah, I think LMS is...promotes active collaboration, it's about social learning, also it has some individualized instruction like we have the information, we access it at anytime, convenient to everyone yes, yes* **P18**.

> *PowerPoint, yes, yes, in most cases we actually present using PowerPoint reflecting on the screen* **P18**.

> *Very useful, it promotes sort of some responsibility, ones responsibility in learning, yes, independent learning* **P18**.

According to the participants, the availability of notes as resource materials via LMS was one of the ways of engaging and improving e-learning activities that allows students to manage time for their learning, access notes, and work on them in their own pace and space. This is evidenced by the comments made below, indicating that it was one of the highly acknowledged productive aspects of pedagogy:

> *You are free to push yourself because information is there for you, you don't have to wait for the lecturers to tell you what to do, everything is there yours is to push yourself and do the work* **P18**,

> *You have no problem because you have a lot of work to do* **P18**.

Most of the participants argued that the computer is essential for any type of learning:

> *Ehm...In a computer the Internet and MS Word play a major role in our teaching and learning* **P3**.

> *Yes well of course, yes, we should, you know in a computing we have so many things, we have got, there are so many features or ICTs we get from computers that we can , we discuss with other colleague, can chat with other colleagues and, and, and lecturers everywhere***P5**.

> *We eh...we use computers for administrative purposes at our school such as examination preparation; examination questions, worksheets, mark sheets and reports eh... that's all* **P2**.

The above cited comments highlight the well-located aspects of pedagogy coupled with the computer to support e-learning activities including assessment as a learning reflection.

Computer-assisted assessment brings about progress in learning outcomes and student performance due to its appropriate and accessible feedback to students to accomplish their learning (Morris & Walker, 2006). There is evidence from literature that assessment is a useful way of encouraging students to push themselves to learn successfully as they normally ask for feedback (Badenhorst & de Beer, 2004; Crossouard, 2008; Gulc, 2006; Stacey & Gerbic, 2008). Computer-assisted assessment also caters for students' learning differences. For example, slower students with learning disabilities can take more time and get more feedback and direct help from educators and fellow students (Palloff & Pratt, 2005). Thus, computer-assisted assessment usually results in very high quality student achievement. The following are a few comments made that show different types of assessment experienced and the level of student appreciation:

> *Portfolios, assignment tasks, home work and then in class* **P20**,

> *By assignments, continuous assessment actually* **P20**,

> *Daily task* **P19**,

> *Daily task, class work* **P20**.

> *The assessment was really highly structured to the fact that you find that we get different types of assessment; class assignment, take home assignment whereby we would prepare portfolios but yes, no, no, you find that, I think for for this discipline EdTech like is related to practicals, authentic assessment and appropriate to skills in doing not in writing as such but doing, practicing, they could be useful, help to a point whereby actually we do this things, it is true that we have been introduced to video but we don't know video footage but with others you find that there are such a steering to me, authentic assessment is relevant to this discipline* **P18**.

The above statements confirm Badenhorst & de Beer's (2004) assertion that computer-assisted assessment is beneficial due to the opportunities it provides to students in EdTech course as it encompasses thorough checking of online learning materials for e-learning activities and useful variety of assessment alternatives, and lecturers support. Students indicated that they submitted their tasks by electronic mail to their peers and peers were dedicated enough to provide feedback as soon as possible (Penfold & Pang, 2008). They also showed that their lecturers sent course outlines, course notes, quizzes, tasks, take home assignments to the web to be accessed by students online as proposed by Precel, Eshet-Alkalai and Alberton (2009). Therefore they were able to access such

information and submit their assignments and gott feedback online (Crossouard, 2008; Gulc, 2006; Stacey & Gerbic, 2008). The comments from the participant below highlight how students can benefit from online learning in relation to assessment.

> *Class assignment, we used to submit electronically and some expected to submit as hard copy* **P17**.

As the course improved, student-student assessment and student-lecturer assessment was conducted easily and resourcefully conducted via email.

As discussed in Chapter 2, if students encountered any problem on posted tasks, they communicate asynchronously or synchronously with peers sharing ideas on how to solve it through computer conferencing (Kirschner & Selinger, 2003; Thomas, 2006). Similarly, the participants said they did the same when assessing their colleagues, and they were able to detect their weak and strong points. This is supported by the following from a participant in the second focus group interviews.

> *Yes, we also did it (peer assessment), I remember when doing video production, after production then we exchanged our productions amongst ourselves and we identify the weak points and then strong points, we really do it is not only that video production* **P18**.

The quotation above shows student satisfaction with peer assessment. Thus, a well-organised collaborative assessment programme promotes students' independence, competence and confidence to judge their own and peers work and help to identify their problems and get assistance on time (Unwin, 2008). This social atmosphere is advantageous in that students successfully acquire self and peer assessment skills for lifelong learning. The following statements substantiate this:

> *We did collaborative assessment not peer assessment* **P20**,

> *there was where we discuss in groups and somebody presented it, all ideas come together and presented by one us around the whole group* **P19**.

> *Eh...we we did that individually, so we share our work about what we have found. We never done it collaboratively* **P18**.

Such statements reveal understanding on the part of the students of what peer or collaborative assessment means. However, the comments still show that both forms of the assessment were practiced, and the contradiction might just be matter of terminology.

As has been noted earlier, one important way through which computer-assisted assessment improves outcomes is that it gives students motivation to engage in meaningful continuous learning and quick feedback to enhance their learning (Young & Duhaney, 2008). Students appreciated the fact that they could get answers to their questions promptly from their colleagues and lecturers without wasting time visiting the lecturers' office.

5.4 Theme 3: Limited resources for e-learning activities

The computer is not the only e-learning tool used to learn EdTech modules; there are varieties of them but the data reveals that there are inadequate e-learning tools for students. In most cases, students usually use e-learning resources to learn and do their course work successfully (Codone, 2004; Dickinson, 2005; Hibberd, 2006). They access resources relevant to their course activities such as tasks, assignments, interactions, assessments and examination clues that are made accessible by their lecturers to supplement their courses. Although they should have their choice of resource access to learn, they are sometimes compelled by certain issues regarding their learning such as assessment to use the added resources. However students should have a flexible resource access at their own pace and not be forced to use extra resources through pressure from assessments (Murphy & Greenwood, 1998; Molesworth, 2004).

When students were asked if they should use ICTs for learning, all the participants agreed that it is important to be exposed to varieties of technologies to acquire new skills. They claimed that it would speed up learning and make lessons to be more interesting and easier. In addition, when asked if they felt that the training they received prepared them adequately for using technologies in their learning, few of the participants commented negatively. They said that they were unable to use the computers well and they believed that they should enrol for a full-time course on computer skills (they were on part time

basis) to be thoroughly trained before they can use the computer competently. Still, most of the participants' comments were that there is quite a significant change in relation to learning. They said that they can do their work in a more advanced way.

The participants agreed that they found it easier to use the computer for administrative purposes such as keeping school records, preparing worksheets, using folders to keep created files and saving them in different locations, preparing mark sheets for learners, and surfing the Internet to get information for their daily lesson plans. It was more challenging to use computer as instructional media. The data gathered from the questionnaire relating to their perceptions are represented graphically in Figure 5.2 below:
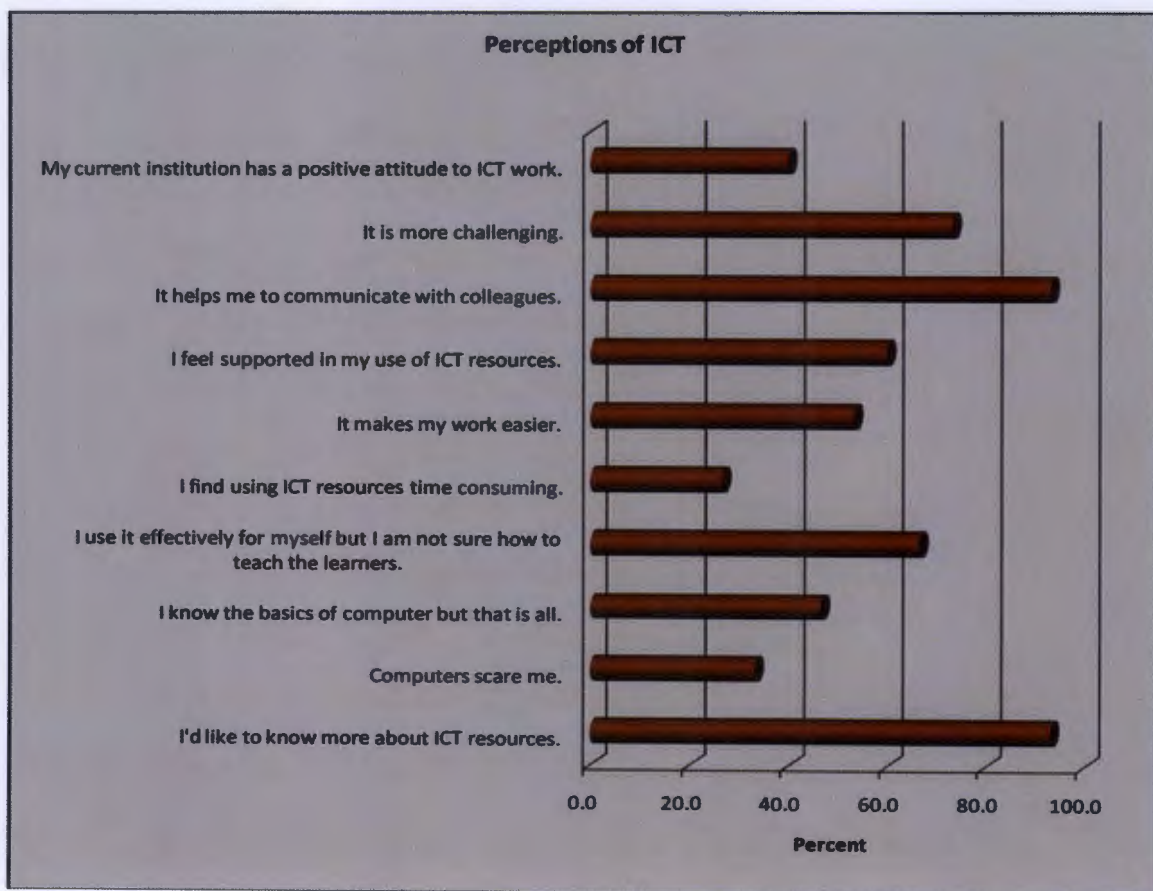

Figure 5.4: EdTech students' perceptions of technologies

The general impression is that the students recognise the need for technologies, and are aware of the benefits of having the resources. Even though only 40% of the participants indicated that the institution under study encourages the use of technologies, the students are keen to know more about them (93.3%). One of the main reasons is to be able to keep in touch with colleagues (93.3%). However, most students are not very familiar with the more complex details of using the technologies. Even though some students have some operational knowledge (47%), participants find technologies scary (33.3%), and challenging (73.3%). A small number (27%) find using technologies time consuming. Students do recognise, though, that technologies would be a great advantage as teaching tools in the classroom if they were taught proper implementation and use (67%). They therefore exhibited a need to understand how technologies can be used appropriately as EdTech students to teach effectively.

In this study, participants indicated that they had access to certain types of resources used in teaching and learning EdTech modules through blended learning such as whiteboards, Overhead Projectors and video productions, but the most basic resources accessible to them were computer tools such as LMS or OLS and the Internet. LMS in most institutions is used as a platform from which students accessed electronic learning materials (Badenhorst & de Beer, 2004). The System was established to provide more flexible access to academic e-learning tools. The Internet networks developed by the university to support students allow them flexibility to access a greater range of learning and information resources (Jones, et al., 2007; Palloff & Pratt, 2005; Panangalage & Pasgual, 2008). This is supported by comments from focus group interviews which focused on the accessibility of the Internet.

> *We used computers, video production, so basically we use computers, because most of the time we use the Internet* **P17**.

> *Now you see ehm...what what we also learned here is the using of this Internet and eh...the resources, electronic resources eh...that brought the e-mails as well, promoting a sort of accessibility* **P16.**

> *To resources, you would not say the lecturer is not here* **P16.**

> *Like I said whatever we did we used computers, there were computers it is true but at times you will find that some of them are not working because everybody uses the computer* **P18.**

Almost all the students now had access to computer and the Internet resources. The quotes below indicate the dominance of computers with the Internet in the EdTech course and how students were exposed to diverse media modes that allow them to interact and access content (Brown & Adler, 2008; Hameed, Badii & Cullen, 2008; Zhou, et al., 2007). Thus, students showed lack of access to e-resources other than computers such as digital cameras due to their shortage or some restrictions.

> *Mostly computers, mostly computers which are connected to the Internet and very few very, very, very few ehm...digital cameras, few ehm very few* **P19,**
> *the only thing that we have access to...we only have access to computers but with the... digital cameras and the video machines, it was rather, you know they were under very restricted access* **P19,**
>
> *Apart from the computer and the Internet which we have in the LNA down stairs for us, other devices are very difficult, call it digital camera, call it video compressors* **P20.**

The focus of the university under study is mostly on computer rather than other technologies such as the digital camera that has not been used to improve access to and the quality of EdTech training. As a result, the quality of teaching and learning can be promoted by other technologies together with computers. Although these computer tools enhance students' inspiration due to their interactivity with other technologies to partake and communicate with people experiencing real world events, students need to be exposed to variety of technologies. However the selected institution in KwaZulu-Natal Province is taking advantage of the computers and Internet to provide better EdTech teacher professional improvement opportunities to promote web-based, self-directed, self-paced EdTech teacher trainees as proposed by Jones, et al. (2007) and Young & Duhaney (2008). Verbally, one of the participants from the individual interviews said...

> *Eh...the Internet is the... rich sources of information needed to learn our daily educational work. It is the fastest and... surest way of discussion boards, chat rooms, online assessment, discussion forums via email, videoconferencing, and live lectures (video streaming), eh... assist us to collaborate on projects and share information, doing assignments even the research projects. It has the rich and reliable information only if one has the Internet skills* **P1.**

The Internet as a web-based learning tool consists of, amongst other things, discussion forums via email, videoconferencing, and live lectures (video streaming) (Kumar, 2004). It provides web based courses, and may also provide static pages such as printed course materials. The value of using the Internet to access information are that, web pages may contain hyperlinks to other parts of the web, thus enabling access to a massive amount of the web-based information (Kent Country Council, 2004; Tech Target, 2009) that students need to learn EdTech. The Internet creates a real live learning environment that eases learning (Kumar, 2004). The Internet is accessed to give and share information, simulate and support research as per the social constructivist theory explained in Chapter 3.

Most students acknowledged the effectiveness of the World Wide Web as a current and extensive source of information and one that was relatively easy to access. Evidently, the Internet as a source of information also increased their motivation to learn. For instance, their desire to learn was perhaps best reflected by one student who declared:

> *I would go from one link to another, doing a lot of reading, not being aware that I have crossed the night* **P8.**

Furthermore, the participants gave evidence that access to meaningful resources fostered critical thinking skills and allowed them to see new ways of interpreting and evaluating information. In corroboration, several students acknowledged that gathering viewpoints and knowledge from the Internet enabled them to debate before they can attend the lectures. Below is an example of a comment from the focus group interview.

> *The Internet is very instructive; it has cleared up some misunderstandings I think a lot of us had before* P8.

Students further noted that they were given access to references that illustrated and extended classroom discussions. In addition, most of the participants appeared genuinely impressed by the variety and quality of learning materials offered via the Internet. As one student explained:

> *Other very fascinating for me especially the Internet, I couldn't stop mentioning because I am very good interested in that you know, so when you, when you log in, there is a lot of materials that even your course mates may not know about that, is highly assisted learning process* **P20**.

Participants were inspired by being able to connect with a real community and to participate in real events globally via the Internet. According to the data that were gathered through the questionnaire, interviews and observations, the general use of technologies in the laboratory was adequate since 27% of students answered negatively whereas 73% of students answered positively. They said that the EdTech training they received in relation to e-learning resources used was valuable.

The data revealed that computer mediated communication allows students and lecturers to interact collaboratively even if they are off campus. Students can be given their own electronic space to communicate as a group, with members working either at the same time (synchronously) or at different times (asynchronously) through computer conferencing (Palloff & Pratt, 2005). Moreover their modules with tasks and reading materials prepared by their lecturers were found in OLS (Jones's 2006) continuum of Blended Learning. In this way, students could work at their pace. This is supported by the quotations from focus group interviews in relation to the user-friendliness of the OLS.

> *To add on that, I can also say that there were Learning Management System, because you find that before we could start particular module there is information on the Open Learning System where we go through some notes to find some additional information from websites so we can't do such things without identifying a good website that we want to use* **P17.**

> *Eh... I find OLS an easy and well-located tool to utilize. Labels employed for the diverse of tasks. For example; reading mm...materials, assignments, communication such as eh... chatting and collaboration are clear and not confusing; it is too easy eh... to navigate* **P2.**

Most of the participants in interviews showed that they enjoyed OLS the most because it was one of the best e-learning resources in learning EdTech they worked successfully with. They indicated that it was easy for them to be devoted to their work without any problem because of the OLS's ease of accessibility. The buttons for searching information are plotted in such a way that they track the investigators towards information. Therefore, computer tools, in particular, the Internet and OLS served as a support to students. Learning is an active process and learning situations, environments, tools, skills, content and tasks are relevant, realistic, and authentic and represent the

natural complexities of the real world (Vygotsky, 1978) guiding principles of constructivists theory.

According to Dix (2007) integration of ICT in schools develops noteworthy changes in teaching practice and improves students' confidence. Therefore, their main concern is to be trained for basics on other technologies skills and knowledge regardless of the computer basics they have already received in EdTech training since computers are not the only form of technologies found in schools. According to Trucano (2005), technologies use differs according to different school subjects, there is proof that EdTech students are still in the first phase of ICT improvement because they lack skills of other technologies.

The EdTech lecturers did not make use of other technologies such as mobile phones, Smartboard and others that are available at the selected institution for students' learning. A possible reason for the non-use of the other technologies could be the lack of technical support from the selected institution's structures. It was noted in the literature review that reasons for low usage of technologies are assignable causes, namely, lack of technical support or unavailability of the resource. The findings emerging from the questionnaire indicate that there are a few categories of items that are not available at all. Amongst these are podcasts, facsimiles, Smartboards, blackboards and to a lesser extent, laptops. Where resources are available, students are unable to use them because of the unavailability of technical support. Possible reasons for this are:
- There is no technical education in the given department
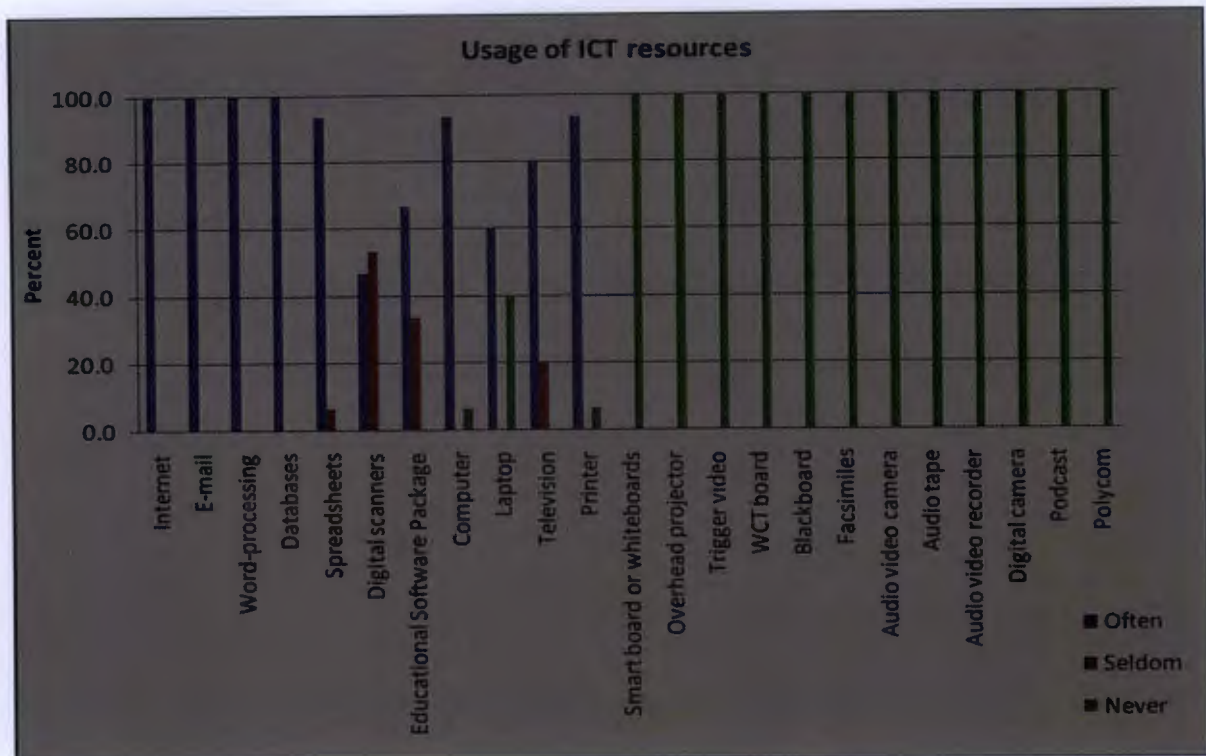- There is no personnel who are capable of handling the equipment

Figure 5.5: EdTech students' use of technologies in learning

Figure 5.5 shows that 100% of the participants often used the Internet, e-mail, word-processing, database, spreadsheets, computers and printers. The more familiar they were with a particular technology, the more confident they became with the use of that technology. The other technologies such as Smartboard, trigger video, WCTboard, blackboard, facsimiles, audio tape, audio video camera, audio video recorder, digital camera, podcast and polycom were not used at all but learning in multiple perspectives and presentations is effective (Vygotsky, 1978) . The non-use of these technologies has a negative effect on their confidence in using these tools in case they had access to them.

The participants were asked to indicate their reasons for not using some of the e-learning resources. The main reasons given are that they lacked technical skills and confidence. One of them in an individual interview said:

> *I think like for now I understand when we talk of e-learning like we are doing, we are basically using computers which I think it's not enough, to get the information like we did the module on video production, there weren't enough videos because from what happened, we didn't have enough video skills, so if there weren't enough it means, we didn't have enough time to practice, we don't*

have time, we lack time so that we become confident in using it, so if we could improve the resources that will be fine. One other thing is eh...we have a Smartboad on campus but as an EdTech student I haven't been taught about using it so if that could be considered so that when we go out in the field we are very confident and competent about all the resources that relate to EdTech like the Smartboad, the one that are available like Smartboad, it is available but we didn't have access to, we don't even know how to use it but it's there is part of e-learning **P18.**

Most of the participants agree that they have to ensure that they keep up with skills and development for e-learning resources. Although none of the participants are currently using resources as instructional aids, they acknowledge the benefit of employing such aids in teaching and learning. However, a large number of the participants felt that EdTech training was not appropriate enough to their teaching and that their teaching should change to incorporate e-learning resources relevant to the subjects taught in schools.

All of the above mentioned students' views are critical if there is a need to build students' confidence and competence when incorporating technologies in teaching and learning at work place. One participant remarked:

Eh...we operated trigger video; make snap shot such as extreme long shot, long shot and medium shots, close-up, extreme close-up; shot duration (time in seconds), slide transition (movement); music/sound effects and narration applying the following techniques; tilting, panning, zoom in and out for mm...one... day eh... one day if I am not mistaken .Therefore time Eh... was not fair enough for the Eh...technical part of training **P1.**

Most students indicated that they have gained much computing skills, but were not introduced to general technical skills apart from operation such as installation, maintenance of e-learning equipment, networking management and precautions. This may be possibly because there were technicians who were specially hired for that job. Moreover, Educational Technology courses focus on 'how' to teach and learn; that is, the methodological aspect involving techniques, strategies and theories for successful teaching and learning.

The challenge faced by the students in this situation is that, they are trained to use only computers as one of the technologies found in most institutions nowadays, whereas in the

field there are varieties of technologies. Findings emerging from the research show that there is a mismatch between the technologies infrastructure found in schools and students' training. Technologies infrastructure does not contribute towards the training skills of students (Panangalage & Pasgual, 2008). Different technologies have different skills and knowledge of application, therefore it is necessary for the students to acquire different technologies skills to be able to fit in the educational field and society at large. This idea is indicated in the quotations from the focus group interviews below:

> *And again ehm... using computers doesn't maily say you should be computer literate, there are so many things that we need to know so that we should use the computers with all the confidence like... browsing, like knowing about the search engines, knowing about the web sites, that is much more beyond just being computer literate, there should be adequate skills so that we should use computers confidentely* **P1**,
>
> *knowing how to attach files* **P2,**
>
> *how to create them* **P4,**
>
> *how to save them eh...mm* **P3.**

It is evident that the challenge faced by students is to transform teacher-centred to learner-centred education through technologies using a range of e-learning activities that meet educational objectives.

The findings reveal that most EdTech students in the institution see technologies as the incorporated resources within teaching and learning rather than another discipline on its own. Many students were still concerned with how to use technologies skills when teaching and learning EdTech. The reason behind this is that there are technologies in the selected institution which EdTech students have not been exposed to.

The researcher observed that the participants mostly make use of the popular search engines such as Google, Soople and Yahoo. They also used the keywords to get information from the Internet. Figure 5.3 above indicates that 7% of the students experienced difficulty in utilising the Internet software to learn EdTech. They pointed out that they were uncertain about the appropriate search engines and relevant keywords to

use and obtain relevant information. As a result they often waste a lot of their time visiting irrelevant sites in the end being unable to obtain suitable sources of information for their EdTech course work. Another issue the researcher discovered was that students sometimes find online information without author's names and copyright protected information, and this affected them negatively. Therefore they regarded the Internet as not easy to access. This idea is highlighted by the comment from the focus group interviews below.

> *Ehm...sometimes you will find that the information we get from the Internet has complications; you get it today tomorrow it is outdated, at other times we get the information without references, ehm...or get information read from the abstract only as well as protected information from some PDF* **P8.**

Participants further pointed out that some of the sources with rich information as read from the abstract are copyrighted and thus protected and can only be accessed through subscription. In some cases the students get synopses without references and in other instances, the sources of information they found had expired. This dilemma is evidenced by the quotation emerging from first and second individual interviews.

> *Sometimes when you want to access a certain file you find that you can't really get the full version, you are told that you had to sign-in, it is right protected but you find that this is the information that I need, restricted accessibility, it is very frustrating really* **P18.**

60% of students indicated that they experienced too many problems when learning EdTech modules as they know only computer basics. One of the participants in individual interviews said:

> *I, I'm not quite sure on how to access most of the Microsoft Office programs therefore to use the Internet eh... is not an easy task for me* **P4.**

Most of the participants complained that their work is always poor because they lack some of the computer application software skills, such as MS Access. Thus they were unable to do the simple Mathematics calculations. They were also incapable of using MS Office programs well and that hindered their learning progress. This is supported by the comment below emerging from individual interviews.

> *Our major problem is eh... on Microsoft Access, we are completely lost, we do not know how to use it. There is lot of calculations that needs Mathematicians; I think eh...we need further training and practice on Microsoft Access. Another*

thing is that our typing speed is below average and as a result eh...credible amount of time is lost in the process of typing. To cover up for this disadvantage, some students called eh... 'the speed-typists' are paid to type our work against eh... due dates. Therefore this causes more problems because we are not getting eh... enough exposure in computers practically and therefore we end up forgetting the simple basics of operating the...the computers **P8.**

Even though most of the participants had problems with calculations when using MS Access, students' subject-related performance and basic skills such as calculation, reading and writing were improving with technologies as is supported by Balanskat, *et al* (2006).

The researcher through observation also discovered that some of participants were unable to use the tool bars and menu bars to guide them. Most of the time, they were helped by others on how to use a tool bar. Students needed help for tasks like inserting bullets and borders. The observations the researcher made in April 2008 revealed that all students underwent the EdTech training through e-learning. Most of the students stated that EdTech training did not meet their needs for technologies incorporation. They claim that the training was not sufficiently relevant for technologies incorporation due to lack of variety of technologies and a shortage of technologies used such as computers.

> *Yah...I don't think it's (resources) enough, for instance let's take the computers, there are computers in the campus but I think there are not enough for... everybody, I think if we could have eh...computers basically for Educational Technology that would be fine, at moment the computers that are on campus shared by everybody so you would find that at postgraduate level especially at EdTech student when you want to continue with your work all the LANs are full throughout the day you have to wait for others to finish then you will come very-very late until the worse eh... a special LAN for EdTech student was free* **P18,**

> *what I was trying to add to what I said, by saying it's quite frustrating that eh... with the num, so many students using the LAN and eh... with very few resources sometimes you find that we don't have access to the LANs not because there are no resources but because they are fully booked, you find that you would spend the whole day looking for a computer, and you don't get it, people are working on the computers and is* **P19,**

> *the ratio because the people ratio is not appropriate* **P20.**

Due to the above mentioned citations, lack of computers as the dominant EdTech teaching and learning resources seems to be a major problem to students.

The other issue was that students lacked certain EdTech skills such as web designing and keeping the pictures on the created web page. They claim to have experienced frustrations when designing a web in EdTech modules such as Multimedia. These are the comments from the individual and focus group interviews.

> *You know the part where we were asked to design a web, you see you would design, you would Google pictures from the...mm from Google search trying to put them, when you come next day you are still working on that, you would find that have shifted, there are no more there it was probably you know to keep them in one position so that was quite frustrating because you need to work on something then the next time you want continue you have to go back where you were, that was...sometimes you close it you want some information that you want to add into your website you find that is not working or where you want to...you know you want to link, you find sometimes you would find that they don't link, and that was quite frustrating* **P19**,

> *the information is very frustrating is from the the web design, frustrating in the sense that the in the web continues changing everyday you may have this information today because of time you couldn't finish it you are going to add onto it, that web is gone is is possible little bit difficult but at the same time we we we continue working on it, we don't need to get discouraged even though it is difficult,all the information is gone* **P20**,

> *I remember one case when designing the web I keep on referring to him, I shed tears one time find that I don't know what went wrong when you open your files you find that they can't open, until we finally went back to the lecture, really he was of great help, everything was smooth with his help* **P17**.

Many students became frustrated because those who came into the course without any computing skills took a longer time to master other aspects of e-learning and educational technology. However, these students were able to learn from their peers through collaboration and the use of Open Learning System.

English is a World Wide Web language. Online information, games, educational software produced globally, OLS, web-based learning and multimedia at large such as podcast, videoconferencing, computer-conferencing, teleconferencing or any electronic training programs are mostly in English. Consequently, the EdTech students, who were mostly second language speakers of English, struggled with English language to get the appropriate information from the Internet when doing the IT module. The evidence below is emerging from the individual interviews.

> *English is another fad, the reason why we are struggling when surfing the Internet is our poor command of English, if we have poor command of English how are we going create the websites at work? All the information from the Internet is written in English. Therefore, to surf the Internet needs one to understand English very well; know appropriate English key word to get appropriate information as well. All the instructions are in English but English is our second Language* **P12.**

In developing countries like South Africa where English is a second language to the majority, there are setbacks to the exploitation of the educational benefits found from the Internet. Students point out that because they use English as their second language, they struggle with technologies and the English language to learn EdTech which involves designing websites, learning materials and content development. These aspects need educators who are competent in the use of English.

90% of the students recommended a need for the course to implement a variety of technologies such as Smartboard, Blackboard, and Podcast to the fullest and make sure the implemented e-learning resources are appropriate to teaching and learning while equipping EdTech students with suitable technologies skills. During the individual interviews one of the students noted that:

> *Eh...as the EdTech students, we need further training on other types of ICTs such as Smartboard, Blackboard and many others to acquire diversity of skills to be applied in the field. Currently we are only engaged in one type of ICT such as computers but... we are to work in a work place that has a variety of ICTs. Therefore it would be a great embarrassment eh... if we do not know how to employ them in our teaching. The training that we have is not adequate enough to equip us with relevant skills to support us incorporate ICT into ehm... curriculum at work* **P2.**

Students were also asked if they would like to have another training session in ICT in teaching and learning. In response, they remarked that they wanted EdTech training to be related to what is done within the classroom with practical examples on how to incorporate technologies in lessons. In support to what the participants said, Balanskat, *et al* (2006) indicates that when introduced into the classroom the Smartboard can result in students' good performance in English, Mathematics and Science. However, it is not easy to know the use of other technologies in the classroom successfully without being trained on how to use them.

Moreover the participants claim that attention should be given to all trainees during the EdTech training in relation to technologies use and individual differences should be catered for. Some of the participants confessed that they had one to two weeks training on trigger video using digital camera and TV screen. The training was not effective enough due to its duration and shortage of the equipment.

The respondents reported that they used only one digital camera amongst the eight of them. Most of them complained that they only handled the video camera once when doing their practical. They also complained that the course was not structured to include adequate training in incorporating different types of technologies and other educational technologies to learn EdTech modules as intended. ICT is not a subject on its own but it fuels teaching and learning to be successful.

The lack of and in some instances inadequate educational technology tools, the lack of computing skills and knowledge of basic applications software was a great challenge to face at work place.

5.5 CONCLUSION

In this chapter the experiences of students making use of blended learning to learn modules in EdTech programme were noted and discussed under three themes addressing the key research question. Thus comments, views and direct quotations from students were used to illustrate their experiences. This information helped the researcher to identify the kind of support and training that will make e-learning to benefit positively students learning the EdTech modules at the selected institution.

The results presented above indicated that e-learning has had positives and negatives on EdTech students in this study. Their experiences include benefits gained such as interpersonal skills, LMS three levels of interactions, acquisition of computer skills, information skill and the Internet surfing skills. Negative aspects refer to inadequate technologies, contradictory technologies, obscurity in technical support. Finally the

EdTech training did not offer what originally it meant to; practical aspects are not allied to classroom application, pedagogical principles of the e-learning resources, somewhat to practices outside the EdTech training field. As a result, while students gained advanced computer skills, the expected outcomes of the programme to equip the students with the knowledge and skills of using technologies for the classroom pedagogy were not necessarily achieved for all students. Based on these findings, the next chapter provides analysis of findings, recommendations and conclusions from this study.

CHAPTER SIX

ANALYSIS OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

'Common sense' is not common but needs to be learnt systematically... A 'simple analysis' can be harder than it looks.... All statistical techniques, however sophisticated, should be subordinate to subjective judgment (Chatfield, 1985, unpaged).

6.1 INTRODUCTION

This chapter provides an analysis and discussion of the findings of this study according to the following main research question and three subsidiary research questions:

6.2 THE MAIN RESEARCH QUESTION

- What are the experiences of the postgraduate students in using blended learning to learn Educational Technology modules at the selected institution?

6.2.1 Subsidiary research questions
- What are the experiences of postgraduate students in using electronic learning to learn educational technology modules?
- How do postgraduates students use e-learning technologies for interaction with peers, content and lecturers?
- How can access to e-learning resources be improved to enhance learning?

The analysis is supported by literature that was reviewed in Chapter 2 and framed within social constructivist theory, supported particularly by Salmon's E-moderation model, Jone's Blended Learning Continuum model and Maslow's hierarchical needs model that were discussed in chapter 3. This discussion is based on the findings that were presented in Chapter 5. This chapter also provides the conclusion as well as recommendations, both

for institutions and lecturers involved in blended learning and for researchers interested in conducting further studies on blended learning.

6.2.1.1 Subsidiary research question one: What are the experiences of postgraduate students in using electronic learning to learn educational technology modules?

The excitement, enjoyment, and appreciation of using computers in their learning displayed by the students indicate their levels of computer illiteracy. This kind of experience is referred to in the first stage (access and motivation) of Salomon's (2000) model, whereby e-tivities give students an exciting introduction to the use of technologies such as computers, and respect students' emotions towards the use of technologies like the ones mentioned above and their exposure to novice via e-learning. The students' appreciation of computer and supplementary e-learning resources was apparent from their several statements and actions. Thus the students showed or expressed appreciation, in the process emphasising the issue that students do not necessarily use technologies as intended by the EdTech course, partly due to their initial computer illiteracy.

Moreover, students who had some limited levels of computer literacy were eager to know more than what they had already acquired in computer basics. They wanted to go beyond computer literacy, and be trained on how to use the tool in teaching and learning. This finding resonates with aspects of Vygotsky's (1978) Zone of Proximal Development (ZPD) where students are encouraged to study tremendously well ahead of their knowledge and move from the known into the unknown.

As per the findings, the majority of students in the EdTech discipline were from previously disadvantaged homes and schools without electrical facilities such as computers and television to foster e-learning activities. This explains their comments of not having had experience in terms of computer use and application in classroom situations. As a result, their EdTech experience involved using the computer for personal use and growth rather than actual application in the classrooms in their schools.

To further explain this theme, in the beginning of the course, most of the students found the use of a computer to be very complicated and frightening. However, it turned out to become a stimulating part of their learning. Students confirmed that had they not been compelled to use computers to learn the IT module with the assistance of the lecturers, they probably would not have been able to use a computer. This correlates with Salomon's (2002) access and motivation stage, whereby some of the newcomers experience substantial frustration in using computers; thus e-moderator has to ensure that students get the required encouragement, accessibility and support to successfully use e-tools.

Engaging with the Information Technology (IT) EdTech module helped students gain basic computer skills. As was stated by Vallance (2008), IT involves developing, maintaining and using computer systems, software, and networks for the processing and delivery of information. In relation to this, the students used computer software like Microsoft Word and surfed through the Internet using different search engines to get information sometimes needed for communicating with others. They therefore exchanged ideas and opinions which enhanced their learning. The designing of websites, and engagement of other technology devices like video technology were helpful in what (Valance, 2008) referred to as the delivery of information.

Social constructivist principles of learning which encourage group discussion for the students to learn with the support of exchange of ideas and develop their capabilities for the enhancement of collaborative activities contributed much to the EdTech course (Jackson, Karp, Patrick & Thrower, 2006). Students were engaged in activities that focus on real world, and real tasks that require collaboration with their peers. The findings presented in Chapter 5 in which students' organised themselves and formed discussion group named "Dream team" and they discussed face-to-face are also evidence of social constructivism in practice. Furthermore, students were given notes, tasks, assignments and quizzes as they commented, that give them opportunities (a park) to search on and share their knowledge in instructor-led discussions. This is also in line with Salmon's

(2002) Stage 3 of information exchange whereby students productively process information and are practical in their learning.

The EdTech students understood that their participation and sharing of ideas introduced them to deeper learning. The more they exchanged their ideas, the more they internalised the concept of discussion and even went beyond what they were expected to know. Thus, as discussed in Chapter 2, online peer-interaction is convenient due to the freedom it offers to students such that even the shy ones are free to ask and share their ideas without being intimidated as is common in the teacher-led approach. Lack of self-confidence and shyness of students to share views in the teacher-led seminar was very common. Students would shy away from giving opinions, making comments, raising questions or even answer any. Therefore online interaction seems to be friendly and convenient for learning compared to the threatening claims of teacher-led interaction. To be specific, studies by Potter (1998) and Anderson (2002) on channels of group interactions came to similar conclusions that the E-learning platform fosters discussion and confidence amongst the students.

The participants pointed out that they successfully construct knowledge through e-learning interactions. This is in line with Salomon's (2002) blended learning model on knowledge construction stage whereby students are able to productively handle their own group as they learn. However, there was no evidence of knowledge construction on the students contributions posted to the discussion board. In addition, students were reluctant to criticise each other's work online. However, it is clear from the comments that students learnt more and understood concepts better because of peer interaction.

The PowerPoint presentations by the students can be taken as evidence of knowledge construction. This is consistent with Jones' (2006) continuum of blended learning, particularly the first stage of 'Basic ICT Usage' and the second stage of 'E-enhanced' learning. Thus the PowerPoint presentations also assisted them to build and increase their knowledge even further and hence empowered them in solving problematic issues. As per Maslow's (1943) self-actualisation stage, the students became experts and acquired

higher order thinking skills, and on top of that they appreciate their potential and manage to assist others discover self-achievements.

Salmon's (2002) and Jones' (2006) blended learning models operate as a realistic guide for lecturers engaged in blended learning instructions to advance crucial pedagogical concept and practices for effective delivery. Besides being effective in terms of pedagogy, it seems that the students enjoyed these experiences-an aspect that is essential but often ignored in teaching.

A problem experienced by the students when designing their websites on their own was that they would struggle and therefore needed help from the lecturers. They therefore had to interact with their lecturers through LMS. This consultation on online forums can be based on Jones' (2006) model for discussion platforms.

6.2.1.2 Subsidiary research question two: How do postgraduates students use e-learning technologies for interaction with peers, content and lecturers?

Technologies especially the LMS via the Internet encourage a teaching and learning environment that caters for student's differences. Students learn differently, appreciate different learning styles and have culturally diverse perspectives. Because of this, students advocate for interactive learning, they appreciate peers, lecturers and content interactions which are the most valuable tools used in social constructivism learning podium (Vygotsky, 1978).

One of the students' experiences is peer interaction. Peer interaction was valuable in promoting students' self-directed learning. This then empowered students to be responsible for their own learning. Such students' experiences are in harmony with Salmon's (2000) online socialisation stage that underpins effective learning achieved from peer-interaction. Because of this socialisation, students become comfortable with the online culture and so they can move into sharing and exchanging information. This corresponds with the social constructivist principle of peer interaction whereby students

learn by active construction of ideas and acquisition of skills through research and gaining more understanding from their own findings rather than being given information.

Constructivist theory and technology principles advocate for collaborative learning whereby students learn from their peers; sharing their views, experiences and information about knowledge when interacting with technology resources. Effective collaborative learning allows students to develop, compare, and understand multiple perspectives on an issue and this is the major advantage of technologies (Scardamalia & Bereiter, 1994). In a constructivist perspective, knowledge construction is a dynamic process of learning. Therefore students construct their personal knowledge that provides foundation for common understanding and shared solutions to problems encountered (Palloff & Pratt, 2005). Some of the participants noted that technologies had promoted their confidence and independent learning, and therefore was good training their professional work. Other participants responded that their learning could change even more if they could have access to varieties of technologies and not only computers.

This study shows that collaborative learning can be useful to reach intellectual goals such as critical thinking and problem solving. Moreover, technologies seem to be the effective tools because students have to write down their ideas. Writing is one of the basic language skills. While writing is one of the skills, it is through the writing process that language and thought are integrated. It has a vital meaning in explanation and expression of one's conceptions since students' thought is grounded in perception and bodily experiences (Jonassen, Mayes & McAleese, 1993). Therefore, ICT supports collaborative work due to sharing of experiences and builds student's competence and confidence.

Students are expected to construct their own knowledge, interpret the objects and issues to give them meaning (Yilmaz, 2008). Learning is considered to be most effective when they actively construct knowledge in a group interaction.

According to constructivism learners will not make use of concepts and ideas unless they use them through some type of process. In other words, learners master only those

activities they actually practice; therefore practice makes them competent. Therefore the EdTech students should be exposed to a variety of technologies to develop their confidence and competence as technology is too broad, computers are not the only technology equipment, and there are multitudes of technologies.

Constructivists consider that students construct their own reality or at least interpret it based upon their perceptions of experiences. Therefore, the students should be devoted in practical work to prepare them to solve problem in ambiguous situations (Schuman, 1996). Furthermore, the users themselves agreed that they are always uncomfortable when using the technologies unskilfully, but that technologies were easy to use with skills. According to McKenzie (1996), the lack of practice by students questions the readiness of the students for the challenge of making meaning from the vast, rich and often badly organised information landscape called the Internet. Actually, students can be computer literate but information illiterate. McKenzie (1996) contends that if one has the ability to make meaning from comprehensive and puzzling collection of data sources, he or she has information literacy. Information illiterate students in most cases have problems when surfing the Internet to get information. Thus, they need their lecturers support to succeed.

In reference to the lecturers' intervention, it has been noted that the participants used words such as approachable, available, helpful, supportive, informed and problems-solving. Their problems on complex concepts were solved and thus students' performance was improved. Such experiences by students resonate with last stage of development on Salmon's (2002) model. Here the students took personal ownership of their learning experiences by sharing problem-based circumstances with students within their learning sphere.

Students' interaction with the lecturers cultivates a relationship of care between both parties. Salmon's (2002) and Maslow's (1943) aspects of learning effectiveness include students' excitement, enthusiasm, concentration, eagerness and inspiration to learn keenly. However failure to accommodate motivation promotes underprivileged student-

lecturer interaction so as learning environment. Students value their lecturers support for their learning. This inspires lecturers to improve students' progress and compelled to put more effort to their work. Gruender (1996), Salmon (2002), Kesley and D'souza (2004), agree that a student-lecturer relationship should exist so that enjoyment and motivation may be promoted.

However, students support the presence of the lecturers in their learning podium, and their comment shows that they still appreciate the teacher-led seminars. They required the lecturers to still foster some measures of the human element.

Another of the students' experiences is content interaction. Having access to the notes helps students to make proper summaries, highlight the essentials and identify core information in a special section of the work. It lessens their workload and teaches them valuable skills. It allows them to concentrate more in class, thus assisting them in the classroom situation, to consider the content of the work in context, not just to regurgitate mere facts.

Because students have access to much more information than in the past, by means of additional online resources and the Internet, they are able to solve many problems by merely doing the Internet search. The findings revealed that students needed to go back to the notes, textbook and lecturers before they are able to participate meaningfully in the discussions. They were also forced to do extra work and take responsibility for their own learning.

Students were engaged on daily tasks, quizzes, class work, portfolios, tasks, take home assignments which are all forms of formative assessment. This links with Jone's (2006) model on e-focused learning where students interact with each other through discussion boards, get assessed and get feedback online and use interactive learning materials. Students enjoyed online assessment as they got quick feedback and thus bringing about progress in learning and performance (Clarke et al., 2004; Morris and Walker, 2006; Russell and Bullen, 2005). This method of assessment allows the students' freedom to choose the appropriate problem-solving method (Salmon, 2002).

Additionally, students claimed to have free time to spend on searching for information or reading notes (be it from the Internet or LMS) and sharing the probable solutions. Although students excitedly acknowledged that assessment connotes more time and hard work, most of them approved group dialogues, supplementary readings and notes sent by the lecturers to LMS. However Enjelvin (2005) and Meredith and Newton (2004) argue that formative assessment should have at least a portion of summative assessment to help detect the progress of the students and make-up for the weaknesses inherent in the formative assessment tradition (Clarke et al., 2005). However, e-moderating still offers an effective online assessment to assist students to reach their developmental stage in stage 5 of Salmon's (2002) model.

Concannon et al (2005) argue that often students treat online assessment as group work or collaborative learning as they access online assessment together, discuss it and work on it. This weakness is more or less the same with one of Salmon's (2002) E-Moderating model whereby students' contributions are posted to the discussion board even if they are unproductive. But the argument behind this is that there are various means of assessing students besides social interactions or collaborative assessment. However, computer-mediated assessment is still an exciting and convenient method that brings about progress in learning outcomes and student performance due to its appropriate and accessible feedback to students to accomplish their learning. It allows for the construction and development of more supportive, collaborative and social learning context favoured for by the social constructivist context.

Online assessment also promotes students' self-governing learning. This intertwine with Salmon's (2003) and (2004) e-moderating model that students socially interact with peers, content, materials and with e-moderator to encourage their independence and own pace learning rather than reading only from e-learning tools. Actually online assessment is a dominant learning aspect.

The formative assessment therefore compels students to spend extra time revising the work done. This issue of the intervention engages all the students to work thoroughly

throughout the semester. However, without the assignments or any tutorials no time would be spend on the study material and textbook and that makes the formative assessment inconsistent and unproductive. This brings about the issue that blended learning should have variety of assessments due to inclusion of different teaching and learning approaches it has. This was the case in this study as per students' responses relevant to assessment.

The findings of this study revealed the benefits of only the resources accessible to students such as computer, the Internet and LMS or OLS. LMS was used as a platform for students to access flexibly electronic learning materials. This is in direct connection with the e-enhanced stage of Jone's (2006) model indicating that students should have access to online resources such as blackboard for announcements, LMS for lecture notes and Virtual Learning Environment (VLM) for students' interactions. According to the principles of social constructivism, VLM engages students actively in authentic decision making and problem-solving situations. The System was established to provide more flexible access to academic e-learning tools.

The findings suggest that technologies educative effects are crucial in that they have a definite benefit on learning and teaching. The current method of presenting material in the institution to be learnt via technologies on a standard computer screen, or via the Internet facility appears to create a higher level of learning than that achieved by printed text and a chalkboard if implemented effectively. That is why some scholars see technologies to amalgamate efficiently with constructivism as per Vygotsky (1978). Authenticity of (and in) learning environments are important because certain things can only be learned in practice while they encourage social enculturation and increase the participants' motivation to learn.

Techniques for incorporating the computer into the educational experiences of students are improving slowly but surely. The OLS and electronic-mail are used to send their assignments and chat with their lecturers even when they are away from home on institution vacations. The LMS is an excellent platform to develop approaches to distance

learning and e-learning, and support face-to-face learning. Educational Technology (EdTech) students' confidence and competence is developed through their daily use of computers. Hence tasks given to students should deliberately include the use of technologies. According to the findings from this study, the extent to which this has happened is inadequate so far, and development is rather slow. A successful delivery mode on technologies practice should involve the motivation of the supporter to deliver computer knowledge and skills to students effectively. On top of that more focused research on such improvements aiming to provide support to teachers is necessary.

6.2.1.3 Subsidiary research question three: How can access to e-learning resources be improved to enhance learning?

It seems that learning via the technologies may well cause considerable qualitative differences in the ways which knowledge is acquired. This then has considerable implications for the designs of such systems, and suggests that lecturers need to be made more aware that teaching via these systems has such effects. Lecturers are finding, however, that while technologies can provide a technical environment for constructivist learning to occur, there needs to be high quality teaching to develop and sustain an environment that challenges and inspires students to learn. Rich learning environments encourage multiple representations of knowledge from different conceptual and case perspectives (Vygotsky, 1978). Any specific concept may be approached via a wide range of learning contexts, the aim of which is to transfer knowledge in a broader range of domains.

Moreover, findings clearly show that technologies training should not solely rely only on computers and the Internet. Indeed, literature reinforces the notion that other technologies can be used to enhance teaching and learning as well. They still have a vital role to play in the educative process. This does not deny the fact that the Internet, serving as the window to the world systems, can play an outstanding role in education. However, different technologies contribute differently to different subjects in teaching and learning. A certain technologies may support a particular subject, but not necessarily all subjects in a similar manner. Therefore, as technologists, ETech students have to use a multi-level

approach to understanding complex learning situations. Issroff and Scanlon (2002, p1) argue for this view by stating that, "there is a need to consider the context of the institution, the culture of the students, the location of the learning situation within the curriculum as well as the design of the technology and software."

The Internet proved to be crucial in supporting students' learning experiences. It allowed them access to a great range of information, just as Salmon's (2002) e-tivities help online students work on problems that have multiple interpretations for knowledge construction. Accordingly, the computers, Internet connectivity and accessible OLS provide students with highly developed learning. These tools enhance students' motivation due to their interactivity with other technologies (Salmon, 2002). As a result, they can partake and communicate with people experiencing real world global events linked with Jone's (2006) model on e-enhanced stage.

As per the findings, the Internet as a source of information also increased students' motivation to learn. Moreover, the students' access to meaningful resources fostered critical thinking skills and allowed them to see new ways of interpreting and evaluating information. This tallies with the fifth stage of Salmon's (2002) e-tivities that encourage reflective thinking by sharing problem-based situations or scenarios that require interpretation information, creativity and a willingness to test assumptions. Students acknowledged that gathering viewpoints and knowledge from the Internet caused them to debate in advance held values and information. Their confidence is promoted by using computer as a necessary prerequisite to apply productive e-learning skills for learning.

The above discussion emphasises the dominance of computers with the Internet in the EdTech course. This is therefore an indication of students' lack of access to e-resources other than computers. Thus, the EdTech training was not sufficiently appropriate to the students' occupational practice because the aim of the course is to change their teaching to incorporate e-learning resources relevant to subjects taught in schools. In any case, computers are not the only form of technologies found in schools. On top of that, students were not trained how to link technologies to different subjects yet the use of technologies differs from school subject to subject (Trucano, 2005). This shortcoming was explained

by the lack of technologies subjects' specialists at the selected institution, but it is a proof that EdTech training was inadequate for the students because they lack skills of other technologies. According to Dix (2007) integration of ICT in schools develops noteworthy changes in teaching practice and improves students' confidence, but this is not necessarily the case in EdTech discipline.

The findings showed that there is limited technical education in the given department and a shortage of personnel who are capable of handling the equipment. Students' lack of confidence may be attributed to the fact that they had no technical support on how to use other e-learning tools in their training as well as in their own professional development and administrative functions required of them at work. These weaknesses are exposed by Dix's (2007) argument that effective training that results in the production of high quality work is enhanced in schools with good technical support and guidance from technology specialist educators.

Both EdTech students and lecturers are aware of the potential and importance of blended learning efficacy in improving teaching and learning. The participants reported that they need further training to use other e-learning tools competently in learning and teaching. This competency has a direct bearing on the Educational Technology course. The students mostly acquired knowledge and skills at the selected institution and therefore they are likely to have been acquired systematically, bridging gaps in their computer experiences to learn EdTech efficiently. Knowledge and skills can be acquired from tasks found in LMS. Above that, knowing use of technology implications broadly more especially technical part of it such as set of rules, procedure and safety measures are all important aspects of technologies literacy that students should acquire.

Currently, a variety of technologies such as mobile phones, digital cameras and many more not mentioned here are being used by the participants. However these are not being used to the advantage of learning and teaching Educational technology at the selected institution. In most cases, mobile phones are used by students only to report their personal matters to their lecturers not for learning purposes yet they are the most common

and cheapest technologies available to all the students. Mobile phones can be utilised to accumulate weblogs when afar from institution or home under any circumstances.

Through adequate access to suitable technologies most EdTech students are eager to study more about technologies and to develop skills in using technologies to support learning across the curriculum through the use of innovative techniques. The biggest obstacle to reach their target was that they lack time to practice new skills, get appropriate technologies, and suitable innovative teaching and learning techniques and time to share their joint experiences and views with their colleagues.

In the case of disadvantaged students who lack access to applicable technologies off-campus and competition issues amongst the students also slow down improvements. Collaborative learning according to social constructivism theory which is the tried and tested mode of teaching and learning for most lectures and students should be catered for. As the researcher has explained earlier, most of the EdTech students learn from their colleagues to develop new proficiencies and awareness of resources.

The students' aspiration was to have time to practice out of institution, to keep up with recent technologies and to have the appropriate variety of technologies such as personal computers and laptops with the Internet, to employ their creative information and skills in the classroom. The noteworthy technology evidence such as this is more powerful in bringing about considerable transformation to practice than the evidence in black and white ICT policy documents. Therefore guiding principles and means of utilising it should be carefully planned.

The constructivist principles involve an idea that student's distinctiveness and social experience are basic issues through which new meaning and knowledge are constructed. Particularly, learning in the constructivist context with technologies is perceived as an ongoing process where students construct and reconstruct their knowledge as they tackle new information and experience. Social constructivist principles better encourage an appropriate selection of technologies to enhance teaching and learning. It sheds light that

might better inform the inclusion and incorporation of technologies in constructivist learning environments.

The general implication drawn from the findings indicates that technologies are rooted into daily experiences of most students; their awareness has been promoted and can do more than before. Both lecturers and students are positive about the benefits of technologies up to now and think that substantial potential remains. An important aspect is the lecturers and students of Educational Technology require support in the use of different educational technologies available and pedagogical incorporation of technology in the delivery of content must be an aspect of the EdTech course and other related courses.

Further investigation is essential to verify what factors lead to high quality EdTech learning when technologies are incorporated into constructivist learning situations. For example, access to huge amounts of information available within the Internet, cannot be considered to be a lower level of learning, but must be harnessed to be beneficial and add to the potential of high quality EdTech learning through constructivist principles and technologies facilities.

6.3 SUMMARY OF MAJOR FINDINGS OF THE STUDY

The findings summarised in this section are drawn from the evidence discussed above, with reference to the purpose and the main research questions that guided the study.

6.3.1 Students' positive experiences of using electronic learning in EdTech discipline
- The major educational technology tool used was the computer. The course enabled the participants to use the computer more frequently and efficiently. Students found that the learning management system was most constructive, convenient and realistic.

- The learning management system, in particular, the OLS improved collaboration amongst the students, and interactions between students and their lecturers, students and the content, and students and their peers.

- Students developed positive perceptions of technologies and its potential use in teaching and learning.

- By the end of the EdTech course, the participants' confidence in computing increased.

- There was a definite observable increase in computer competence of the participants.

6.3.2 The challenges faced

- Inadequacy of computers at the selected institution is considered a serious problem for EdTech students to do their work during their spare time. LANs were always full with long queues for computers during the day up until very late at night.

- The lack of training in the use of a variety of other technologies, yet there are variety of technologies at workplace.

- EdTech training does not incorporate technologies into the school curriculum or give any example on how to use it with subjects in teaching and learning.

- Support was lacking in situations when network servers were down.

- Frustrations caused by printers without paper during the weekends yet work had to be done.

- Most participants were not native speakers of English which hindered surfing the net and obtaining the relevant sites efficiently since the language of the World Wide Web is predominantly English.

- Few students could access information from the Internet without any assistance.

- Students' failure to access information from the Internet is credited to the lack of skills due to lack of computers with the Internet at students' home (73%).

- Information illiteracy skills were documented as the key hindrance to students' access and use of information from the Internet. Participants did not have the

necessary pre-requisite computer skills to handle the educational technology modules effectively.

6.3.3 Ways on which EdTech training can be improved

- Content of the course for EdTech should be designed appropriately to integrate technologies effectively so that improved learning can take place.
- Content which includes the use of EdTech should be also relevant for higher education.
- The training should include application of the e-learning tools within classroom situation and equip students with technologies' skill to match subjects with relevant technologies.

6.4 CONCLUSIONS DRAWN FROM THE STUDY

This study set out to explore the experiences of EdTech Masters of Education students at a selected institution. In particular, the focus was on their experiences in relation to blended learning, that is, a combination of both face-to-face study and distance learning in the form of e-learning. Using social constructivism as a framework, this study has revealed that there are attempts at the university to make blended learning work. In fact, the selected institution has a positive outlook in relation to implementation of technologies in their programmes due to the fact that in recent years it has invested a lot of resources into the technology and infrastructure of electronic library that could match the standard of the Western countries although it is still running short of other technologies. It was found that while the EdTech course exposed the students to experiences of computer literacy, the rest who were already computer literate were left frustrated. Therefore the EdTech course has the challenge of moving from teaching computer literacy to training how the technologies can be use for the benefit of the teaching and learning process in the schools. Similarly students have to move from the excitement at computer literacy without enhancing their teaching methods.

6.5 RECOMMENDATIONS

Based on the discussions presented in this thesis, it is essential, just like any other study, some recommendations are proposed.

EdTech Entry requirements

- A specialised course in computer literacy or access course is recommended to enable such students to be able to meet the pre-requisites of the EdTech course. It is also important that computer literacy as a pre-requisite for admission be strictly adhered to. This way more time in the EdTech course can be devoted to more specialised tools and pedagogy.

- Students who lack English language skills should have a Basic English course as a prerequisite. Meeting these pre-requisites of the EdTech course would avoid most of the students' frustrations and narrow the digital divide in EdTech discipline.

EdTech Training

- EdTech students should be equipped with relevant skills, literacy, techniques, methods, theories, strategies and approaches that are very significant in the incorporation of technologies for learning rather than acquiring only computer skills and literacy. It can be done by broadening their awareness on how to use a variety of technologies. Technologies, such as Smartboard, Blackboard, Polycom, Podcast, amongst others, need to be used and incorporated in the EdTech programme content.

- Technologies should be regarded as the instruments for life-long learning for lecturers and students. It should be imperative for the lecturers to use a variety of approaches, should focus on using all the EdTech resources available in the computer laboratory, and the institution at large, to make technologies incorporation successful at the selected institution.

- It is worth providing higher institutions the opportunities for professional development if the EdTech educators are to promote the improvement of their technologies expertise. Professional development should not only provide teachers with ideas on the use of computers as ICT, but also focus on other technologies skills mentioned above. For students to qualify as professionals in the EdTech programme, need to understand the underlying principles for incorporating technology-based apparatus into teaching and learning context.

- The selected institution should give EdTech students an opportunity to attend obligatory ICT conferences and workshops organised by the institution. These can help them get current information on technologies that are not available at their institution but available at workplaces to assist them to acquire skills and understanding of different types of technologies and how to use them in teaching and learning. Students from the ICT workshops and conferences would then form an EdTech panel and share their ICT views with colleagues to acquire additional skills and knowledge.

Technologies Incorporated into the school curriculum

- It is imperative that the EdTech curriculum be reviewed to incorporate technologies across disciplines, for example interactive whiteboards (Smartboard) can be used in Literacy, Mathematics and Science. Interactive whiteboards have a positive effect on performance of low achieving students specifically in English and writing.

OLS as support

- OLS should be used more fruitfully so that students can develop their full potential in supporting learning and teaching as a platform for all types of learning (distance, e-learning and face-to-face lectures), which is what educational technology should aim at.

6. 6 RECOMMENDATIONS FOR FURTHER RESEARCHES

A further research to be conducted to explore the extent to which EdTech students' professional practice is hindered due to inadequate training:

- Exploring the EdTech department's responsibility in the implementation of blended learning approach in EdTech course; pedagogical practices and technologies incorporated in EdTech modules and the technical support that can be given to students in the EdTech discipline for them to be capable future technologies facilitators.

- Investigating the type of technologies for EdTech students' training that can be offered in order to equip them with all the necessary skills for technologies use in teaching and learning.

- Further research can be conducted regarding the support received by EdTech students from the Department of Educational Technology facilitators in the selected institution in KZN Province.

In conclusion, this study contributed to understanding by revealing the blended learning experiences of EdTech students at a selected institution. The results of this study can assist lecturers or facilitators of the EdTech course in understanding the perceptions and experiences of and challenges faced by the students. Hence they may be able to make informed choices on how to improve their modules so that the EdTech students can benefit and in turn accomplish positive professional practices at their schools.

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Appendix A

University of KwaZulu Natal

Edgewood Campus

Rosewood Flat 2

Room 71

06 December 2007

The Dean

The Faculty of Education

University Z

Institution Campus

Dear Professor

<u>Re: Request for permission to conduct a study</u>

I am a Masters student specializing in educational technology at the above mentioned university. I am undertaking a study titled: **The experiences of the postgraduate students in using blended learning to Educational Technology modules.** Kindly I request your permission to conduct my study within the University premises for the fact that I have to observe and interview students of this University.

I intend to explore how students enrolled for post graduate programmes in education technology, experienced blended learning and how it enhanced their learning, aiming at achieving the following objectives of the study:

- To identify effects of blended learning that are most appropriate and effective for post graduate students who are specializing in EdTech.
- To determine whether students use the Learning Management System (LMS) to interact with lecturers, peers and content.
- To identify students' challenges in using blended learning in EdTech programme.

Phahamane P.M   219

My intention is to conduct focus group and individual in-depth semi-interviews, classroom observations and self-administered questionnaire to twenty students. Attached to this letter is a list of ethical issues I will take into a consideration when dealing with my participants.

Participants should take notes of the following issues:

1. The researcher is going to use focus group and individual semi- interviews
2. The participants are expected to answer the questions to the best of their ability.
3. All the interviews will be tape recorded with prior consultation and permission
4. The identity of the participants will not be revealed under any circumstance.
5. There will be no right or wrong answers.
6. All responses will be treated with strict confidentiality.
7. The data will not be used for any purposes, except for this study.
8. Participation is voluntary.
9. The participants are free to withdraw from the research at any time without any negative or undesirable consequences to them.
10. There will be no benefits that participants may receive as part of their participation in this study.
11. Data stored in the university locked cupboards destroyed after five years.

On completion of this study, the researcher is willing to share the results and any recommendations that may arise pertaining to how the university may improve the quality of teaching and learning using blended learning.

I am looking forward to your favorable response to my request.
Thank you for your academic support, co-operation and valuable time: Best wishes from

PM Phahamane (Paulinah)
EdTech Med student (Student no.206519514)
Cell: 0833195651/ (00266) 63016506
Email: phahamane@webmail.co.za

Phahamane P.M   **220**

SUPERVISORS: **PROF. T. BUTHELEZI**   **DR.S.B. KHOZA**
Tel no: 031 260 3471   **Tel no**: 031 260 7595
Cell no: 0761412324   **Cell no:** 0833111468
E-mail: Buthelezit10@ukzn.ac.za   **E-mail**: khozas@ukzn.az.za

DECLARATION

I ……………………………………………… (**Full names)** hereby grant/do not grant permission to P. M. Phahamane for research to be conducted at UKZN (Edgewood Campus).

Appendix B

University of KwaZulu Natal

Edgewood Campus

Rosewood Flat 2

Room 71

06 December 2007

Educational Technology Department

The Faculty of Education

University Z

Institution Campus

Dear Sir / Madam

Re: Request for permission to conduct a study

I am a Masters student specializing in educational technology at the above mentioned university. I am undertaking a study titled: **The experiences of the postgraduate students in using blended learning to Educational Technology modules.** Kindly I request your permission to conduct my study within the University premises for the fact that I have to observe and interview students of this University.

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Phahamane P.M

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PM Phahamane (Paulinah)

EdTech Med student (Student no.206519514)

Cell: 0833195651/ (00266) 63016506

Email: phahamane@webmail.co.za

Phahamane P.M   223

SUPERVISORS: **PROF. T. BUTHELEZI**   **DR.S.B. KHOZA**
              Tel no: 031 260 3471   **Tel no**: 031 260 7595
              Cell no: 0761412324   **Cell no:** 0833111468
              E-mail: Buthelezit10@ukzn.ac.za   **E-mail**: khozas@ukzn.az.za

DECLARATION

I ……………………………………………………. (**Full names)** hereby grant/do not grant permission to P. M. Phahamane for research to be conducted at UKZN (Edgewood Campus).

Appendix C

<div align="right">

University of KwaZulu Natal

Edgewood Campus

Rosewood Flat 2

Room 71

06 December 2007

</div>

The Participant

University Z

Institution Campus

Dear Participant

<u>**Re: Request for permission to conduct a study**</u>

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- To determine whether students use the Learning Management System (LMS) to interact with lecturers, peers and content.
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Phahamane P.M   225

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2. The participants are expected to answer the questions to the best of their ability.
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8. Participation is voluntary.
9. The participants are free to withdraw from the research at any time without any negative or undesirable consequences to them.
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Thank you for your academic support, co-operation and valuable time: Best wishes from

PM Phahamane (Paulinah)

EdTech Med student (Student no.206519514)

Cell: 0833195651/ (00266) 63016506

Email: phahamane@webmail.co.za

Phahamane P.M 226

SUPERVISORS: **PROF. T. BUTHELEZI**   **DR.S.B. KHOZA**
           Tel no: 031 260 3471   **Tel no**: 031 260 7595
           Cell no: 0761412324   **Cell no:** 0833111468
           E-mail: Buthelezit10@ukzn.ac.za   **E-mail**: khozas@ukzn.az.za

DECLARATION

I…………………………………………………………………………… (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT   **DATE**

………………………………………   …………………………………………………

NOTE:

Potential subjects should be given time to read, understand and question the information given before giving consent. This should include time out of the presence of the investigator and time to consult friends and/or family.

RESEARCH OFFICE (GOBAN MBEKI CENTRE)
WESTVILLE CAMPUS
TELEPHONE NO.: 031 – 2603587
EMAIL: ximbap@ukzn.ac.za

7 FEBRUARY 2008

MRS. PM PHAHAMANE (206519514)
EDUCATION STUDIES

Dear Mrs. Phahamane

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0026/08M

I wish to confirm that ethical clearance has been granted for the following project:

"Computer application software in teaching and learning Educational Technology (EdTech) modules in higher education: A case study of EdTech students at University of KwaZulu-Natal (UKZN) (EDGEWOOD CAMPUS)"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

MS. PHUMELELE XIMBA

cc. Supervisor - Dr. D Govender)
cc. Mr. B Khoza
cc. Derek Buchler

2008 -02- 1 2

02 December 2009

Student No: 206519514

Mrs PM Phahamane
PO Box 10742
Maseru
100
Lesotho

UNIVERSITY OF
KWAZULU-NATAL

Dear Mrs Phahamane

Change in Title: Master of Education

The Faculty Higher Degrees committee at it meeting held on 30 November 20009 recommended a change in title as follows:

From:
Experiences of Educational Technology students in using blended learning to learn Educational Technology modules

To:
Experiences of students in using blended learning to learn Educational Technology modules.

Yours sincerely,

Nomsa Ndlovu
Postgraduate Administration

cc: Professor T Buthelezi, Deputy Dean, Initial Teacher Education
    Mr SB Khoza, School of Education Studies