New Learning Pedagogy

A study in determining an appropriate pedagogy and pedagogical strategies to support phonetic awareness, whilst using new technology with young children.

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Abstract

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New Learning Pedagogy: A study in determining appropriate pedagogy and pedagogical strategies to support phonetic awareness, whilst using new technology with young children.

This research comes at a time where the use of Information Communication Technology (ICT) is seen by the UK Government as having the potential to improve the quality and standards of children's education in the earliest years of a child's development (DfE 2011). At present, there is a significant discourse to introduce more appropriate forms of technology within the early years educational curriculum. New changes to the UK ICT policy (DfE 2010) suggest the need to reform the current early years ICT curriculum to provide for better and more effective methods of technological practice. Greater importance lies with 'how to use technology' rather than 'what technology to use' or 'how much technology to use' with young children.

This research focused on The Early Years Foundation Stage (EYFS) framework, established by the National Curriculum in England which brings together the principles, pedagogy and approach of the Early Years Curriculum Guidance. It was guided by questions about the relationship between the effective pedagogic qualities in the early years and by determining an appropriate pedagogy used with young children. A central importance was to determine how an appropriate pedagogy applied with a new form of technology, can support phonetic knowledge and learning in young children, and to what extent can this appropriate pedagogy support good quality care practices and involvement with the children, within a planned learning setting.

This study addressed the use of new technology of an educational website via the Internet, with the intent to support phonetic recognition and awareness, so that the process of reading can begin earlier. This was conducted against the backdrop of children failing to reach expected standards in literacy tests (DfE 2010). Taking the lead from the synthetic phonetics programme, introduced by the UK Primary National Strategy (2008), this study adopted the use of the online educational website, *Alphablocks*. It developed from the study of thirty telephone interviews and nine early years settings, the latter encompassing a total of 82 children.

This study adopted pragmatism and included both qualitative and quantitative methodologies within the four stages of the research process. The first and second stage utilised Action Research Methodology in conducting interviews to scope out the research purpose and work closely with the early childhood practitioners, so as to understand their current pedagogical practices. The third and fourth stages employed Piaget's Methodology, using his Non-Clinical Interviews in developing and determining an appropriate pedagogic dialogue and then his Teaching Experiments in transferring and validating the new found pedagogical knowledge with the early childhood practitioners. The final stage also employed Laever Ferre's Scales to measure both well-being and involvement of the children, in planning an appropriate educational setting, within an early years classroom.

The original contribution of this research showed that in determining an appropriate pedagogy, applied with new technology, a number of factors need to be considered. Pre-scaffolding issues of technical connectivity, small group structural settings and organisation of an active learning experience are first to be appropriately established prior to the application of the use of a pedagogy. Then through means of an appropriate pedagogy, that of the Communication and Collaboration early years pedagogic approach and Sustained Shared Thinking pedagogical strategies (Siraj-Blatchford, I., 2007), learning can be enhanced and enriched through appropriate forms of meaningful and shared dialogue between the participants. By using Ferre Laevers Scales of Well Being and Involvment, the quality of learning can be validated to take place both safely and appropriately, within a planned early years learning setting.

Key words: Early Childhood; ICT; Technology; Pedagogy, Communication and Collaboration

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Preface

This PhD was made possible through a full-time bursary from the Centre for Excellence in Media Practice (CEMP) in the Media School at Bournemouth University, including a one year maternity leave.

I am extremely grateful to the scholars in the Centre for believing in my potential and for providing me the flexibility to change the purpose of my research. The nature of this PhD has changed course substantially from the focus of study of new media narratives in higher education, to the impact of technology with children in primary school settings and finally to the study of this thesis in determining appropriate pedagogy and strategies whilst using technology with young children.

The change of this study intersects at an important stage of my own personal experience, where as a mother, I wanted to pay close attention to the educational values that technologies are bringing into the classroom settings and within subject content. At the time this study was conducted, I had one child in KS1 primary years, 1 child in Reception and 1 child in the early years. Working closely with teachers as both a mother and a researcher, it soon became clear that a more immediate form of research, in that of determining appropriate pedagogical strategies, within a learning environment, was becoming more prominent and a pressing need to understand in education.

This was particularly important with children in their early years where there is a wide range of 'electronic gadgets' in their classroom settings and where, importantly, practitioners are looking for improvement and direction to both enrich and enhance the current early childhood curriculum. At the phenomenal rate of which new forms of technology are filtering into early childhood settings, it quickly became apparent that the practitioners were struggling to keep up to date with more appropriate forms of pedagogy, whilst using the technology with children.

This study, therefore, took a drastic turn from not only looking into the impact of new technology within classrooms but mainly in determining an appropriate pedagogy, within a planned learning environment, to support and encourage the recognition and awareness of the letters and sounds within the UK early years national curriculum.

I thank my supervisors, Professor Stephen Heppell and Dr. Richard Berger for believing in me and encouraging the change of direction, without any restrictions or imposing conditions.

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Definitions

Communication and Collaboration: Effective early years pedagogic approach in providing for opportunities for the co-construction of possible solutions in the learning processes that take place between the peer and child where they can learn alongside one another.

DfE: Department for Education (earlier known as DfES for Department of Education and Skills), The UK central government department.

Developmentally Appropriate Practice: Developmentally appropriate practice, often shortened to DAP, is an approach to teaching grounded both in the research on how young children develop and learn and in what is known about effective early education. Its framework is designed to promote young children's optimal learning and development

Early Childhood Education: There is some variation across countries in the ages of children considered to be in early childhood education. Some studies of ICT in early childhood use the term 'young children' to refer to children up to the age of 8 years. In the United States and Canada, children start school at the age of 6. Prior to this, nursery schools cater to children between the ages of 3-5 years and kindergartens cater to children between the ages of 4-5 year olds. In England, Scotland and Wales, children in nursery schools are normally between the ages of 3-5 years old. In Northern Ireland, children are between the ages of 2-4 years old. Sweden has preschools for children aged 0-5 years and an additional pre-school for 6 year olds. Unless otherwise specified, this research study refers to children in England in Early Childhood Education between the ages of 3 to 5 years old.

Early Childhood Curriculum: is used to describe a way of structuring learning experiences or an organised programme of activities.

Early Childhood Practitioner: is the term used to refer to the adults who work directly with the children in the Early Years Setting.

EPPE: The Effective Provision for Pre-school Education project of longitudinal research study in the effects of early childhood provision on the developmental progress of 3000+ children. Also formally known as EPEY.

Effective(ness) vs Appropriate(ness): The UK Effective Provision of Pre-school Education (EPPE) and Researching Effective Pedagogy in Early Childhood (REPEY) defines the term effective pedagogy through rigorous quantification and knowledge of child outcomes involving 12 preschools, selected on the basis of having good to excellent child outcomes in cognitive, social and behavioural development. Research processes and settings are outlined as effective outliers from 141 settings, as part of 3,000+ children in 1998. For this research, an overall definition of appropriate(ness) is based on the proxy of effective pedagogical qualities.

Free Flow Play: where children can choose what they want to do and how they wish to do it. There are no external goals set by adults and no imposed curriculum aims and objectives.

ICT/Technology: ICT is defined as "anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment" (Siraj-Blatchford & Siraj Blatchford, 2003). In the Early Years Foundation Stage (EYFS) framework, ICT is defined to include forms of both old and new technologies. These range from barcode scanners, calculators, cameras, cash machines, electronic toys, computers, photocopiers, printers, scanners, CD players, recorders and digital cameras to new forms of technology which include the Internet, touch screens, laptops, projectors, interactive whiteboards, beebots, console games, mobile phones and Tablet PC's (such as iPads) (Audrey and Dahl 2008).

Instruction/Instructive: The term 'instruction' is applied to include both direct behaviours (demonstrating, questioning, modelling etc.) and indirect instructional behaviours and intentions such as encouragement of parental involvement and 'pedagogical framing'.

More Knowledgeable Other: The more knowledgeable other (MKO) introduced by Vygotsky (1978) refers to someone (usually a teacher or parent) who has a better understanding of a higher ability than the learner, with respect to particular tasks, processes or concepts.

Laever's Scale of Well-Being and Involvement: The concept of well-being and involvement that we have applied has been adapted from the work of Ferre Laevers (1994). The term is applied to adults and children who have focused their attention upon a shared activity and are persistent with good qualities of care and well-being. They are 'intrinsically happy and settled, motivated and appear fascinated and absorbed' by shared activity.

Modelling and Reciprocating: Where the adult is able to suggest and demonstrate ways to encourage the leading as well as provide an extension of the thinking experience of the child with positive affirmation.

New Technology: New forms of technology which have been readily accepted within the EYFS framework and included within the early years settings. These types of technologies include the Internet, touch screens, laptops, projectors, smart toys, interactive whiteboards, beebots, console games, mobile phones and Tablet PC's (such as iPads).

New Learning Technology: New forms of technologies which have the potential to extend and enrich learning and development in classrooms.

Open Questioning: Open questions take the form of an answer which is more than just a 'yes' or 'no'. Open ended questions often begin with 'how do you think', 'I wonder what will happen' etc. This is the opposite of closed questions which yield single answers of 'yes' or 'no'.

Pedagogy: For the purpose of this research and within the EYFS framework (2010, 2011), pedagogy is defined as an interactive process between the practitioner and the learner undertaken to promote learning within the learning environment. This also includes all the instructional processes and strategies that occur within the early years classroom (Siraj-Blatchford et al., 2002).

Pedagogical Strategies: Practices which support learning, for instance, social interactions, the organisation of management and assessment. It encompasses both the direct actions that practioners undertake e.g. modelling, questioning and indirect activity such as planning, observing and recording.

Piaget Interview Methods: Piaget interview methods include face to face interaction and dialogue with young children where the researcher actively asks the questions and the participant offers the answers. Piaget's interview method consists of two types: Clinical Interviews which take the form of free flow conversation verses Non-Clinical Interviews which take the form of a more structured interview.

Piaget Teaching Experiments: Piaget's Teaching Experiments provides for a more structured and controlled environment. The Teaching Experiment is purely an exploratory tool (Steffe 1991), derived from Piaget's Interview Methods and is aimed at investigating what might be going on in the children's minds during the communication process.

Play: Play is at the heart of the EYFS Framework. Children learn and need to play in order to have fully understand the world around them. There are six areas of Learning and Development all of which, according to the EYFS framework, 'must be delivered through planned, purposeful play, with a balance of adult led and child initiated activities'.

Phonics: Phonics is a method for teaching reading and writing. There are several methods of phonic study. This thesis focuses on the analytic and synthetic forms of study. Analytic Phonics focuses on identifying the common phoneme in a set of words and synthetic focuses on phonics involves teaching children to recognise the different sounds represented by letters to them.

Phonetics: Phonetics is the study of phonemes which is the ability to hear, identify and manipulate sounds of the alphabets.

Phonological Awareness: Refers to a child's awareness of the sound structures of the letters and in turn, spoken words.

Probing and Prompting: A technique used when an adult tunes in and listens carefully to what is being said by the child, including that of body language and what the child is doing and trying to say. Probing and prompting is especially effective when showing genuine interest and giving one's whole attention to the child.

Scaffolding: The term scaffolding is generally attributed to Wood, Bruner and Ross (1978) who describe it as a process which enables a child to solve a problem, carry out a task or achieve a goal, with adult assisted means, which would be beyond the child's capability unassisted.

Sustained Shared Thinking: An episode in which two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend.

ZAD (zone of actual development): Refers to the cognitive levels at which a child is currently operating.

ZPD (zone of proximal development): Refers to the higher cognitive levels which a child can achieve when supported by a practitioner or more knowledgeable other (the cognitive potential).

1. Introduction

"We don't see things as they are; we see them as we are".
(Anais Nin 1903-1977)

1.1. Introduction

In the UK, ICT (Information Communication Technology) is used as the underlying generic term to include the various forms of technology, used in early years settings (see Definitions, p.11). As new forms of technology have filtered into preschool classrooms, the term technology has been used interchangeably to reflect ICT in the EYFS framework (EYFS 2012). Some of the new forms of technology which have recently been added to the ICT definition include the Internet, touch screens, laptops, projectors, interactive whiteboards, beebots, console games, mobile phones and Tablet PC's (such as iPads) (Audrey and Dahl 2008).

The purpose of this research was to determine an appropriate pedagogy whilst using a new form of technology, with young children in their early years. The research process began in 2009 and was completed and submitted in 2013. At the time of this research, the use of online educational websites, via the Internet, was a new form of technology to be found in preschools. Indeed, for some preschools, the use of the Internet was still a reality that was not yet feasible. The Internet was most commonly accessed via a desktop computer, from within the early years classroom setting. In the case, where a desktop computer was not available, the use of a laptop was utilised. For the purpose of this research, the fieldwork data collected and analysed in 2011 focused on the use of an online educational website, *Alphablocks*, within a preschool learning environment.

This research expanded the parameters of this study to include international based research and evidence, from outside the UK. The scope of this study includes literature appearing in international journals and reports, and used if it is seen as relevant to the areas of appropriate research considered for investigation. It would seem that some of the data and studies discussed in the literature review are relatively old and dated, particularly in the UK. However, at the time of writing, this area of study and particularly the use of new technology in preschools was an under-researched area. Therefore, the data supplied and investigated is considered the most recent for this thesis. Nevertheless, this was particularly helpful and important as the old research highlighted two areas of concern. First, there was a need to revisit and provide new research in this area and second, it helped provide the necessary structure in formulating the evidence for the pedagogy proposed in this study. In writing up this thesis, the scope and boundaries of the literature evidence includes up to the end of 2012.

As it stands today (2013), technology has moved on phenomenally and other forms of new technologies, such as tablets, leap pads, smartphones, have made their introduction into preschools. Yet, the concept of what constitutes appropriate pedagogy, whilst using new technology, with young children is still vague and there is still evidence from the Tablets for Schools UK Government Initiative highlighting that more research and studies need to be dedicated to "understanding the changes of pedagogy and pedagogic styles" (Clark 2013), when using technology in classroom settings. It is intended that the findings from this research will provide a beginning and foundation for future work to be developed for the understanding and development of pedagogy and pedagogic strategies, with other forms of new technologies in the coming years.

1.2. Research Purpose

Studying the use of technology in preschool settings comes at a time when there is widespread (though not unequivocal) support for the value of technology in educational settings. In most European countries, there appears to be an increasing desire to prepare children of all ages for what is seen as a complex and technological world (Sharp 2002). In the Portuguese early childhood guidelines, in the section of 'Expression and Communication', Information Communication and Technology (ICT), which extends to include new types of technologies, are seen as part of the 'new languages present in children's everyday lives' (Folque 2001). Samuelsson (2001) cites Sweden's reference to ICT in the preschool curriculum as the use of multimedia and information technology that can be used in preschool for the development and application of creative processes. In the United States, the National Association for the Education of Young Children (NAEYC 1996-2012) endorses the use of technology to be included as developmentally appropriate software for collaborative play, learning and creation. For this research, ICT in UK Early Childhood Education is defined as anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment (Siraj and Siraj Blatchford 2004, 2007).

The UK BECTA (British Educational Communications and Technology Agency) report shows that over the last five years new types of technologies have permeated young children's lives and shaped their understanding of their world (Audrey and Dahl 2008). These include the Internet, touch screens, laptops, projectors, smart toys, interactive whiteboards, programmable toy robots (known as beebots), console games, mobile phones and Tablet PC's (i.e. iPads). Established in the Early Years Curriculum (DfE 2008), these new forms of technologies are categorised within the definition of ICT and have been readily accepted and included in the early years playrooms.

Making the introduction of new technologies in early childhood settings is not difficult in the 21st century, but providing good use of the technology, so as to enhance young children's learning is still challenging. This is arguably the most controversial aspect of using technology as a learning tool in early years educational settings. At present, there is a debate about the need to introduce more effective uses of new technology in early education and include them as forms of '*new learning technology'*, where the application of the technology in education can be used to enrich and extend learning and development (Siraj and Siraj Blatchford 2005, 2006; Prensky 2001, 2006; Audrey and Dhal, 2008; Heppell 2010, 2011). For it is no longer acceptable to just introduce a box of technical gadgets into a classroom and consider this appropriate learning.

Advocates for using technology as a learning tool for young children (Brooker and Siraj Blatchford 2002; Siraj and Siraj Blatchford 2003, 2004: Plowman and Stephen 2003, 2005; Prensky 2006; Zevenbergen 2007) are pitted against opponents (Elkind 1996; Healey 1998; Sigman, 2008, 2011) who argue that the use of technology flies in the face of all our traditional beliefs about developmentally appropriate learning experiences for young children. There seems to be a direct conflict between the advocates of using technology in early years education and the warning signs that arise from studies in paediatric medicine of social, emotional and biological concerns. Yet, despite the negative claims made by the opponents, there is still no convincing evidence to suggest that learning and some of the new forms of technology are incompatible with or detrimental to children's learning and development (Rideout et al., 2003; Saude, S., Carioca, V., Siraj-Blatchford, J., Sheridan, S., Genov, K., and Nuez, R., 2005; Jones 2004; Goldacre 2009). In fact, there is still great support for the value of technologies in educational settings and a political commitment to their introduction into early years classrooms.

This research has come at a time when the Internet, a form of new technology, is slowly filtering into and becoming common practice in preschool surroundings. In some settings, the use of the Internet is now a part of classroom culture where its expectations of its use is cross-curricular and exists from an early age (Plowman and Stephen 2003, 2005). In an early study conducted by Marsh et al., (2005), the findings showed that parents are generally positive about the role of technology in their young children's lives. The results from Marsh's parents survey (Marsh et al., 2005) revealed that parents feel media education, using a variety of technologies, should be included in the school curriculum from when children are very young so that they can be prepared for the demands of the new technology age. This is supported by to Rideout and Hamel (2006), in which they argue that early childhood experiences using new technologies within the educational curriculum can potentially aim to prepare children to become digitally literate, in which they can have the opportunity to connect with experiences from the wider world. It would also seem that the use of technologies in education are seen by the UK Government as having the potential to improve the quality and standards of children's education, in addition to supporting teachers in their everyday classroom roles (DfE, 2008) and can become hugely exciting when they are used in appropriate ways.

As part of creating for more effective learning environments, Scotland's Learning and Teaching Early Years Framework (Scottish Executive 2003) policy-makers have recently turned their attention to integrating the provision of ICT experiences in preschools in more appropriate ways. Becoming increasingly aware that the current generation of young children are living in a world rich in media resources, the new early years policy set out by Scotland ICT in Education Excellence Group (2012) have begun to create a framework in which ICT (including new emerging technologies) learning can take place within a high quality preschool educational setting. Taking the view to innovate with purpose, the Scotland in Education Excellence Group are providing for more up to date changes in pedagogical strategies in order to help children acquire new skills, knowledge and positive dispositions for effective and useful learning through the means of technology.

Unfortunately, the same cannot be said for the UK Early Years Foundation Stage (EYFS) framework. There is early literature to demonstrate some problems associated with some of the forms of new technology in preschools (Plowman and Stephen 2003, 2003a, 2005; Siraj-Blatchford, Sylva, Muttock, Gilden and Bell 2002). Studies by Plowman and Stephen (2003, 2005), show that many early childhood educators have focused mainly on the technical competencies of using technology (i.e. power button/print/save on the computer), and less attention has actually been given to the *pedagogical* aspects for extending learning through the use of technology with young children. The findings from Plowman and Stephen (2005) studies showed that children's interactions with each other, whilst using technology, mainly fall into three distinct categories:

- *Negotiating access and taking turns* where children use a timer to decide when it is their time at the computer. Negotiating access and taking turns dominate the processes of the children's play;

- *Managing operations*, such as deciding where to click when the children work together and help each other to interpret error messages but at no time is there any explanation to enable the child to understand what the error is and how to overcome;

- *Sharing enjoyment of the action depicted* on the screen where the children exclaim at the various actions and images displayed on the screen with no clear understanding of the results of the animation.

Observations from the study showed that early years practitioners only become involved with the technology if they notice a need for intervention, i.e. 'checking that children are taking turns and ensuring that they are not doing anything that could incur damage' (Plowman and Stephen 2005). Consequently, due to the minimum interactions between the early childhood practitioner and children, the findings showed that there is a limited learning experience for the children, and a potential loss of learning opportunities. Very little attention was actually dedicated to the pedagogical aspects and the outcomes highligthed that early years practitioner involvement was limited and un-opportunistic. The literature articulated that the practitioners were found to have inadequate knowledge of suitable pedagogic practices whilst using technology in classroom settings and this was found to become problematic:

> "Although practitioners felt that children would benefit from a structured introduction to computers, they had not considered how this might be achieved in learning environments ... as a vehicle for learning" (Plowman and Stephen 2005, p. 153).

While there is increasing pressure to include new forms of technologies into the early years classrooms (DfE 2009, 2010, 2011), the literature evidence highlights that less emphasis has been placed on integrating the technology within pedagogical terms. Although Beastall (2008) acknowledges that teaching staff recognise the benefits of being able to engage children more effectively with the uses of technologies in preschool settings, they are still unclear how to raise the attainment of children and improve their learning processes. It would therefore seem, and for the purpose of this research, that the potential effect of new technology, filtering into early childhood education, may still require further development of more appropriate theories of learning and pedagogical strategies.

1.3. Research Foundation

The development of pedagogy with technology, within early childhood education, can be linked to the many views in the learning theories that have developed over time. In the UK, early childhood education (EYFS 2012) places more weight on Vyotksy's (1978) concept of social constructivism. Vygotsky's theory of children's development (1978), embedded firmly within the early years curriculum (EFYS 2012; Evangelou, Sylva, Kyriacou, Wild and Glenny (DfE) 2009) suggests that social interaction plays an essential role in children's cognitive learning and describes the learning process as working with children, where a child actively participates in learning under the guidance of more knowledgeable other (MKO), and who has the responsibility to structure and scaffold learning. However, this can become problematic, when using some of the new forms of technology, as there is literature evidence to suggest that early years practitioners do not consider themselves as the more knowledgeable other and their minimum efforts can be reflected in their pedagogic approaches (O'Rourke, M and Harrison 2004).

Early childhood practitioners have long been encouraged to use planned playful activities as a method to stimulate learning in early years settings (DfE 2008, 2011, 2012). However, within the context of technology in classrooms with young children, there is evidence of very little planning and appropriate practitioner instructional interventions (Marsh et al., 2005; Plowman and Stephen 2003, 2004). The use of online educational websites, such as *Cbeebies* and *Nick Junior*, were often found to be accessed during a time of free play where children could choose from a range of activities and experiences with little or no practitioner interaction. Unfortunately, the outcomes from this studies showed that this only resulted in a type of free form play, which does not necessarily maximise children's cognitive learning, and can be found to be a lack of a challenging activity (Siraj and Siraj Blatchford 2005, 2007; Plowman and Stephen 2005, 2007). There are researchers who caution that the use of technology should not be seen as a stand-alone activity, particularly within preschool years, and should look to be integrated into planned and playful activities within the classroom (Siraj and Siraj Blatchford 2007; Plowman and Stephen 2007).

In early work of project KINDERET (Saude et al., 2005), the practitioners awareness to meet a child' interest and to support, with care and involvement in their learning with the use of technology, is noted as important characteristics, for high pedagogic quality use of technology within curriculum. Here the role of the early years practitioner is to deliver appropriate instructions, so as to manage the cognitive challenges and development a child receives, within an emotionally warm and positive approach. This requires sufficient adult support in guiding and instructing the playful experience, where too much support can hinder playful learning and too little support can limit learning. Unfortunately, in an early study of REPEY and (Siraj-Blatchford et al., 2002 – 2003) and a more recent study of INTERPLAY(Stephen and Plowman 2010), the outcomes showed that 'reactive supervision' with the use of the technology was still found to be most common form of practitioner guidance, and could not be seen as contributing directly to learning.

Whilst the literature evidence above suggests that there is a lack of understanding and pedagogical support whilst using technology with young children, it is also worth noting that the literature is relatively dated. Prior to the start of this research, a pre-pilot study was conducted to help scope out and confirm the pedagogical gap in this research area. Thirty telephone interviews were conducted with a random selection of preschool settings based in the Southwest UK, each following the Early Years Foundation Stage (EYFS) framework (see chapter 6). In conversation with the early years practitioners and educators, they recognise that they have a responsibility to encourage the balanced uses of technologies for the best interests of the young children and look to embrace it within a learning capacity in their classrooms. However, in determining what is their most effective and/or appropriate pedagogic method for encouraging the use of technology in learning and development with young children (Appendix 10, p.212), the majority of preschool practitioners were uncertain and seeking for more information. Indeed, different types of approaches were considered, tried and tested ranging from exploratory play, to some adult guided interaction, peer to peer learning and in most instances, no practice(s) at all. However, whether one or all of these approaches are appropriate with technology in the early years is still up to debate. Although the dataset of the pre-pilot is not necessarily conclusive, the findings showed that there is still an apparent gap of pedagogical knowledge in this area, and that the practitioner and educators from the preschools lack knowledge of what constitutes an effective method and/or appropriate pedagogy, when using new technology with learning.

So far, there have been many varied technological adapted pedagogic approaches used in the early years classrooms. The Drill and Practice developmental approach is an instructional strategy and tends to reinforce learning through repetition and memorisation i.e. of words or arithmetic facts. Then there is the Exploratory approach which is a more hands off approach where children can learn about the technology through exploratory means independently and where practitioners will only intervene if the children appear frustrated or struggling (Haugland 1999). Additionally, there is The Guided Interaction approach which advances the concept of social cultural interactions and applies the theoretical framework of Vygotksy's learning (1978), in which learning can be enhanced through the interactions and dialogue with the participants. Although these approaches have a place in some educational learning settings, there is much literature evidence to show that they are not appropriate with young children, whilst using technology. There is literature evidence to show that the Drill and Practice approach can be counterproductive with young children and can, unfortunately, generate higher anxiety and lower self-esteem with the children (Sylva and Nabuco 1996). Through the Exploratory Approach, the outcomes to generate learning often results in missed opportunities as it can lead to random-responding or mouse clicking (Labbo et al., 2003; Plowman and Stephen 2003, 2005, 2007). Finally, in the Guided Interaction approach, there is danger of offering a planned, tutoring approach, where children are guided to pre-set outcomes and there is more focus on the provision of resources in the learning environment and less on dialectical inquiry to generate interest and motivate a learner (Siraj Blatchford 2002, 2005).

In determining the most appropriate pedagogy whilst using technology, the study of the nature of pedagogy and the appropriateness of its processes can be linked to established early years educational models, which constitute of effective pedagogical qualities in driving forward learning, both holistically and in totality with young children. The established effectiveness of these pedagogical qualities is based on earlier studies of Research Effective Pedagogy in the Early Years (REPEY) (Siraj-Blatchford et al., 2002) and The Effective Provision for Pre-school Education project (EPPE) (Sylva et al., 2004). Both studies provided for quantitative data on child developmental outcomes, as funded by the Department of Education (DES 2002) in a five year longitudinal study of more than 3,000 children across England, and have been established as effective qualities, for driving forward the learning processes, in the UK EYFS (2007, 2009) framework.

In the UK, there are three early years models that have greatly influenced the Early Years Foundation Stage (EYFS) framework. These include the Regio Emillia, High/Scope and the Experiential Education models. The Regio Emillia model distinctly seeks to recognise the social nature of learning and places greater importance on cognitive activity that occurs through interactions with their peers and adults who provide support. By truly listening to the children, the Regio Emillia approach can be defined through a meaningful and shared learning process, determined by dialectical inquiry. The High/Scope model focuses on active experiences, where children learn best through hands on experiences with people, material, events and ideas. There is a good deal of evidence that learning is an individualistic event, where a child constructs his/her own understanding within a planned social and physical environment. The Experiential Education model (EXE) suggests that children's learning occurs when children are cared for and involved. The understanding of early years education demands that practitioners should stimulate children, be sensitive to individuals and give autonomy to learners. By adopting the distinct qualities of the Regio Emillia, High/Scope and the Experiential Educational (EXE) early years models, this research looked to determine an appropriate pedagogy, based on the proxy of the effectiveness of these pedagogical qualities, when using technology with young children in the early years.

The literature shows that the Communication and Collaboration pedagogic approach, used extensively in creative environments within the early years playroom settings, has the potential to adopt the effective early years pedagogical qualities. The *Effective Provision for Pre-school Education project* (EPPE) (Sylva et al., 2004) and *Research Effective Pedagogy in the Early Years* (REPEY) (Siraj-Blatchford et al., 2002) project evidence shows that the use of Communication and Collaborative approach (Siraj-Blatchford, I., 2007) is likely to encourage a more balanced approach of learning settings, which combines the provision of free play with more active focused group work, involving practitioner direct instruction, within a more naturalistic environment. Used extensively in creative environments of the Early Years Foundation Stage (EYFS), and included in the *Key Elements of Effective Practice* (KEEP), the Communication and Collaboration type of interaction stresses the importance of the affective bond that builds between a child and a practitioner (Cuban 2001 and Elkind 1996).

The role of collaboration is very influential in providing opportunities for the co-construction of possible solutions in the learning processes, where both the more experienced peer or practitioner and the child can learn alongside one another, and where they are actively and *jointly* (as suggested by Dewey above) constructing new knowledge (Doise and Mugny 1984). These more successful practitioner and child interactions can inclusively look to adopt the use of Sustained Shared Thinking which, when used correctly, can provide for effective dialogue, and can help move forward the attention and interest of the child. The EPPE project quantitative analysis revealed qualities of effective pedagogical interactions, utilising scaffolding with Sustained Shared Thinking, 'where two or more individuals 'work together' in co-construction in an intellectual way to solve a problem, clarify a concept, evaluate activities or extend a narrative'; which was found to most commonly occur in a 1:1 practitioner and child ratio interactions (Siraj and Manni 2008). As Pramling et al., (2004) and Siraj Blatchford (1999) observed, there is a number of interesting commonalities that can be found between the instances of Sustained Shared Thinking and the highly promoted particular strategies applied within the Regio Emilia, High/Scope and EXE early learning models (Siraj-Blatchford 2007).

Yet, while it is likely that there may be opportunities for appropriate technology adapted pedagogy to enrich learning, it is still unclear how it can work in a particular context, and within the early years curriculum. There is recent evidence to show that the early years Communication and Collaboration approach can have a significant impact on the awareness of phoentic learning with young children, when using forms of technology (Siraj-Blatchford (SPLICT) 2011/2012). At a time where the standards of learning to read are falling in the UK, the preparation of high quality phonetic work to read earlier and faster in their preschool years can look to become beneficial. Jim Rose (2006), advisor to the UK government, recommended that the early years curriculum should look to include more technology related learning experiences. He (2006, 2005) suggests that a new curriculum needs to reflect changes in children's learning where the use of technology is to be as central to learning as the three 'R's (Cole 2010). This was backed by the Department of Education (2011) who urged that preschool children need to participate in more effective and engaging phonetic activities so as to enable them to relate initial phoneme recognition letters in the alphabets to the blending of sounds and onto constructing simple words.

1.4. Research Approach

At a time where the standards of learning to read were falling in the UK (DfE 2012), the study of high quality phonetic work with young children was becoming a priority to 'minimise the risk of children falling behind' (Rose 2006). Education Michael Gove (DfE 2010) argued that too many young children were failing to reach the expected standards of literacy tests and as a result, new measures had to be found to increase basic reading skills from a young age. According to Schools Minister Nick Gibb (DfE 2010, p.1):

> "The fact is that alternative methods have left too many young people with poor literacy levels, especially among children of more disadvantaged families, and we are determined that every child can read to their full potential".

There is evidence to suggest that technology can help make a phonetic based learning experience more effective. Earlier studies of the use of electronic talking books showed that technology has the potential to promote phonological awareness between four to six year old children (Chera 2000, 2003). In later studies (Littelton, K, Wood and Chera 2006), the electronic talking books improved the test scores of lower phonologically proficiency boys, in relation to the higher attaining boys. However, the findings showed that whilst technology can work as a catalyst in bringing about favourable results, the advantageous effects of the technology is found to be dependent on the two aspects: the adopted phonetic approach and phonetic pedagogical practices.

In the last seven years, there has been a gradual shift from the analytic approach of learning to read (National Literacy Strategy 1998) to a more systematic, synthetic phonetic approach (National Strategy 2008). Supported by the National Literacy Strategy Framework, the analytic phonetic model of study encouraged children to identify the common phoneme in a set of words through the concept of whole word recognition, where on the other hand, a more synthetic phonetic model of study looks to encourage children to identify phonemes and letters individually. In the time this research was conducted, the Department of Education established that the systematic, synthetic model works as a more effective phonetic approach, in delivering appropriate phonetic instructions, to encourage children to develop a strong awareness of the letters and sounds, and established it within the new EYFS *Letters and Sounds* curriculum (EFYS 2012). There is strong literature evidence to suggest that while the analytic approach is good, the systematic and synthetic approach is better (see chapter 4).

While there are various engaging activities outlined in the *Letters and Sounds* curriculum to support the systematic and synthetic model (i.e. songs, rhyme, sand play, magnetic boards etc.), there is to date, no research using new forms of technology to encourage the systematic and synthetic phonetic approach within the EYFS curriculum (2010, 2011). At present, the new synthetic phonetic approach, applied with technology, within the EYFS *Letters and Sounds* (EYFS 2012) curriculum is an under-researched area. In developing and determining an appropriate pedagogy applied with new technology, within the *Letters and Sounds* curriculum, early years guidelines suggests that a learning process with young children should follow appropriate phonetic pedagogical practices. It advocates that learning in the early years should take place in an informal environment, through engaging and playful hands on activities, where the practitioner's instructions are positive, to allow the children to engage in language play; in which sustaining engagement with young children is crucial to their development in learning (Guthrie and Wigfield 2000; Justice et al., 2003; Mc William, Scarborough and Kim 2003). In building upon phonetic awareness and recognition, children learn best through informal interactions with their peers, in worthwhile talk and attentive listening. Yet, the literature evidence above (see Research Purpose) shows that although early years classrooms have a range of technologies in their classrooms, there is very little evidence to show how some of the newer forms of technology have been used as engaging, playful and enriching experiences.

Clearly, it is important use technology appropriately so that is relevant to the child's development, within meaningful context and with real purpose in the curriculum. At a time where the UK government is looking to improve reading results and where there is literature evidence to suggest that technology can make a curriculum more effective, this research looked to adopt the more effective and established systematic phonetic approach in its study. Through the process of applying appropriate phonetic pedagogical practices, this research determined whether the applied pedagogy with new technology, can enrich learning within an informal and engaging manner and afford for appropriate interactions between the participants, so as to enrich and develop the process of phonetic recognition.

1.5. Research Aims and Objectives

This research looked to determine the most appropriate pedagogy, to be applied with new technology in early childhood education, with respect to phonetic learning. It addressed the value of effective pedagogical qualities, from early years education models, and determined an appropriate pedagogy to support phonetic recognition and awareness, with technology in early childhood settings. This research focused on an EYFS preschool environment, with children between the ages of 3-5 years, who are in part-time preschool education that is funded by the government and provided by the public, private or voluntary sectors following the Early Years Foundation Stage (DfE 2007) framework. The EYFS builds on and brings together the principles, pedagogy and approach of the Curriculum Guidance (DfE 2008-2010).

This research was guided by the main question and subdivided into the following:

Research Question: To what extent can new technology be used appropriately in extending learning and development with young children?

1. In what ways can early years technology based classroom settings provide for an appropriate learning environment with young children?
2. In what ways can existing early childhood technological practices provide for appropriate use of new learning technology, within early years settings?
3. What is the relationship between effective pedagogical qualities, in early childhood education, and in determining an appropriate pedagogy, whilst using new learning technology?
4. To what extent can the appropriate pedagogy applied with new learning technology, support phonetic awareness and learning in early childhood education?
5. To what extent can the appropriate pedagogy applied with new learning technology, support the quality of well-being and involvement with young children, in a planned learning setting?

The following aims and objectives outlined this research:

1. To develop an appropriate early years playroom setting with the use of new technology.
2. To research and determine an appropriate pedagogy to be applied with new technology.
3. To trial the use of the appropriate pedagogy, applied with new technology, across a range of early years learning environments.
4. To determine whether the appropriate pedagogy, applied with new technology, can scaffold and enhance phonetic learning practices with young children.
5. To ensure that the appropriate pedagogy, when applied with new technology, can support good quality of care and levels of engagement of the children.

1.6. Research Organisation

This research comprises of nine chapters. Chapter one introduces the research, its importance, approach, aims and objectives.

Chapter two outlines the historical evolution of the use of technology within early childhood education and lays the foundation from which this study was developed. This chapter is divided into three generations of technology in the early years. The 1st generation (1980-1990's) emphasises the use of computers in ICT with the view that both teachers and children come to learn and become comfortable with the tool and its processes. The second generation (2000 – 2010) introduces the use of various other technologies in early childhood education and places greater importance to the continuum use of technology with young children. It discusses the various technological, physical, social, emotional, and neurological concerns and shows that when used appropriately, the above health and safety concerns can be mitigated and learning can be progressed with technology. The chapter outlines the third generation (2010 – current) use of technology and demonstrates that more attention needs to be dedicated to pedagogical considerations, to include better teaching practices and learning experiences in early classrooms, when applied with technology.

Chapter three is the underlying crux of this research thesis from which this study develops. It shows how learning theories of early years pedagogy have developed from more developmental constructivist practices to social constructive practices. Well established in early years education, the social constructivist theory (Vygotsky 1978) advocates that better and appropriate forms of learning, can take place through more social cultural interactions between their peers, teachers and/or early years practitioners. It discusses the nature of pedagogy in the early years and highlights the necessary processes of active, playful experiences for the children, and the balanced role of the practitioner, within an early years learning environment. This chapter shows that although various technological pedagogic approaches have been tried and developed in early childhood settings, there are still some concerns of how the technology is pedagogically grounded into the early years classrooms. The literature highlights that in determining an appropriate pedagogy whilst using new technology, the investigation of early years education models can be useful in outlining effective pedagogical qualities. The evidence shows that, from the three early years models of the Regio Emillia, High/Scope and The Experiential (EXE) approaches adopted within the UK EYFS framework, shared and distinct pedagogical qualities have emerged, which can effectively drive children's learning and development forward. This chapter concludes that the

Communication and Collaboration approach has the potential to combine the effective early years pedagogical qualities and can support appropriate pedagogical instructions between participants, in a learning environment.

Chapter four discusses how technology can be pedagogically grounded, within the early years curriculum, to encourage phonetic recognition and awareness, with young children. The literature demonstrates that the use of some newer forms of technology can help make a phonetic program of study more effective but it would seem that its value would depend upon the quality of the overall phonetic approach of study and the implementations of appropriate phonetic pedagogical practices, with children in their early years. As it turned out, the National Strategies (2008) replaced the National Literacy Program (1998) analytic phonetic approach in the early years curriculum and introduced the new *Letters and Sounds* framework, following the systematic and synthetic phonetic approach. Although there is evidence to suggest that technology can help make a curriculum based phonetic program more effective, the value of the application of the technology will still depend on integrating appropriate phonetic pedagogical practices, within the early years classrooms. This chapter shows that in leading and engaging a purposeful phonetic learning experience in the early years, children are encouraged to learn in social and informal, playful learning settings, in which practitioners, can play a guiding role in scaffolding their interests and increase the learning experience for them.

Chapter five outlines the use of pragmatism as the choice of philosophical methodology for this research. It adopts Guba and Lincoln's (1994) argument that having to choose between one position and the other is not always realistic and to forcefully apply a stance to justify a type of research philosophy is only then accommodating the research process. This research embraces both philosophies of positivism and interpretivism and recognises the need for collaboration between the research processes so as to provide for ways that can bring about positive consequences (Tashakkori and Teddlie 1998). This chapter reviews the qualitative and quantitative paradigm wars and demonstrates evidence for how both approaches can complement and work alongside each other in order to best fit this research purpose. This chapter provides a solution for developing methodologies and methods which are uniquely suited to the needs of this research.

Chapter six continues with outlining Action Research and Piaget's Methodology in a four stage process. The first stage of this research process adopts Action Research to conduct thirty telephone pre-pilot interviews to serve as a investigating 'tool' in validating the gap in knowledge of what constitutes appropriate pedagogy, when using technology with young children. The findings from the pre-pilots informs the second stage which also uses Action Research, in an inductive qualitative approach, and is selected to guide early years practitioners to help unravel their current methods of pedagogy, when applied with technology. Stage three utilises Piaget's Methodology to generate a narrative for stimulating a conversation between the researcher and children. This stage adopts an inductive and qualitative approach utilising Piaget's Non-Clinical Interview method and is based on interpretations of the child's language and actions to create critical questions to ask. The fourth and final stage of this research continues with Piaget's Methodology, which employs Piaget's Teaching Experiments and validates the transfer of the new pedagogical knowledge to the early years practitioners. The final stage also uses Laever's Scales of Well-Being and Involvement Methodology in verifying the appropriate quality of care for young children and the quality of interactions between the participants, within the planned learning setting. This stage is led by a deductive and quantitative approach and follows a more structured and controlled environment.

Chapter seven takes into consideration the specific research design processes and techniques of this study. This chapter illustrates two methodological triangulation techniques of observations and interviews and demonstrates evidence to justify for qualitative and quantitative truthfulness and validity. It discusses the use of video cameras and tape recorders, for data triangulation, in providing for evidence with respect to the validity and reliability of data collection. It shows that the study adopted the notion of theoretical sampling, in gathering as much data as required, until a theory of concept can be generated. This research is divided into four stages and includes a total of thirty telephone interviews and 82 children. The chapter ends by mapping the physical arrangement of the study and, most importantly, by making contributions to the ethical considerations for following the necessary guidelines to work alongside both children and adults respectfully in research based environments.

Chapter eight takes into account data findings and analysis of the research process which is divided into four distinct stages. Stage one demonstrates that there is an overall lack of understanding of pedagogical knowledge when practitioners use technology with the young children in their classrooms and establishes the research protocol for this study. Stage two of the pilots demonstrates that an appropriate pedagogy whilst using technology with young children has the potential to be developed, however, it is a complex scenario and areas of technical, structural and organisational issues need to be established. Stage three of the research demonstrates that the Communication and Collaboration approach (Siraj-Blatchford, I., 2007) has the potential to incorporate the effective pedagogical qualities from the early years educational models and encourages both the practitioner and child to work together in constructing knowledge jointly as well as extend dialogue within the child's frame of reference and interests. It illustrates that through appropriate pedagogical strategies, of Sustained Shared Thinking techniques, which includes Open Questioning, Adult Modelling, Recriprocating, Probing and Prompting; phonetic learning can be enhanced and enriched when using technology. Stage four validates the four stages put together and establishes the pedagogy to be appropriate, within a suitably planned learning environment, in providing for care and involvement for children, within challenging yet achievable learning experiences whilst using the new technology.

The final chapter provides a summary of this research and discusses the key findings from the previous section. It considers the substantive pedagogical practices and issues which have emerged from this study. Grounded on the proxies of shared and effective early years pedagogical qualities from the early years education models, the original contribution of this research lies in providing for an appropriate pedagogy, applied with new technology, to support the process of phonetic development with young children in a well-planned early years learning setting. It is intended that by determining an appropriate pedagogy and pedagogical strategies, this new information can help guide early childhood practitioners to think about learning and working with new forms of technology, both now and in the future. This chapter highlights the limitations of this study and makes recommendations for the current use of new technology within the UK early years education policy. It concludes by offering a number of options for future research.

2. New Learning Technology in ECE

This chapter will outline the historical progression of the use of ICT (Information Communication Technology) within early childhood education and establish the foundations upon which the study is grounded. The historical timeline is particularly important in providing a base for this research as it highlights the progressive growth of ICT in early childhood education from the use of computers in the 1980's, to include newer forms of technology in recent years. This chapter will begin by introducing the 1st Generation of ICT (Information Communication Technology), which will identify the emergence and gradual acceptance of computers in early childhood education. It will discuss the impact of ICT in early years education, discussing limitations of learning theories and will show how the use of the computer and supportive educational software, regardless of its initial negativity, was incorporated into the early years settings through more developmentally appropriate practices.

It will continue to expand into 2nd Generation Technology in early years education, demonstrating how as technology developed over time, new forms of technology have been introduced in the early years classrooms in motivating and expanding children's learning and development. It discusses the technological issues and concerns of the use of technology with young children in the early years and argues for the continual progression of new technology in the early years setting by taking a more balanced view within safe and suitable conditions. The chapter ends by leading up to the 3rd Generation of technology in early childhood education which demonstrates that although there is a place for new technologies in early years, there are still limitations of current pedagogical practices whilst using some new forms of technology. The chapter concludes with the need to determine an appropriate pedagogy and/or pedagogical strategies to be applied whilst using new technology with young children in their early years.

2.1. 1st Generation - ICT in ECE (1980-1990's)

In the 1980's, early childhood education experienced their first wave of the use of ICT where the view was that "children must become comfortable with the tools and processes that impact on their lives" (Barnes & Hill 1983, p. 250). At this time, ICT included a wide range of products that were used to manipulate, store, retrieve, transmit and/or receive transformation. Most of the ICT applications used at this time with young children included electronic items such as tape recorders, telephones, audio and video, television receivers and networked desktop computers. The role of ICT encompassed a wide range of technological products and applications, and there were numerous publications in the 1980's about the positive and negative implications of using technology within the early years, but most debates during this period were mainly concerned about the use of desktop computers with young children.

The early debates raised a number of criticisms about the use of computers, namely that they did not encourage children to work collaboratively and could lead to social isolation; that they were not developmentally appropriate and can possibly hamper social, emotional and physical development (Brady & Hill 1984). These claims were contradicted in a study by Lipinksi et al., (1986) which showed that whilst children are using computers, there was much verbal cooperativeness and supportive interaction occurring between the children. Lipinkski, Nida, Shade and Watson (1986) found that social interactions at the computer were quite similar to that of a classroom and although there is initial disruption of classroom activities at first, sooner or later, the 'novelty' factor wears off over time and the balance of activities is returned to normal baseline levels. In the 1980's, very few research studies specifically focused on the impact computers were having on children's social and emotional development, so these concerns voiced were more about the moral panic with change in culture.

However, one of the strongest objections of inappropriate computer use drew on Piaget's developmental theory (1953). Shade and Watson (1990) argued that unless children have reached Piaget's concrete development operational stage (7 – 11 years of age), where they are able to think through a task in their heads and physically carry it out, they will not be able to use technology successfully. This was argued by Papert (1980b) who suggested that it is the influence of materials that the culture provides which is paramount in determining the order of development of intellectual abilities. So, if culture, at a state in time, is to become rich in using computers, children would have the opportunity to develop the ability to use symbols to carry out cognitive tasks, to think logically and to consider multiple perspectives of a situation. But, Papert's (1980b) line of thinking was too controversial for some teachers at that time, who voiced strong opinion to the use of computers in the programme of learning. They argued using pedagogical and philosophical concerns that the use of computers control learning experiences and put children through a pre-determined agenda.

> "…Sure the children will like the computer. It's a magical toy. But can computers develop skills and understandings for individual young children? Can the computer really add to the development of self-esteem, autonomy and cooperation?" (Burg 1984, p.30)

Papert (1980b) attempted to contradict this thinking by demonstrating the use of the LOGO application (a computer language specifically designed for use by children), in which children were given the potential to control their own learning. He advocated that when children use LOGO, they program the computer and engage in thinking about their own thinking. This type of thinking resonated with the process of metacognition (Flavell 1979) in which an individual is aware of his or her own brain processes that occurs during learning. In other words, metacognition is thinking about thinking and where a child's thinking becomes visible to him/her and others, to help achieve learning outcomes. Although the idea of young children learning to program and making beneficial gains was still in its infancy and controversial, the evidence from the LOGO study suggested that when computers are used appropriately, there is no substantial evidence to suggest that they are detrimental to children's learning (Pea and Kurtland 1984). A study by Borgh and Dickson (1983) also provided evidence that young children are intelligent enough to turn on and off a computer, insert and remove a disk and engage in discussion about how to work a computer as well as work collaboratively and in a sharing environment within small groups. These fine motor skills themselves can lead to building children's development and self-esteem.

The research on the LOGO application and other early research findings refuted the various cognitive, emotional and social claims about computer use within the early years and became the initial seed for a whole new approach to using computers in early childhood settings. This attracted a lot of attention with early childhood teachers and educators of young children, from both the UK and US who began exploring educational approaches in using the computer in classroom settings. With the rise of a variety of educational computer software becoming available in early childhood education, there was a growing need to provide early educators with appropriate guidance which would assist them in identifying the most appropriate applications for use with young children. It would seem that Papert (1980a) was ahead of his time when he argued, that introducing children to computers is not so much about 'when to use them' but rather 'how to use them'.

This line of thinking is key to this research for even in the late 1980's to early 1990's, it soon became apparent, that although computers, as leading ICT tools, had a place in the educational environment, there were still implications in determining which ways computers could be used to extend learning with young children, and the impact of selecting appropriate software to support learning. As a result, organisations such as The National Association for the Education of Young Children (NAEYC 1996 – 1998) in the US brought about Developmentally Appropriate Technology in Early Childhood in the United Kingdom (DATEC 2000), both of which released position statements that provided guidelines for early childhood educators to examine the impact of technology on children and to prepare to use computers and their software applications, in developmentally appropriate ways.

2.1.1. What is Developmentally Appropriate?

NAEYC (1996 - 1998) encouraged for more developmentally appropriate practices, which required teachers to understand and get to know their children as they were, and at the level they were at, so they could enable the children to reach their educational goals. In this context, developmentally appropriate practice means helping children achieve that which is both achievable and challenging enough to promote the child's progress and interest rather than making things easier for them. According to the NAEYC's principles (Appendix 1), all teaching practices should be appropriate to children's age and development and attuned to them as unique individuals, whilst at the same time being responsive to the social and cultural contexts in which they live, when using technology.

NAEYC (1996, p.56) identified six key areas of guidance for the use of computers in ECE:

- Computers are used to extend learning in a collaborative and interactive way;
- Computers should be integrated into the programme of learning "physically, functionally and philosophically";
- Equitable access to the technology should be promoted;
- Diversity of the children should be affirmed through software and negative stereotyping avoided;
- Teachers and parents work in partnership to advocate for appropriate technology applications;
- Opportunities for professional development that link curriculum, skill and integration of computers should be provided.

These principles, combined with evidence of curriculum and teaching effectiveness, had the potential to form a basis for *developmentally appropriate* practices in early childhood care and education. Solid research evidence and guidance provided by NAEYC (1996) in the United States brought about DATEC (2000), Developmentally Appropriate Technology in Early Childhood, in the United Kingdom. DATEC pointed out that children, from their early years, should find out about and identify the uses of technology in their everyday lives; where young children should be using computers and programmed toys to support their learning. DATEC advised that children need opportunities to play and explore with computers just as they have done with other forms of electronic technology, such as cassette recorders, electronic toys, cameras, scanners etc (see definition of ICT, p.11).

DATEC in the UK found that the best uses of computers in early childhood education can encourage educational purpose, collaboration, and integration within curriculum as long as the use of computers can be integrated within other early years practices in play and project work. In order to provide for more valuable use of the computer and for children to understand its uses, DATEC recommended that children need to see the use of computers within more real life purposes and in more meaningful context. The DATEC approach presented a broader framework of incorporating computers within an integrated technology curriculum where just like any other technological artefact, computers carry values and by using them within early childhood settings, they must be identified in determining their educational value:

> "The emphasis on using computers in early childhood contexts was no longer 'what age should children be using computers' (Papert 1996 p.98) but rather 'what are appropriate and meaningful uses of technology with young children?'" (Scoter et al., 2001).

According to DATEC and NAEYC, the use of computers should be used in such a way that it allows for the child to express their ideas, solve problems, develop new ways of playing, use their imagination, and unleash their creativity. But with all this new information and guidelines, Clements et al., (1993) claimed that early childhood teachers interested in using computers now stood at a crossroads:

> "Will we (they) use computers to reinforce existing educational practices or to catalyse educational innovations, following NAEYC (and DATEC) guidelines (p.56)".

A second more rapid generation of ICT began to rise with greater importance to dedicate appropriate guidelines, for the use of computers in the early years. Much research and evidence supported how the use of computers and educational software can be integrated appropriately within the early years curriculum, so as to achieve learning and developmental gains with young children. Research case studies in Scotland using CD's/DVD's (Luckin et al., 1998) showed how using CD/DVD's with computers can provide for a variety of ways for children to weave together words, pictures and sounds, thereby providing a range of ways for children to communicate their ideas, thoughts and feelings. There was strong research evidence and practical experience of the impact of the use of computers and associated software in motivating and expanding children's learning and development of different skills (Yelland 1998).

Haugland (2000) demonstrated that children of three to four years olds, who use CD's with the computer, can increase learning dispositions and make greater developmental gains when compared to children without such experiences. She compared children from the US without computer experiences in similar classrooms with children who have extensive use of computer and found that more appropriate computer usage has the potential to lead to gains in intelligence, non-verbal skills, structural knowledge, long-term memory, manual dexterity, verbal skill, problem solving, abstraction and conceptual skills.

By the end of the 1990's and into the 20th century, computers and educational application software had become a more accepted part of the early years ICT settings, with some rich evidence to suggests that the use of "computers can actually help and modify the way children think, work and inevitably the way they learn" (see Project KINDERET; Saude, S., Carioca, V., Siraj-Blatchford, J., Sheridan, S., Genov, K., and Nuez, R., 2005, p.6). However, as new types of technology began to start filtering into the early years classrooms, there was evidence to suggest that the impact of some of the new technologies in early childhood settings had done little to improve children's learning experiences in any meaningful way (Peck, Cuban, & Kirkpatrick 2002; Shamburg 2004; Hughes, 2005; Zorfass and Rivero 2005; Siraj and Siraj Blatchford 2006; Plowman and Stephen 2007).

2.2. 2nd Generation – Technology in ECE (2000 - 2010)

Other new types of technologies began to filter through into early childhood classrooms. More common technologies included the use of laptops, smart electronic toys, interactive whiteboards, programmable floor robots (Beebots and Pixie Robots), digital audio players (DAPs), digital cameras (Siraj-Blatchford and Siraj-Blatchford 2006; Audrey and Dahl 2008) and the Internet. In more financially equipped early childhood settings, newer versions of technology such as mobile phones, interactive TV and Console Games/Wii were also being introduced (Audrey and Dahl 2008).

Studies with digital cameras in the UK (Einsarsdottir 2005) found ways to encourage forms of creativity, collaboration and social interaction between peers and/or children. It was suggested by Brooker (2003) that, at least in the UK, early childhood education may actually be leading the way in developing best practice in the use of various technologies to support positive learning experiences for children:

> "...there is increasing evidence that some of the most exciting and appropriate uses of ICT (technology) are to be found in early years settings, where there is less pressure to meet strict targets and more opportunity to experiment with child-centred practice… "(Brooker 2003, p. 261).

In the UK based early years settings of Histon and Homerton, a wide range of technology from digital cameras to remote controlled cars and programmable toys have became part of children's everyday experiences (Andrews 2008). The use of the Pixie robot (programmable toy) is used to support areas of mathematical thinking and development which can look to engage children in self-directed exploration.

> "The children were fascinated that the Pixie was a rectangular shape but made circular patterns when they directed it across a large sheet of paper placed on the floor. This provided an opportunity to explore the language of direction and number and to start predicting how far the toy might need to move and in what direction, to make different patterns" (Andrews 2008, p.1).

According to early years adviser Harriet Price who received the ICT accreditation mark from BECTA – the British Educational Communications and Technology Agency (DfE 2008):

> "Technologies are now such an important part of children's everyday lives that a learning environment without it would be completely out of touch with their own realities" (Cited in Andrews 2008).

In project findings of IBM Kidsmart, it would seem that the early years had reached a time where technology is introduced to young children of preschool age to not only develop positive attitudes to learning but also to prepare them for a knowledgeable society (Siraj and Siraj Blatchford 2000 – 2001). Yet despite the positive feedback, where the research demonstrates how various forms of technology can contribute to learning, a very strong level of resistance in considering potential threats and disadvantages for using technologies with young children emerged. Where in the 1980's, concerns of social, emotional and behavioural issues were implied, new and recent research began to advocate warning signs for the integration of new technologies in early childhood settings. To the extent, that the use of computers and some of the new forms of technology should look to be removed completely from early years settings:

> "Children should be banned from using computers in schools until they are nine-years-old because the early use of technology is destroying their attention spans" (Henry 2010, p.1).

This concern is very relevant to this research because at the time of this writing, there was much controversy in regard to whether the Department of Education (DfE) will continue in progressing with ICT and introduce some of the newer forms of technology in the early years education. There is research evidence to suggest that the effect of technology on children's learning, social and physical development is mixed but the debate is becoming increasingly polarised. While there is research in the US to show that age-appropriate software can bring about benefits in areas like language development (Scoter & Boss (2002), other research suggests that prolonged computer use can stunt brain development (Sigman 2008).

The next section will illustrate that although there have been concerns for the use of technology with young children, there is no significant findings to determine that technology use in early years is detrimental to children in their early years. For the purpose of this thesis, and in determining an appropriate pedagogy, it would seem that some of the warning signs, discussed below, are critical factors when considering applying technology with young children in their classroom settings.

2.2.1. Technology Concerns

The arguments used for and against the use of technologies in education of young children most often appear to be concerned with the quality of children's experiences and the value these experiences they can bring to their physical, cognitive and social-emotional development (Alliance of Childhood 2000, 2004). Researchers, such as Haugland (1999, 2000), recommend that technology, such as general uses of ICT and the computer, should be introduced when they are about three years of age and above.

> "Computers are not a good choice for the developmental skills of children.... these children are learning to master: crawling, walking, talking and making friends" (Haugland 2003).

In agreement with Haugland (2003), children younger than three learn best through their bodies; through their eyes, ears, mouth, hands and legs. Although children may return over and over to an activity, they are full of moment, curiosity and are often found to be developing patterns of change through activity.

> "The American Academy of Paediatrics (2009, 2010, 2011a, 2011b) and the White House Task Force on Childhood Obesity (2010) discourage any amount or type of screen media and screen time for children under 2 years of age...." (Found in NAEYC Position Statement 2012).

However, the same expressions do not necessarily apply to children above three years of age who are attending preschool settings. Young children have an increasing access to a variety of technologies such as the computer, DVD's, CD-ROM's, electronic story books, Internet, and in some cases, new forms of screen technology where the modern child is becoming increasingly aware of the various types of technologies becoming available (i.e. tablet applications). With children over three years of age, scholars (Haugland 1992, 1999, 2000; John Siraj Blatchford 2002, 2003, 2005) recommend that technology can be used with young children as long as it is used in ways that are developmentally appropriate.

There was even more increasing concern that young children are being "fast forwarded" through the basics of educational uses of technology (Healy 1998). Early debate found its strongest expression in the United States with the Alliance of Childhood, in a widely cited publication *Fool's Gold*, which calls for an immediate moratorium on the further introduction of the use of technology in early childhood, except on exceptional cases for students with special needs (Cordes and Miller 2000). The *Fool's Gold* represents the most conservative position on young children's use of technology, favouring the 'essentials of a healthy childhood' such as,

> "…time for spontaneous, creative play; a curriculum rich in music and the arts; reading books aloud; storytelling and poetry; rhythm and movement; cooking, building things , and other handcrafts; and gardening and other hands-on experiences of nature and the physical world" (Cordes and Miller 2000, p.98).

The report suggested that computers with the use of the Internet in particular, should be banned in all US primary and early childhood schools. It was argued that the use of computers using the Internet pose a dangerous threat to young children because they include physical, emotional/social, intellectual and moral hazards. It would also seem that the report assumes young children spend significant amounts of time each day using the Internet. However, a report by the Kaiser Family Foundation Report (1999) found that children in America between the ages of 2-7 years averaged about 4 hours and 13 minutes of screen media exposure daily, which was subdivided into 3 hours and 9 minutes watching television or videos, 45 minutes reading, 8 minutes playing video games and only 11 minutes on the computer using the Internet (Appendix 2). The results indicate that the computer time included using the computer both at school and at home. From the analysis of the results in this study, there was a total of 11 minutes spent on the computer using the Internet. It is worth pointing out that 11 minutes is a very small amount of time for a child on the computer to pose any detrimental signs of physical, emotional and or social hazards in the young child. Therefore, to make large claims that the Internet should banned due to health and safety measures cannot be conclusive and as many critics suggest, this can be described as a 'death of a childhood' thesis based on a mixture of panic and nostalgia (Buckingham 2000). He points out that similar concern about harmful cognitive, emotional, physical, and social effects on children have accompanied the emergence of every new technology from the advent of alphabetic print, to electronic toys, to the increase use of films, TV and video games. The belief is that ideological rejection of a role for technology in early childhood education is founded on the belief of moral panic in change of culture.

Even though the use of technology is found to becoming ubiquitous at all levels of schooling (Jones 2004), there are still heated debates relating to more specific significant health and safety concerns ranging from physical and cognitive to emotional, social disengagement and neurological limitations with development in young children. Where this research is focused on determining an appropriate pedagogy, whilst applying technology in early childhood education, it is important to explore these concerns and provide insight into the implications of how to apply new technology (i.e online educational website via the Internet) into the early years settings, within a safe and suitable approach.

2.2.1.1. Physical Health and Safety Concerns

The Alliance of Childhood has a strong view (2000, 2004) that children's use of ICT should be side-lined in favour of other kinds of learning and play activities. This is due to some of the concerns which focus on the physical effects of prolonged exposure to a desktop computer use, such as repetitive strain injuries, addiction and sedentary lifestyles (Sigman 2008) that can lead to future health problems.

According to BECTA (2001) leaflet on keyboard skills in schools, it states that using the keyboard with index fingers only is highly risky for children with years of typing ahead of them, especially when there may be added strain from playing games on home computers. There is less danger for young children getting repetitive strain injury as much as it is for older children. It would also seem that research on the possible addictive nature of the Internet and computer games has so far also only been limited to older children (Shah and Godiyal 2009). Siraj and Siraj Blatchford (2003, 2008) suggests that technology, particularly the use of computers, when used appropriately, can play a role in young children's early childhood experiences and should work alongside the many other kinds of activities offered in the pre-school setting. In this way, technology can be used with caution in early years classrooms and should not be seen as a way to supersede or displace other activities (Siraj and Siraj Blatchford 2003).

In a study conducted by Graham and Banks (2000), it was observed that some children have to tilt their heads up to look at a computer screen and raise their aims to use the mouse, and often assumed a slouch position when seated in front of the desktop computer. Some other children were observed moving their noses very close to the computer screen. Siraj & Siraj-Blatchford assert that 'general health awareness relating to the uses of ICT and new technologies should form part of children's learning and should certainly form part of any setting's health and safety policy' (Siraj & Siraj-Blatchford 2003, p.21). Research by KINDERET (2005) advise adopting basic health and safety standards, described in current ICT policy of early childhood education such as, appropriate use of time, organisational and setting features as well as appropriate selection of software, to minimise detrimental effects of the use of technology in young children. Just as office workers and adults are given clear guidance about posture, eye-level, foot rests, arm supports and time spend on computers; Siraj and Siraj Blatchford (see KINDERET report, 2005) suggest that children need to become more responsible for ensuring they have a chair of the right height when using a desktop PC and/or a laptop. Early childhood practitioners can reinforce this by ensuring that children have the appropriate tools and workspaces, including appropriate sized mice and child friendly keyboards which need to be correctly evaluated correctly, with considerations given to potentially adverse effects for children health and safety.

Although there are a few studies focusing on the health and safety effects of computer use for young children, there is a general consensus which suggests a cautious approach and believes that practitioners and children need to be well informed about safe and appropriate ways to work with technologies. Siraj and Siraj-Blatchford (2003) recommend that time spent by young children using technology should occur in relatively short spells, usually no more than 20 minutes for three year olds, extending to no more than 40 minutes for children by the age of 8. This time constraint works as recommendations to limit the children's exposure to screen time which can avoid physical concerns of screen addiction and possible sedentary lifestyle leading to early childhood obesity (Birch, Parker, and Burns 2011).

2.2.1.2. Cognitive and Emotional Development

Aric Sigman (2008, 2011) argues that early exposure to technology and an increased amount of time spend watching the screen on the computer, such as websites on the Internet, is strongly linked to a significant continuing decline in time spent reading books as a regular past-time. A comparative study of children in 41 countries found that England has dropped from 3rd to 19th in the international reading literacy league table since 2001 (PIRLS 2007; see Chapters 16 and 17).

> "Computer use too early has long term, detrimental effects on children's maths and reading. Early exposure may have long-lasting adverse consequences for educational achievement" (Sigman, press release, 2008).

However, it is worth pointing out that children in their preschool years are usually in the process of learning to read. Most children between the ages of three to five years are still unable to read and it is no wonder that the data shows that young children spend longer at a computer (playing and watching websites) than reading. It is also worth noting that Sigman (2008) focuses primarily on children and passive viewing on television than more so with hands-on interactions with computers (Rideout et al., 2003):

> "Those with screen media in their bedrooms use media for more time each day, and children in "heavy television" homes read less and learn to read later than those in other homes" (Found in, The Kaiser Family Foundation Report, January 2006, p.1)

Liang and Johnson (1999) describes ways in which computers can be used in activities that are labelled as investigative play, functional play, games with rules, pretend play and constructive play. Here the use of computers in early years can foster development of communication skills among young children between peers and with adults. Scoter & Boss (2002) study also further illustrated how talking 'word' processors' using screen interaction can support young children's experimentation as they play with language which can make rich contributions to children's literacy development, in areas of speaking, listening, reading and writing. There are also many other research based studies showing how computers can play a significant beneficiary role in young children's cognitive development (Haugland 1999, 2000; Freeman & Somerindyke 2001; Helft & Swaminathan 2002; Clements & Sarama 2003a; 2003b; Fischer & Gillespie 2003; Rideout, Vandewater, & Wartella 2003; Greenfield 2004; Kirkorian, Wartella, & Anderson 2008; Linebarger, Piotrowski, & Lapierre 2009).

Overall, it would seem that children's media researchers have found no significant evidence to support the belief that technology, such as the Internet, are inherently harmful. Findings from the

Public Broadcasting Ready to Learn Initiative suggests that when educational websites on the Internet have been carefully designed to incorporate what is known about effective reading and viewing instruction, they can serve as powerful and positive tools for teaching and learning (Pasnik et al 2007).

> "There are some educationally valuable websites and digital media and there are some that are less valuable or even educationally worthless. The logical conclusion to be drawn from the existing scholarly literature is that it is the educational content that matters – not the format in which it is presented" (Wainwright and Linebarger 2006, p3).

2.2.1.3. Social Dis-Engagement

Studies at Stanford University have led to a displacement theory of Internet use with young children (Aric Sigman 2008):

> "In short, no matter how time online is measured and no matter which type of social activity is considered, time spent on the Internet reduces time spent in face-to-face relationships….an hour on the Internet reduces face-to-face time with family by close to twenty four minutes" (Nie et al.., 2005).

On-going study of families by Campo et al., (2009) at the University of California found that social disengagement is now rapidly increasing, as side-by-side and eye-to-eye human interactions are being displaced by the eye-to-screen relationship. This Sigman (2009) suggests is increasing morbidity and mortality, linking to physiological alterations in young children and reduction in social interactions. Yet, upon further investigation of both studies, it would seem that the participants selected for the research, were that of older children, some of who are now in college in the US and where their data correlates to adult time with the Internet, and not directly related to young children in their early years.

Recent studies with some newer forms of technology (Einsarsdottir 2005) suggest that when technology is used appropriately, there are ways to encourage forms of collaboration and social interaction between children and their peers. In a study by Calvert et al (2005), the findings show that constructive engagement through early adult-child interaction allows for the child to retain control of the computer whilst still engaged in conversation.

Still, other concerns suggest that the use of technology with young children might foster learning in a negative sense. Some scholars argues that the idea of solitary game play, on the Internet, can lead to children's isolation from social interaction in learning and play, or the violence in some types of educational computer games has the potential to encourage aggressive behaviour. However, a review of research games for young children on the Internet (Griffiths 2000; Sakamoto 2000) suggests that there is no definite indication that playing educational computer games can lead to aggressive behaviour. What makes it complicated is that new forms of technology, such as the educational websites and games software designs, are evolving so quickly that the results of many studies results are becoming too old to be applicable to some of the kinds of online educational games that children are using today.

According to a study by Funk et al (2003), there is evidence to suggest for increased aggression in children to emerge. Sixty six children were recorded experiencing a violent game and then a nonviolent educational game. They were then coded for aggression and empathy scores. It was observed that long term violent games contributed to lower empathy scores and the findings suggested that long-term violence exposure to violent computer games may be associated with desensitisation as reflected in lower empathy. However, it was concluded that the direction of causality remains unclear and that aggressive behaviour can be linked genetically to either parent.

Whilst it may seem that options are polarised, what remains certain is that early childhood educators have a responsibility to critically evaluate children's computer use of software and online websites, and to identify those that might include or promote violence, as well as undesirable gender or cultural stereotypes.

2.2.1.4. Neurological Development

There is belief among some researchers that computers pose a threat to children's ability to engage in open-ended and imaginative play and that some of the new forms of technology have the potential to damage young children's development (Healy 1998: Sigman 2008, 2009, 2011). There is a claim by some studies that the early years are a 'busy time for the brain' and using technology before the age of seven could be at a detriment of important intellectual growth.

According to Sigman (2008), the American Academy of Paediatrics (1999) found that online screens have negative effects on children's brains:

> "....limited neurological activity and reduced cerebral blood flow. The frontal lobe is stunted and the wiring of the brain is changed, affecting the attention span, learning and sociability" (Sigman 2008, p.5).

The view is that screen based medium, such as the Internet, is not as effective as manipulative in developing and understanding skills in the early years. It is suggested that young children's brains are still developing and the use of online screen media can stunt creative and imaginative play. A review of developments in neuroscience and their implications of research in technology in learning (Blakemore & Frith 2000) suggests that while it is true that preschool children have brains that undergo substantial and rapid changes 'this increased flexibility remains throughout adolescence, at least in some brain areas' (p. 10) and there is no significant reason to believe that on-going use with computer screens can deteriorate brain development.

Cuban (2001, p.212) once commented that early childhood researchers and policymakers often habitually cite brain research on infants and young children to support or rebut positions on the 'critical period' of intellectual development but most neuroscientists themselves are reluctant to apply their findings to preschool settings. Similarly, it would seem that there are studies to suggest that technology, particularly some newer forms of technology, can have negative effects on young children, but there is still not enough concrete evidence to make any significant claims.

There are further possible negative outcomes which have been identified with the use of technologies in young children resulting from irregular sleep patterns, behavioural issues, focus and attention problems, decreased academic performance and the negative impact on socialisation skills to areas of decreased language development and their detrimental effects with long term use of online screen time (see Cordes & Miller 2000; Appel & O'Hara 2001; Christakis et al. 2004; Anderson & Pempek 2005; Rogow 2007; Vandewater et al. 2007; Brooks-Gunn & Donahue 2008; Common Sense Media 2008, 2011; Lee, Bartolic, & Vandewater 2009; DeLoache et al. 2010;

Tomopoulos et al. 2010; AAP 2011a, 2011b). However, some of these research findings still remain divided and there is no substantial evidence to choose one way or another. According to Goldacre (2009, p.1), Sigman's (2009) evidence is often one-sided and "cherry picked and selectively only mentions the supporting evidence for his case whilst ignoring the evidence that goes against it". It would seem that the main catalyst of the negative health outcomes above is related to the long and abusive use of television screen time (Sigman 2008, 2011), which tends to take a more passive form of viewing (Goldacre 2009), and less to the use of websites, on the Internet, with young children.

As a word of caution to all educators using screen media, Sigman suggests that:

> "...It is important to strike the act of balance and moderation... In short, there is nothing to be lost by children watching less screen media but potentially a great deal to be lost by allowing children to continue to watch as much as they do" (Sigman 2011 p.113 -114).

A more recent concern relating to wireless technology is whether radiation emitted by wireless services can have harmful effects on young children. The UK Health Protection Agency states that "people using Wi-Fi or those in the proximity of using Wi-Fi equipment, are also exposed to the radio signals that it emits and some of the transmitted energy in the signals is absorbed in their bodies" (p.49). Wireless technologies transmit information using radiofrequency (RF) and/or microwave signals and the relatively low-energy forms of radiation are known to cause damage to living tissues through changes to the chemical structures within cells. Although there is no specific research dedicated to the uses of wireless technologies with young children, there is substantive international research that investigates the health effects of using wireless Internet and other sources of radiofrequency isolation (HPA 2012). What is made certain is that exposure to RF radiation via wireless technologies, be it via a computer, laptop or touch screen, occurs at very low levels, approximately similar to cordless telephones. According to the Health Protection Agency (2012), the general position stands that there is no consistent evidence to date that exposure to radio signs from Wi-Fi (and WLAN's) adversely affects the health of the general population.

> "On the basis of the published studies and those carried out in-house, the HPA sees no reason why Wi-Fi should not continue to be used in schools and in other places" (HPA 2012).

Whilst strong debates continue over the validity of the claims for and against the introduction and use of new technologies into ECE, a strong rationale has emerged that more care and awareness needs to be recognised when integrating technology into classroom settings with children. It would seem that the use of technology in early years classrooms require a balanced view; where just as an educator/teacher would vet for a book, toy or video for suitable use with young children, the same caution ought to be given with newer selection of software (offline and online), health, safety and supervision. Although criticisms of introducing and integrating new forms of technologies in childhood classrooms exist in the early education sector with young children, it would appear that the technology is here to stay.

> "EYFS mandates that all children, in all nurseries or care settings, *must* be introduced to computer technology (and newer forms of technologies), starting at 22 months of age. **No settings will be excepted**" (DfE, 2008, 2009, 2010, 2011).

2.3. 3rd Generation – New Learning Technology in ECE

Studies (Siraj and Siraj Blatchford 2004, 2005, 2006) suggest that the use of technology can provide a context for collaboration, co-operation and positive learning experiences between children, or between children and adults. However, this does not necessarily happen on its own accord. Research indicates that not only should appropriate technology be selected for the selected age range but also that practitioners must be conscious of the kinds of learning interaction that they would like to occur whilst using the technology (including the interaction between teachers and children or between children themselves).

The experiences and research demonstrate that carefully selected technology such as the use of digital cameras and programmable toys, can develop and extend young children's learning sometimes in original ways through more effective interactions with their teachers. This was especially most effective when knowledge of young children's learning is informed on how the selected technology is planned, used and evaluated and where the teacher's pedagogical awareness of the tool, education and competence was achieved to meet the child's interest to support, stimulate and encourage learning.

Many scholars have written about the importance of the teacher's role and knowledge in understanding of the technology itself in order to develop awareness about how they can integrate it into early childhood practices and bring about effective learning experiences for children through the use of technologies, (O'Hara 2004; O'Rourke & Harrison 2004; Patterson 2004; Siraj-Blatchford & Whitebread 2002) but unfortunately, these views have often been side stepped due to the nature of the concerns and issues of associating technology and young children.

> "To make ICT (technology) part of children's daily life in such ways is a rather complex process that requires professional teachers with a positive attitude towards ICT" (Saude, S., Carioca, V., Siraj-Blatchford, J., Sheridan, S., Genov, K., and Nuez, R., 2005, see KINDERET report, p.20).

Whilst the growth and development of technology in education has sometimes been driven by the desire to get more developing technology and technological infrastructure into place, there is significant research evidence to show the impact of some of the newer forms of technology in early childhood settings has done little to improve children's learning experiences in any meaningful way (Peck, Cuban, & Kirkpatrick 2002; Shamburg 2004; Hughes, 2005; Zorfass and Rivero 2005; Siraj and Siraj Blatchford 2006; Plowman and Stephen 2007). Although there are some useful demonstrations and research to show that various technologies can help children to learn and educators to instruct more effectively, less attention and care has been given to the pedagogical purposes for introducing newer forms of technologies and/or the supporting conditions and resources that might enable the technology to contribute towards better teaching and learning experiences for both the teacher and child (Downes & Fatouros 1995; Siraj-Blatchford 2005; Plowman 2007).

This is where the real question lies: what can be considered an appropriate pedagogy whilst using new forms of technology in early childhood education?

The Effective Provision of Pre-School Education (EPPE) Project in the Early Years (EPPE 1994-2004 by Sylva, K; Melhuish, E; Sammons, P; Siraj-Blatchford, I; Taggard, B) study was developed to identify the most effective pedagogical strategies that are applied in the UK Early Years

Foundation Stage (EYFS) to support the development of young children's skills, knowledge and attitudes, and ensure they make a good start at school. The EPPE project investigated the characteristics of effective practices and that pedagogy which underpins it through twelve intensive case studies of settings where children had positive outcomes. It was a major five year longitudinal study funded by the DfES and conducted by a combination of six local authorities and the many preschool centres, children and parents that participated in the research. The EPPE project collected a wide range of information of 3,000 children who were recruited at age 3+ and studied longitudinally until the end of Key Stage 1 (end of year 2). Data was collected on the children's developmental profiles (at ages 3, 4/5, 6 and 7 years), background statistics, the child's home environment and the preschools that they attended. The settings were selected from a range of providers including local authority day nurseries/preschools, integrated centres, playgroups, private day nurseries, nursery schools and nursery classes.

The EPPE project showed that while all twelve centres involved were effective in promoting learning within the early learning preschool settings, the results were found be to less effective in integrating technology into curriculum. Most of the practices that were observed scored between "inadequate" and "minimal" (Appendix 3). The children were seen to be using the computer mainly as a tool to develop creativity in areas of art, music and dance programmes with some use of literacy related software. It was observed that practitioners helped children access software and supported them when they got into difficulties but intervention tended to occur when children had problems. Children were often found to be using the computers without a practitioner. Whilst immediate priority was provided for technical training, there was very little attention paid to the necessary pedagogical approach for using technology to create a conducive learning environment. There was much uncertainty expressed about the early childhood practitioner's appropriate use of software with computers and software applications.

The EPPE case studies included detailed documentation of naturalistic observations of staff pedagogy and systematic structured child observation's of learning. The data collected was analysed using interviews with the parents, staff and managers, through intensive and wide ranging documentary analysis and literature review of the pedagogy in the early years. The overal outcome from the EPPE findings showed that the effective and 'excellent' pedagogical strategies that had been developed with the early years practices tended not to be applied in the the context of ICT and this showed that more work and investigation is required in this area of development.

Similar findings were also found in a later study by Plowman and Stephen (2005). This study took place in Scotland with seven case study settings which were selected to provide a balance across the different sectors of local authority nursery schools, two of which were privately funded preschools and two others that were voluntary sector playgroups. These preschools were selected predominantly for their access to and usage of the Internet in their playrooms. The other settings were selected not because of their access to technology but rather as good quality preschools and other government funded institutions. The outcomes from their study suggested that reactive supervision was found to be the most common form of adult intervention. The children were rarely questioned or guided with help when interacting with the computer, other than to request turn-taking interventions.

> "the approach operated by default rather than constituting a pedagogical strategy, although it was associated with children's choosing for themselves

> when or if they would use the computer and what they would do" (Plowman and Stephen 2005, p. 151).

The data collected through interviews and observations of both the early years practitioners and children's usage of technology in their classrooms, showed that the children's interactions with computers "could not really be described as contributing directly to play or learning, other than the social aspects of negotiating access" (Plowman and Stephen 2005, p7). It was most commonly associated with keeping a check on turn-taking and the length of time at the computer. An egg timer was used to manage the duration of time on the computer. When asked how they identified what children were learning, the adults (practitioners) acknowledged that it was difficult to pinpoint unless staff engaged the children in dialogue (Plowman and Stephen 2005).

> "You can never be sure what they are learning. You are assuming that if you ask them something about what they have been doing, they will be able to explain – sometimes they just watch. You have to ask and see what they have learned" (Stephen and Plowman 2005, p. 7).

The overall outcomes from this study (Plowman and Stephen 2005) highlighted that computer play does not always act as a support mechanism for learning. There were examples of observations which showed that while the software informed children that their answer were wrong, there was no other forms of support from the early years practitioners to explain why the children's answers were incorrect or any further explanation. This type of dismissal or perhaps ignorance is unlikely to support learning and can look to fall short of the facilitation required by an adult who can identify the source of the child's error, and the benefits of directing a child to more concrete or active forms of learning. The study concluded that the observations and data collected from this study point to the need for a more developed pedagogy to be used with computers in the playroom.

Following on from the study of Plowman and Stephen (2005), observations from a more recent study conducted in eight Scottish preschool settings yielded similar results. Plowman and Stephen (2007) studied young children using the computer accessing new technology of children educational websites (e.g. CBeebies) in a preschool classroom. The study represented a range of types of provision and served 400 families within a broad range of socioeconomic status. The preschool settings were divided into two cluster groups, based on location and travel and the research was undertaken in collaboration with two practitioners from each setting. The data collected in this study produced a baseline of this study and included a technology audit, field notes, focused observations and video recordings.

Earlier research of Plowman and Stephen (2005) showed that children using software on the computer (the dominant feature of ICT in the playroom) was characterised by brief and unproductive encounters. Unfortunately, similar results were also observed in their study using educational websites in the early years playroom (Plowman and Stephen 2007). The results suggested that whilst practitioners are experts at providing tailored responses to children, the help they were intending to provide did not always extend the child's thinking. Instead, it was observed that playing games on the computer, via the *CBeebies* and *NickJnr* websites, was the most common activity and once the children were introduced to the new technology by the practitioners, they were often left alone for extended periods of time where they had the opportunity to explore, manipulate and experiment, either by themselves or with their peers. . The practitioners were not always able to attend to the children at the computer due to the busy nature of the classroom. This frustrated the children and they would leave the computer terminal to turn to the other many activities on offer in the pre-school setting.

> "Children did not find their time using the computer rewarding in terms of pleasure or achievement when it was chosen as free play activity…" (Plowman and Stephen 2006, p.2).

The findings from the study (Plowman and Stephen 2007) showed that there were few examples of the adults initiating directed activities and the children's interactions with the computer were referred to as 'playing with the computer'. It was also noted that the practitioners found using new software on the computer to be challenging and complicated where they did not know how to extend the use of the technology to include learning and therefore were unable to give children the opportunity to build on competences and knowledge that is applicable to their development. A form of the Guided Interaction pedagogic approach was implemented in this research. While there were some developments of what constitutes as appropriate components in determining a good quality approach of pedagogy (i.e. providing for a well-balanced learning setting, more adult involvement, quality of care etc.), whilst using the new technology, the Guided Interaction approach also had its limitations (see chapter 3 for more discussion); one of which the nature of dialectical instructions between the participants needed more consideration.

Although the literature evidence is relatively dated, it suggests that there is a lack of pedagogical support and knowledge whilst using some of the new types of technology with young children, particularly the use of online websites within the playroom settings. Some existing pedagogic practices practiced in Scotland, in Early Learning Forward Thinking (2003) indicate that young children using technology learn effectively in collaboration with other children and adults which is found to encourage children to develop better shared understandings. Yet, other research findings in the UK indicate that children using technology learn better through only exploratory play (Haugland 1999) and can be found to help children to become independent and self-directed learners and, therefore, teachers should not intervene in the children's play. There is even evidence from the literature to show that early childhood educators are strongly advised against the use of 'drill and practice' pedagogy, yet this type of method of instruction is still currently being used, particularly in instances of mathematical development with young children (Han 2002, 2003). So, there is no doubt that there is still much confusion as to what is an appropriate pedagogy whilst using some of the new forms of technology with young children.

A collection of more recent studies by researchers from the National Endowment for Science, Technology and the Arts (NESTA) say that there is clear evidence that technology can boost learning (Luckin, Bligh, Manches, Ainsworth, Crook, and Noss, cited in Burns 2012), but much too often the technology is used without a strong understanding of the power to transform education and many institutions are still using technology to support 20^{th} century teaching methods and learning objectives. Chief Executive Geoff Mulgan of NESTA claims that 'the emphasis is too often on shiny hardware rather than how it is to be used' (cited in Burns 2012).

While it would seem that the integration of new developing technologies within the early years matters for the development of young children and has the potential to enhance young children's learning, it is also strongly suggested that it is not just enough for the early settings to include a collection of new generation *'electronic gadgets'.* Even though there is much influence and hype for integrating new and developing technology into early childhood education, there is also much evidence to show that simply providing new forms of technology equipment to teachers, schools and early childhood educations will not necessarily make a difference; what makes a difference is the way in which this equipment and resources are used. It would, therefore, seem that the impact of technology in early childhood education has substantially progressed from the culture of '*when to use them*' to '*what to use*' and now to '*how best to use them'* within education.

2.4. To Summarise

The 1st Generation use of ICT (1880 – 1990) illustrated the emergence of ICT with young children and demonstrated, that despite limitations of the developmental theory and initial negative feedback, the use of computers still found its way into early years classrooms. With a rise of educational software becoming available in early childhood education, educators looked to adopt more developmentally appropriate ways to adapt the use of computers within early years classroom settings. Organisations such as NAEYC (1996 – 1998) in the US brought about DATEC in the UK (2000) and released position statements that provided guidelines for early childhood educators to examine the impact of technology on children and to prepare to use computers and software applications, in developmentally appropriate ways.

The 2nd wave of Generation of Technology brought with it a whole host of new technologies and the underlying technological concerns of its association with young children. Although there are strong debates for and against the use of new technology in early childhood education, the literature evidence suggests that a strong rationale for the use of technology in the early years has emerged. More care and guidance needs to be recognised whilst using technology with children in early years classrooms. It would appear that technology is here to stay in the early years settings and when used appropriately, has the potential to result in enriching and enhancing learning with young children. Although there are some good examples of integrating technology within curriculum design, there is also significant evidence to show the impact of some newer forms of technology has done little to improve children's learning experiences in any meaningful way.

Leading up to a new generation, of the 3rd Generation, it would seem that the uses of new technology within the early years have returned to a time when Cuban (2001, p.67) referred to ICT as 'benign addition'. In other words, some newer forms of technology have been brought into the early years educational environments as tools to supplement existing resources. Unfortunately, their use does not transform practices and preschool practitioners tend to perpetuate existing ways of working whilst accommodating to the technologies. It is, therefore, now timely for the role and the potential for new technology in the early years to be critically examined to help produce the most *appropriate* outcomes in learning and consequences of its uses. It would seem that the challenge for the educators of today is to re-consider their current pedagogical practices so that it better reflects the educational outcomes of its uses.

> "If we are to use Information Communication Technologies to support early learning across the curriculum then the technology (and future technologies) should be integrated to support the development of positive disposition towards learning" (Siraj Blatchford and Siraj-Blatchford 2006. p.5).

3. Technological Pedagogy in ECE

> "To date we have had no large-scale longitudinal studies of ICT's impact in education, from a pedagogical or philosophical perspective, such as we have in the form of studies of earlier major curriculum development projects" (Carroll 2005 and Cox 2007).

The interest to determine an appropriate pedagogy, applied with technology, comes at a time when there is widespread value of new forms of technologies in educational settings. Although there is an increasing desire to prepare children for all ages for what is seen as a complex and technological world to follow (Sharp 2002), there are still some concerns for the way technology is currently used within classrooms. The UK Education Secretary Michael Gove (cited in Burns 2011- 2012) states that the ICT Curriculum is a mess and must look to become radically revamped. He argues for better teacher training, better pedagogical practices, higher standards and continual assessments (cited in Burns 2012); especially when using technology within classrooms. Shadow Education Secretary, Stephen Twigg MP (2011) addresses that ICT curriculum in schools needs to be reformed, so as to fit in with the times and for the children of tomorrow.

Although this statement was explicitly aimed at secondary and higher education in the UK, it can be argued that similar concerns are also found to resonate within Early Childhood Education. In the study of Multimodal Literacies in the Early Years, Flewitt and Wolfe (2011) found that many early years practitioners lacked confidence in how to use technology, were uncertain about its value in education and feared the potential harm that technology can bring to childhood. Flewitt (2011) advocated that it is the fear of technology and the conceived harmful effects that it can possibly bring to childhood that hold practitioners back in making its introduction properly with the children. The findings from their research (Flewitt and Wolfe 2011) indicate that many early years practitioners do not have the necessary skills or support from their current early years curriculum and lack guidance and information on technological adapted pedagogy.

In determining an appropriate pedagogy for this research, to support learning and development with some of the new forms of technology that have filtered into the early years, this chapter will begin with considering how children learn. It illustrates how learning theories have developed from developmental practices to more social cultural practices; the latter playing a significant role in the pedagogy of the early years classroom. It discusses the nature of pedagogy in the early years and demonstrates the two main conceptions of the early years, where children learn through well-planned play and where there is requirement for the balanced role of the practitioner. Taking into consideration the learning theories and the early years nature of pedagogy, this chapter shows that when put together, they from the underlying foundation for early years education models. This chapter shows that various technological approaches have been applied in early years settings, reflecting the distinct pedagogical qualities of the education models. It shows that whilst these approaches have been tried, they are still not wholly suitable as an appropriate pedagogy, when applied with technology. The chapter concludes by highlighting effective pedagogical qualities from effective early years models and advocates that the Communication and Collaboration approach can have the potential to encapsulate the pedagogical qualities, and possibly drive children's learning and development forward holistically.

3.1. *Learning Theories*

The development of pedagogy in Early Childhood Education can inevitably be linked to views in educational theories and practices, which have got to do with the nature of learning and development in young children (Greeno *et al.*, 1996). Current conceptions of early childhood development and pedagogic implications are built on a century of research. What is sometimes overlooked is that theories develop over time and ideas grow out of one another, but most theories are not wholly replaced by those which are developed later. Pestalozzi and Rousseau (18th century), who regarded children as innocent beings, was developed and extended by progressive 19th century thinkers, such as Friedrich Frobel. The early part of the 20th century saw the development of highly influential approaches within the field of early childhood education – including that of Steiner and Montessori. Broader approaches of psychoanalytical Freudian ideas (1920), and behaviourist theories of Pavlov (1930) and Skinner (1948), were introduced shortly after. The more influential theories of constructivism and behaviourism led to other new theories, which took an important place within social context.

In the UK EYFS framework, early childhood education places more weight on Vygotsky's (1978) concept of social constructivism and the impact it has on young children's learning and development. However, there is still much influence from Piaget's Developmental legacy and how children learn and develop within their operational stages. The next section will briefly outline how Piaget's constructive theories (1967) have been supplemented by those of Lev Vygotsky (1978), who placed great emphasis on the concept of social cultural learning, in which children learn and develop their understanding through the many and possible cultural interactions with others.

3.1.1. Developmental Learning

Since the late 20th century, there has been a shift in theoretical understandings of how young children learn. Previously, much emphasis has been on understanding, observing, and planning for children's chronological developmental needs. Taking the Piagetian constructivist view (1967), a child constructs his or her understanding of new knowledge through the many channels of reading, listening, and exploration. The theory of constructivism maintains that a child learns best when a) he/she constructs meaning from their own experiences and b) when he/she can develop solutions to their own problems. Piaget's theory proposes that children cannot be *given* information in which they immediately understand and use but instead, the child must learn to *construct* their own knowledge which is built upon experience and active exploration (Piaget 1967).

This constructivist theory entails that children think and reason differently at different periods in their lives. Piaget believed that each child passes through an invariant sequence of four qualitatively distinct stages (Piaget and Inhelder 1969) through a linear progression which cannot be made irreversible:

> "They are sensorimotor, pre-operations, concrete operations, and formal operations. In the sensorimotor stage (0-2 years), intelligence takes the form of motor actions. Intelligence in the pre-operation period (3-7 years) is intuitive in nature. The cognitive structure during the concrete operational stage (8-11 years) is logical but depends upon concrete referents. In the final stage of formal operations (12-15 years), thinking involves abstractions" (Cameroon 2002, cited in WordPress 2007, p.1).

In this way, a child's thinking develops as gradual growth of knowledge and intellectual skills moves towards a final stage of formal and logical thinking. Therefore, according to his notion of discrete stages and the idea that children cannot do certain things if they have not yet 'reached' that stage, children cannot achieve to perform some cognitive or physical actions until maturation. Piaget and Inhelder (1969) claim that the essential nature of human beings is of their power to construct knowledge, through adaption to their environment (Appendix 5). Hence, through assimilation and accommodation the child is in a continual process of cognitive self-correction. The goal of this activity is to reach a better sense of balance or equilibrium which is fundamental to learning (Krogh and Slentz, 2001). Action and self-directed problem solving, leading to control of the environment, are considered to be at the root of learning and development (Wood 1988).

However, there are critics (Donaldson 1978; Tan-Niem et al., 1999) who argue that Piaget's theory of the stages of cognitive development is misleading. Their studies, which have taken cross-cultural research, offers evidence to suggest that children do not necessarily have to proceed through the distinct linearity of stages, as Piaget suggests in reaching a level of cognitive development of that which is universally applicable (Donaldson 1978). The Piagetian theory has been criticised for underestimating the learning abilities of young children and the types of abstract direction and requirements Piaget places upon children, which are not conducive to achievement. Recent research from Tan-Niem et al., (1999) has shown that children as young as 4 and 5 years old have a rather sophisticated understanding of their own mental processes, as well as those of other people. This suggests that children have the ability to take perspective of another person's viewpoint, which makes them far less egocentric as Piaget believes.

Some other studies show that under more simple conditions with adult interaction and involvement (Gelman, Meck and Merkin 1986) children have the potential to achieve far beyond their learning capabilities, which are restricted to stage development in Piaget's theory of development. The lack of attention paid to the social and cultural context of child development has been a substantial criticism of Piaget's ideas and there is evidence to suggest that children's development is not so tightly related to their age or stages of development, as was once believed by constructivists. Cullen (2001) concludes that although Piaget's influence and legacy of how children learn has generated great interest and to an extent, has made an impact on the development of education in young children, "the research that challenges his views of the young child cognitive deficits has played an important part in re-thinking the philosophy underpinning early childhood education" (p.51), and of the influence of developing through the varied social cultural interactions with others.

3.1.2. Social Cultural Learning

During the 1980's, Piaget's constructive views of learning were challenged by the Russian Psychologist Lev Vygotsky's in his work of *Mind in Society.* Vygotsky stressed the importance of children's active role in human development (1978). Social constructivism or also known as social cultural theory, places great importance on cognitive activity, which tends to occur during social interaction, with the help of more knowledgeable peers and adults. They aim to provide and support a child, as he/she explores new understandings, knowledge and skills, thus providing learning and insight about himself or herself as a learner (Dewey 1976; Vygotsky 1978, 1986).

According to Vygotsky (1978, p. 57):

> "....every function in the child's development appears twice:
> first on the social level and later on the individual level."

Whilst there is a great deal of overlap between Piaget's cognitive constructivism and Vygotsky's social constructivist theory, the latter theory has much more room for an active, involved adult (i.e. teacher/practitioner). Vyogtsky, like Piaget, notes the importance of children engaging in active learning but also stresses that learning is an interactive and constructive activity. Vygotsky's theory advocates that children in learning are no longer viewed as 'lone scientist', unravelling what things were meant for them, but are now viewed as social beings that learn about their world through cultural interactions with others. Vygotsky argued that the child's cognitive skills begin as social interactions between the child and a more able other. Both the teacher and older or more experienced children play very important roles in learning. Adults such as parents and teachers are conduits for the tools of the culture, including language. The tools the culture provides a child include cultural history, social context, and language. This is strengthened by the point that social learning essentially begins with 'imitative' learning, which is subsequently internalised through identification and thereby incorporated in the individual's self-concept (Bandura 1986).

> "These developments in social theory are creating new and important possibilities for practices of teaching and learning in schools and beyond. They provide us with theoretical constructs, insights and understandings which we can use to develop our own thinking about the practices of education" (cited in Daniels 2001 p.2)

Vygotsky (1978) describes the learning process as working with children within their Zone of Proximal Development (ZPD), where a child actively participates in learning under the guidance of more knowledgeable other (MKO), who in turn structure the learning so as to guide the child through tasks that are just beyond their current capability. The term ZPD refers to the distance between what an individual can do alone and unsupported and what they can achieve with the help of a more knowledgeable other (MKO). Here the pedagogic instruction involves the critical factor of teacher guidance and active engagement, in the process of knowledge construction (Bowman *et al.,* 2001). This type of support provided to a child is known as scaffolding. Bruner's work on scaffolding (Wood, Bruner and Ross 1976) is a specific technique to pass on knowledge from the expert, namely the teacher and to the child. In scaffolding, the purpose of the teacher or a more skilled peer is to support the child to actively construct meaning towards the level at which they are capable of working. As the child's competence increases, the teacher or more skilled peer slowly releases control and allows the child to accept responsibility for the task (Wood et al., 1976).

Yelland and Masters (2005) suggest that scaffolding is a very dynamic technique in nature but requires modifications and personalisation to fit into individual situations. The practitioner has the key role of scaffolding learning within the child's Zone of Proximal Development (ZPD), where the practitioner's involvement can help direct the child to identify why particular responses are incorrect, thereby able to reduce children's frustrations if they fail to demonstrate the correct solutions. However, Bruner (1996) suggests that for scaffolding to work effectively, the teacher, or practitioner, must know and understand *more* than the child; in other words, be more knowledgeable. It is incumbent that the teachers not only transfer the knowledge, but also understand what the child already knows.

While Vygotsky's Social Cultural theory is relevant to most aspects for transference of knowledge in early years education, this can be seen to be particularly worrying, in respect to the use of new technologies. Gauvain (2001) criticises that whilst Vygotsky's work takes into consideration leading factors of teacher interaction and cultural implications, his work on the Zone of Proximal Development (ZPD) focuses more on the experienced partner than the learner and can reduce the learner to little more than a recipient of the experienced partner's knowledge. This also, takes into assumption, that the experienced partner is perhaps, more 'knowledgeable' (or 'significant') than the children themselves. Yet, the literature evidence from chapter two shows otherwise. In work taken by UK IBM KidSmart Early Learning Program (2004), where the project aimed to increase the access and use of technology for children, the findings showed that a significant portion of childhood educators did not have previous computer experience, and therefore experienced some anxiety in relation to their participation, whilst interacting with both children and the technology. It was also observed that the introduction of using computers between the child and adult raised concerns of the technological knowledge of the adult involved:

> "For the adult, the lack of technical knowledge was another added pressure to add to the many other pressure of the work place itself which often resulted in increased anxiety and the avoided or limited use of the computer with the children themselves" (O'Rourke, M and Harrison 2004, p.20).

Although the various strands of the social cultural theory have become an important catalyst for re-thinking the role of learning and development with young children and is also well-established within the UK EYFS framework; the concept of the more knowledgeable other (MKO), with respect to new forms of technology, where practitioners have the knowledge to scaffold learning with the children, is problematic. In the context of Vygotsky's theory, the more knowledgeable other (MKO) have a crucial role in encouraging the child engagement within the environment, to help keep them engaged and motivated (Iram-Blatchford et al, in project REPEY, 2002, p. 32). Yet, there is evidence to suggest (Plowman 2007) that practitioners do not consider themselves as the more knowledgably peer, and this can be reflected in their pedagogic approach.

So, whilst the early years guidelines suggests that the Social Constructivist theory of learning is that which is most appropriate for children in their early years, there is evidence to show that Vygotsky's concept of the MKO may not be applicable for settings of technology use, between the early years practitioner and child. In much of his work, Vygotsky refers to the importance of developing pedagogy for the future in child development rather than dwelling on past approaches (Fleer 2002). This statement can be particularly relevant in investigating the nature of pedagogy with young children and in considering how it can be delivered whilst using some of the new forms of technology, within the early years.

3.2. Considering Pedagogy

The nature of pedagogy, within early childhood education, can often become stuck in the debate about the types of behaviours in question (or how it should be) based on a set of principles and rules, which are more relevantly described 'as art or craft, changing and adapting to the context and individuals involved" (Stephen 2010, p.17). The term pedagogy is by no means universally used by early years researchers or, indeed, even defined in the same way, which by default makes it difficult to carry out a systematic review of pedagogical practices. With respect to primary aged children, David McNarmar (1994, p.6) has suggested that the notion of pedagogy has a "hostile tone with implications for pedantry, dogmatism or severity" and indicates that the pedagogy is employed to signify "the art and science of teaching which carries with itself negative associations"; especially when it is connected to young children in their early years and takes a Piagetian constructive stance.

Mortimore (1999) suggests, that it becomes helpful to define pedagogy in a way that takes the learner into account where "a conscious action by one person (is) designed to enhance learning in another" (p.3). The term pedagogy has often been defined quite broadly in continental Europe and the term is sometimes applied in a similar way in the UK within early childhood contexts. At times, the term pedagogy is used interchangeably with curriculum. UK Policymakers, managers of early years provisions and practitioners are comfortable with considering their pedagogical practices in relation to a formal written curriculum, which is at the heart of their provision, practice and planning to fulfil curricular expectation and outcomes (Stephen, Brown and Cope 2001). Although Bowman et al., (2000) refers to pedagogy broadly as a "deliberate process of cultivating development within a given culture and society where the basics of pedagogy can be broken down into three components" (p. 182), he still makes a clear distinction between that of curriculum, of the content that is being taught, verses methodology, of the way teaching is being done (further extending into cognitive socialising which forms the basis of encouraging the child to move down the path from early years to school culture and onwards to a learning culture of the larger society)(Appendix 4).

Whilst pedagogy can be referred to as an 'art', 'science' or 'craft' of teaching, the term 'teaching' itself can be quite misleading; especially with children in their early years. Most early years practitioners find it difficult to use the word 'teaching' to describe their role with children as it implies a top down teaching method and a more formal method of instruction. The Early Years Foundation Stage (EYFS 2012) framework suggests that teaching and working with young children is a much broader and subtle concept than this and covers the many *instructional* ways that early childhood practitioners work with children.

> "It refers to the interactive process between teacher and learner and to the learning environment" (Siraj-Blatchford et al., 2002, p.28)

The various pedagogical instructions observable in early years settings, range from didactic interactions to more social constructivist approaches, associated with modelling, prompting, exploration, questioning, scaffolding specific skill acquisition and nurturing a child's disposition to learn, between the practitioner and child. Therefore, within early childhood contexts, the term 'teaching', may be unhelpful and '*instruction*' as a more suitable word, may be defined as appropriate, so as to incorporate all the instructional processes that occur within the early years classroom, "with the aim to initiate or maintain learning within a learning environment" (Siraj-Blatchford et al., 2002, p.27).

However, these early years instructions do not solely constitute the nature of pedagogy in early childhood education. There still lie two big conceptions of the delivery of these instructions, in which they occur. The first is found to be concerned with the notion of play as the instructional medium through which children learn and the second emphasises the role of the practitioner, whose aim is to bring about the appropriate instructions and interactions, to help manage the cognitive and developmental challenges that a child receives.

3.2.1. Learning Through Play

Throughout history, great philosophers and scholars such as Plato, Aristotle, Luther, Locke, Rousseau and Froebel have placed great value to children's play and its role in children and family life (cited in Frost 2009). These views helped shape the educational model of the 20th century, focusing on educating the whole child and respecting individual differences. This focus on favouring amusement over compulsion, using play as a guiding principle, involving physical experience with objects and ideas and providing a balance between play and work in child rearing and education, begins as early as infancy (Frost 2009), where play should be included in children's everyday lives.

Within the UK House of Commons, Select Committee on Education and Employment (2000), there is widespread belief that early years learning should be play-based where play is the work of the child and a part of the educational process.

The EYFS Statutory Framework (DfE 2009) states,

> "Play is freely chosen by the child, and is under the control of the child. The child decides how to play, how long to sustain the play, what the play is about and who to play with. There are many forms of play, but it is usually creative, open-ended and imaginative. It requires active engagement of the players and can be deeply satisfying" (p.9).

Early childhood practitioners have long been encouraged to use playful activities as a method to stimulate learning (DfE 2008 – 2012) within both areas of adult-led and child-initiated activities. Most early childhood curricula structure children's playful learning by the provision of materials (blocks, dress-up clothes, games, toys) space (housekeeping, corners, tables, building, areas) and time to use them. While choice and self-directed play are highly valued with early childhood programs, practitioners are often directly involved and encouraged to intervene more directly in children's play, by providing dialogue and becoming involved in the play themselves (Newman and Roskos 1993).

> "Each area of learning and development must be implemented through planned, purposeful play and through a mix of adult-led and child-initiated activity. Play is essential for children's development, building their confidence as they learn to explore, to think about problems, and relate to others. Children learn by leading their own play, and by taking part in play which is guided by adults" (EYFS 2012, p.6).

However, in the review of early years, the British Educational Research Association (BERA), Early Years Special Interest Group, (2003) points out that the picture that emerges from research of early years play in practice are problematic. This occurs mostly in isolating conditions and particularly in cases of free play (where young learners choose from a range of activities and experiences), which in most cases seemed to be superficial and lacking in challenge, as there is very little planning and minimal adult interaction. Santer, Griffiths and Goodall, in *Play England* (2007), describe Free Play as:

> "… children choosing what they want to do, how they want to do it and when to stop and try something else. Free play has no external goals set by adults and

> has no adult imposed curriculum. Although adults usually provide the space and resources for free play and might be involved, the child takes the lead and the adults respond to cues from the child"(p.xi).

Early research evidence shows that free play does not necessarily maximise cognitive development (Sylva, Roy and McIntyre 1980; Siraj and Siraj Blatchford 2005, 2007; Plowman and Stephen 2005, 2007) and that there is lack of challenge in children's activities, as it tends to involve simple repetitive activities. Whilst there are many theoretical arguments about the contribution that play can make to learning and development through the opportunities it can offer to children (Vygotsky 1967; Rogers 1990), in the context of free play in educational settings, there is a significant under-development of the pedagogical role of the practitioners' instructions in the children's play (Bennet, Wood and Rogers 1997).

This was found to be particularly problematic in terms of the use of technology within the early years where the use of the computer by young children, was often conducted during times of free play. Studies conducted by Plowman and Stephen (2003-2004) and Marsh et al., (2005) in preschool settings found that children's use of computers usually took place during periods of free play. There were relatively few examples of practitioner-initiating directed activities, although, in some cases the practitioners would intervene, to arbitrate turn-taking and occasionally observed, recorded and assessed the children's progress. The emphasis of the use of computer was "low-level trouble-shooting and basic skills, rather than on pedagogic instructions and children's interactions with their peers" (Plowman and Stephen 2003, p.3). The findings from the study indicated that practitioner instructional involvement was generally rare with the use of computer in early years settings and that they do not necessarily regard interactions with the computer as part of their job, or only a small part of their job; in terms of providing assistance and monitoring its uses with other children. Unfortunately, the consensus from the study suggested that practitioners have a commitment to allowing free play because children are better able to select the direction of play for themselves; in terms of being more technologically knowledgeable, and that practitioner instructional intervention is considered to be potentially damaging, to the spontaneity and learning for the young children.

While free play has the potential to provide for vital experiences through which children learn social, conceptual and creative skills (see Play England 2006), the literature argues that more focus needs to develop within aspects of technology and pedagogy in the early years playrooms. Within the context of free-play, the DfEE/QCA (2000, p.6-7) suggests that:

> "Practitioners need to plan learning experiences of the highest quality, considering both children's needs and achievements and the range of learning experiences that will help them make progress" (DfEE/QCA 2000, p.6 - 7).

3.2.2. Role of the Teacher

Where it would seem that the concept of "well-planned play has the potential to become the bedrock of learning with young children" (BERA 2003, p.14), key studies in preschools have identified significant gaps between the rhetoric and reality of practice between the child and practitioner interactions, where practitioners have a key role in building the right learning conditions for learning. Corrine Hut (Hutt et al, 1989) draws attention to the role of practitioner interaction in promoting learning through play. She notes that when practitioners are able to focus on what it is the child is interested in or playing attention to, then they are able to enhance learning through their social interaction and dialogue. Supported by Siraj-Blatchford et al., (2002), in the study of *Researching Effective Pedagogy in the Early Years* (REPEY), the findings indicate that if play can really enforce learning, then the early years practitioner must be completely attentive to what children do and say and what they pay attention to. Therefore, by observing closely and taking notes of the child's interests, passions, fears, theories and questions, the practitioner's entire focus is based entirely on the child involved, or child-centeredness.

Sylva et al., (2004) suggests that the term child-centeredness, is where there is a balance between child-initiated and practitioner-initiated learning activities. This balance helps bring the most effective outcomes in children's cognitive, social and emotional outcomes; which, when demonstrated correctly, can bring about for appropriate interactions between the adult and child. As part of this general emphasis on combining both child-initiated play and playful adult-led opportunities (DfE/QCA, 2000), the DfE (2012) suggests that practitioners are required to adopt a balanced instructional approach, which is best for the developmental stage of the children, and/or for individuals and groups. This results in providing the best outcomes for children's learning, where most of the activity within a child's day is a mixture of:

- Child-initiated play, actively supported by adults/practitioner
- Focused learning, with adults/practitioners guiding the learning through playful, rich experiential activities

In providing for a balanced approach, a continuum of approaches is outlined below (DfE/QCA 2009, p.7) :

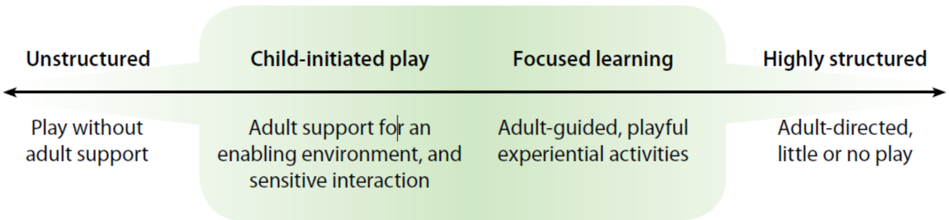


Figure 1 - Continuum of Approaches

This shows that at one end, too little practitioner support can limit learning and too much support can hinder any type of playful learning. Play without practitioners can have the potential to be rich and purposeful, yet it also has the potential to become chaotic, unstructured or repetitive activity which is 'hands-on and brains-off' (DfE/QCA 2009). On the other hand, too much tightly directed activity deprives children of the opportunity to engage actively in learning. It would seem, then, the suitable role of the practitioners, it to provide a blend of both child-initiated play and focused learning, where there is sufficient support in guiding a playful learning activity.

Unfortunately, in the REPEY study by Siraj-Blatchford et al (2002 - 2003), reactive supervision with the use of computer was found to be most common form of practitioner instruction in which the findings showed unstructured play with little or no adult support. Overall it was concluded that children's interactions with the technology "could not be really be described as contributing directly to learning, other than the social aspects of negotiating access" (Siraj-Blatchford 2002 – 2003). Preschool practioners expressed concerns about having knowledge of using technology and keeping up to date with new technology (especially as technology is advancing so quickly). They also felt that they lacked knowledge about how children learn and how technology can be used to shape the child's learning process.

In recognising that children develop at different rates, have different interests, and come from varied and different cultural backgrounds, the guidelines form the early years suggests that the role of the practitioner is to ensure that children feel known and valued as individuals, safe and cared for throughout the activity. Within the EYFS Statutory Framework (DfE/QCA 2009), it is highlighted that it is the duty of practitioners to give priority and utmost care to a child's own rate of development which must be respected, so that children are not rushed and supported in ways that are right for each child. From the child's perspective, the early years practitioner involved, can provide comfort, a secure base and serve to organise the children's behaviour in a setting. More importantly, if children feel emotionally secure with the teacher, they can use him/her as a secure base and a resource for exploring the learning opportunities in the classroom (Birch and Ladd 1997; Howes et al., 1994; Howes and Smith 1995; Lynch and Cicchett 1992; Pianta and Steinberg 1992).

According to John Bowlby (1958), the socialisation approach, and one that stems from the attachment theory (where the practitioners in early childhood settings are considered as attachment figures, taking the mother-child attachment role for both physical and emotional care), is where the practitioner constructs positive and secure attachment relationships with children. By doing so, he/she is providing a safe environment for the young child, and when the child begins to trust the adult, they are more willing and eager to be socialised, thereby feeling vested and responsible for each other's welfare.

> "Each feels concern for and acts responsively to the other's needs, and, at the same time, each comes to expect the other be responsive to one's needs" (Kochanska 1997, p.94).

This type of quality of children's early relationships with their practitioners, in a child-centric environment, emerges as an important predicator of children's social learning environment, where the emotional stability of a child becomes a crucial factor within a learning and developing environment. Supported by Laever's et al., (1997), in his study of Experiential Education (EXE) approach, this criteria demands pedagogical interventions aimed at the preservation of the emotional well-being of the young child (Laevers et al., 1997), where the child feels at ease, is safe, secure within their surroundings and is satisfied with their basic needs of attention and social recognition.

So, whilst it is important that an early childhood practitioner can provide for a balanced practitioner and child-initiated playful activity, it is equally important for the practitioner to deliver knowledge, in an emotionally warm and positive approach, for the well-being of the child. All this indicates that practitioners should become well-trained and skilled in the appropriate use of technology with young children (Siraj-Blatchford and Whitebread 2003). Sheridan and Pramling Samuelsoon (2003) suggests that if early years educators are to extend children's learning opportunities with young children, then it must be recognised that they require pedagogic knowledge of how to use technology appropriately with young children.

3.3. Technological Pedagogic Approaches

So far, the literature shows that Vygotsky's social cultural theory of learning has a significant place within the philosophy of early years education. Through interactions with others, the nature of pedagogy with young children is described to include for appropriate instructions, which can be delivered through a playful learning experience and that which are guided and steered by an active and involved teacher. Put together, these features of the early years are found to have laid the foundation for well-established early years education models to develop. Although there are many reputable early years education models internationally, the Reggio Emillia (New 1998), the High/Scope (1995) and the Experiential Education (EXE) model have placed much emphasis on the UK EYFS framework. These early years models include effective pedagogical qualities (see EPPE 2004 and REPEY 2002) that have helped address the necessary pedagogic processes, which can effectively drive forward the totality of the child's learning and development.

The qualities of several particularly successful and effective Early Childhood Education models were identified in the *Start Strong Report* (OECD 2004) (Appendix 6). Based on studies of *Research Effective Pedagogy in the Early Years* (REPEY) (Siraj-Blatchford et al., 2002) and *The Effective Provision for Pre-school Education project* (EPPE) (Sylva et al., 2004), this report provided data on *effective pedagogical qualities*, found in these models, that have been found suitable to encourage learning and development, with children in their early years. Both studies provided for quantitative data on child developmental outcomes, as funded by the Department of Education (DES 2002) in a five year longitudinal study of more than 3,000 children across England. Although each model is distinctly different on their focus of early childhood development, when comparing these early years models, there are also a number of shared and common pedagogical qualities.

Many early childhood settings have begun to recognise the need to integrate technologies across in their classrooms. However much too often, suitable and well established approaches, which have been developed from the distinct early years pedagogical qualities, have been transferred into a classroom environment without much consideration of its use and validity. This is particularly noticeable in the context of technology and learning with young children in their early years playrooms. There is evidence to suggests that although some approaches are not suitable, when using technology, there are other approaches that are found to better suited, yet still not necessarily wholly appropriate, in an early years learning environment. The following approaches are outlined below.

3.3.1. Drill and Practice

Early childhood use of technology and pedagogy are predominantly based around developmental theories. The Drill and Practice approach has influenced early childhood technological pedagogy approaches for some time and is still found in areas of early childhood education. The theory of Drill and Practice (Jackson and Kutnick 1996) is an instructional strategy, which is common to most educators. It promotes the acquisition of knowledge or skill through repetitive practice. The Drill and Practice approach refers to small tasks, such as the memorisation of words or the practicing of arithmetic fact. In order for it to become meaningful to the learners, the skills developed through the Drill and Practice approach can become the building blocks for more meaningful learning.

However within the context of technology with young children, Davis and Shade (1999) argue strongly for practitioners to abandon the use of this approach. Although there is some evidence that computer mediated instruction can be effective in some areas of the early years curriculum, there are a number of longitudinal studies which suggests initial gains of success, mostly in mathematics, are often short lived (Marcon 2002). Highly structured, didactic teaching has also been found to result in young children showing high levels of stress and anxiety behaviour (Burts et al., 1990). Yet, more significant results emerge from Schweinhart and Weikart (1997) which show little difference in academic performance by young children who are provided exclusively with direct instruction but overall more emotional impairment and disturbance learning. Whilst none of these studies were solely focusing on computer based instruction, it seems extremely likely that the effects would be similar in the case of programmed learning, particularly if they contain some kind of animation, sound or access level, rewards and punishments, found in many early years computer applications.

Unfortunately however, it would seem there are recent studies to indicate that the Drill and Practice is still being used in effect with very young children:

> "Teachers still adopt a traditional whole class teaching approach that relies on drill and practice because they know it works" (Han 2003).

Both the National Association for the Education of Young Children in the United States (NAEYC) and Developmentally Appropriate Technology in Early Childhood in the United Kingdom (DATEC) advice that the application of Drill and Practice approach, is less appropriate in early childhood education, as there is evidence from studies to show that this form of approach can be counterproductive and can, unfortunately, generate higher anxiety and lower self-esteem; especially with very young children.

3.3.2. Exploration

Taking the pro-active and effective pedagogical qualities from the High/Scope early childhood education model, the exploratory pedagogical approach encourages that children learn best through more active experiences and when they follow their own interests, rather than through means of direct teaching. As children make choices, they become naturally engaged and develop what the curriculum developers call key learning experiences. In the High/Scope model, there is a good deal of evidence to support that learning is an individualistic interactive event, where each child actively constructs his/her own understandings within a carefully planned social and physical environment. Hohmann and Weikart (1995) call this active learning and define this as "learning in which the child, by acting on objects and interacting with people, ideas and events, constructs new understanding" (p.17). The High/Scope model was developed and constructed in Ypsilanti, Michigan.

The High/Scope model emerges from the interest of the children and the observations from the practitioners but takes a different focus on the balance between child-initiated and adult-initiated activities. The theme of 'active learning' is central to its practice where children learn best through active experiences with people, material, events and ideas. These active experiences are more holistic, where children are learning in small group, are more hands on with their peers. Dewey (1959, p.27) encourages this type of learning and views it as a continuing reconstruction of experience where in order for learning to occur, education should take the form of being both active and constructive.

Within the context of technology and young children, Haugland (1999) adopted the qualities of High/Scope early years model and encouraged a more 'hands-off' and exploratory approach, in which children are allowed to experiment with the technology and for the practitioners to intervene, only when children appear frustrated or are struggling. She suggests that a quick work or two from the other side of the room reminds children what they need to do to reach their goal. In this way, this type of independent, exploratory reaction can help expand the learner's computer experiences. While Haugland's approach (1999) offers a more liberated view to learning, it would seem that this hands-off approach (1999) to practitioners supervising children using computers in the playroom is predicated on two key assumptions: that the software that they are using is developmentally appropriate and secondly that different modes of interaction with computers are appropriate at different ages, such that children who are between the ages of 4-5 are developmentally ready to explore computer, while the younger children need time to experiment and go through trial and error.

However, researchers such as Forman (1998) and Labbo et al., (2000) are more critical of this type of exploratory approach, as it can lead to random-responding or mouse clicking, just to get some animation, which is generally unrelated to learning. They argue that practitioner support is very important to encourage children to learn in an active and participatory way. Although it would seem that this type of free play is there to liberate the young learner, it also suggests that learning involves more than just independent exploration, and that learning opportunities can become hindered if not effective in practice. Anecdotal evidence suggest that all too often a computer is introduced into a playroom, during free play, as a good thing that will motivate children to get involved with some literacy or numeracy related activity, without given much consideration how this new tool fits with the current or existing pedagogical practices (Plowan and Stephen 2003).

Researchers such as Stephen and Brown (2004) suggests that early childhood educators have employed quite a naive Piagetian model of learning to place great responsibility for them to provide an adequate provision of an environment to support learning. Although the exploratory approach adopted the active learning approach, in which children are encouraged to learn through hands on and active experiences with people, material, events and ideas, the exploratory approach has taken little account of interpersonal interactions as a means of facilitating learning, which at the same time is coherent with an emphasis on child-led activities and a resistance to practitioner-led direction in the playroom. In this sense, the exploratory approach is insufficient to meet the demands of pedagogical adapted technology, when applied with young children.

3.3.3. Adult Interaction

The exploratory approach appears to be in some contrast to that taken by other writers. Schetz and Stremmel (1994) suggest that whilst the exploratory use of appropriate software is important, the role of the teacher is also fundamental in learning and development with young children. This is particularly important to the Regio Emillia early year model, which originates from northern Italy, Emillia-Romagna region. Regio Emilia's distinct pedagogical quality seeks to recognise the social nature of learning. Adopting the Vygotsky's approach of social constructivism, it places great importance on cognitive activity which occurs with more knowledgeable peers and adults who provide support, as a child explores new understandings, knowledge and skills; thus providing learning and insight about himself or herself as a learner (Dewey 1976; Vygotsky 1978, 1986).

Many researchers have discussed the usefulness of adult interaction to describe the benefits of computer use (Downes, Arthur and Beecher 2001; Schetz and Stremmell 1994). If teachers can become engaged in collaborative problem solving with the children and provide both verbal and non-verbal feedback and instruction, then learning has the potential to be accelerated to a greater degree (Samaras 1996; Schetz et al., 1994). With respect to primary aged children, in a study of 150 5-6 year olds, both teachers and their children were placed in one of three groups: mediation, accompaniment, and no assistance/control group (Nir-Gal and Klein 2004). In the meditation group, the teachers helped the children to focus on the task, expanded their thinking and managed the children's behaviours. The teachers in the accompaniment group were instructed to only respond to the children's questions and the teachers in the third group provided no assistance and only interacted with the children with minimal technical assistance. The children were assessed in the beginning and the end of the school year. The results showed that the children in the mediation group scored significantly higher than both the other groups in the study (Nir-Gal and Klein 2004). There were also no significant differences between the accompaniment and the minimal assistance group. Overall, the outcomes showed that adult involvement can play a defining role in shaping and guiding learning, when working with children.

However, critics advocate that whilst the Adult Interaction approach is one step forward, it is also two steps backwards. While there is evidence to suggests that adult involvement is beneficial to a learning process with young children, when using technology, it not just enough for an adult to simply stand by and instruct. The Reggio Emilia early education model is found to position children as powerful learners and argues that education should occur within a 'democratic context where children are able to participate in decision making' about their educational experiences (Edwards et al., 1998). The adult interaction approach adopting the Regio Emilia qualities can be defined as contextual, where the learning process is determined by dialogue and interests among children, teachers and the environment surrounding them. According to Edwards et al., (1998), the educator's role within the Reggio Emilia approach is complex. Working as co-teachers, the role of the educator is first and foremost to be that of a learner alongside the children. Practitioners see themselves as guides who are learning with the children and adopt a listening role that seeks to encourage thinking, negotiation and the exploration of difference, particularly in collaborative group work. Unfortunately, as the literature shows there is evidence to suggest that although adults are present in the classrooms with the young children, while using technology, their passive interactions have done little to improve learning or enrich development in any way (Siraj-Blatchford 2005, 2007).

3.3.4. Guided Approach

In more recent research conducted by Stephen and Plowman (2007), a form of Guided Interaction approach, describes the ways in which children's interaction with computers and other forms of technology, can be actively supported in preschool settings. Guided Participation works more along the lines of a perspective of the effective outcome (rather than a technique itself) through which the learner's process of participation can be examined. The concept of Guided Interaction has been expanded to include the mediating role of a practitioner in actively supporting and enhancing children's interactions with technology, through means of scaffolding. Adopting The Regio Emillia early years pedagogical quality, the practitioners were found to be working as tutors, where they recruited the children for activities, used the computer and looked to maintain their interest, assist them with task completion and helped children to identify reasons for why a response is incorrect. The outcomes showed that the process of Guided Interaction was found to help increase the child's independence in task completion and aid in progress and motivation.

In early work of Guided Interaction, (Stephen and Plowman 2003) the findings showed that children's engagement with technology, used during moments of free play, was often fleeting and unproductive. Concerned with these findings, a new study of INTERPLAY (Stephen and Plowman 2007) set out to investigate ways in which pedagogical actions by the practitioners can support children's learning and development, with the use of technology in their early years settings. They advanced the theory on social interaction and applied Vygotsky's theoretical framework of learning (1978), in which children's interaction with technology can be enhanced through interactions and dialogue with the practitioners.

> "I think I benefitted more in focusing more on what interactions we were having with the children, what they needed, and who could do what, who was interested in what..."(Paula, practioner interview, Stephen and Plowman, unpublished evidence).

However, Crain (2004) points out that whilst this sort of dialectical interaction is one step forward, it is another step backward. There is a perceived danger of an adopted and planned scaffolding approach. The teacher, or more skilled peer, can easily be found to focus predominantly on what children should know (to meet the expected goal within curriculum), rather than extending and celebrating or helping to consolidate learning, to an even greater extent or as it occurs. Additionally, less emphasis was placed on exploration and independence of learning. These types of interactions are what developmentalists have repeatedly warned should be avoided (Crain 2004):

> "When we give children assistance and direction, we encourage them to depend on others to know what and how to think, undermining the ability to think for themselves" (Crain 2004, p.245).

Siraj Blatchford (2002) suggests that the mention of proactive notions, in supporting children's learning, were also infrequent. Practitioners were much more likely to focus on the indirect pedagogical implications such as the provision of resources in the learning environment or physical support. The outcomes from the Guided Interaction Approach showed that distal features are highly significant in the Guided Interaction Approach. These features demonstrate that of creating a learning environment, where the provision for learning includes the access to and time spent on monitoring ICT equipment, creating an environment to facilitate learning, planning the curriculum and identifying the next steps. These features are important indicators in creating the right environment to support learning when using technology in early years classrooms. Unfortunately, more attention was paid to these distal features and there was less emphasis on creating and sustaining a meaningful dialogue or conversation, so as to extend and enrich the learning in the young child.

Interestingly, the Guided Interaction approach also showed the value of proximal features, which demonstrated the physical interactions of touch and movement between the practitioner and children, and that which can be found as important indicators for the well being of the child. The findings questioned whether learning can be progressed through a gaze, gesture, or physical action from the teacher. This idea of proximal features can be found to be quite similar, although not entirely exact, to the Experiential Education Model (EXE) used extensively in UK early years education. The EXE model originated in Belgium, at the Leuven University, Research Centre for Experiential Education.

Taking the view that learning can be progressed through the well being and involvement of the children, the EXE pedagogical quality pays great attention to the quality of care and involvement of the child. The EXE theory suggests that for a learning environment to be conducive for a young learner, the child should, to a degree, feel at ease, act spontaneously, show vitality and self-confidence. All this indicates that the child's basic needs are satisfied: the physical need, the need for tenderness and affection, the need for safety and clarity, the need for social recognition, the need to feel competent and the need for meaning in life and moral value (Bennett and Leonarduzzi 2004 p.5). However, the need for well-being and quality of care does not stand alone. It is linked to a second criterion, that of 'involvement' of the child. For Pascal and Bertram (1995), in order for learning to occur and become effective, there is to become a symbolic relationship to be developed between the adult and the child. Drawing heavily on the work of Ferre Laever (1994) in Belgium, they refer to the importance of the 'involvement' of the child and also the 'engagement' of educator. The understanding of early years education demands that practitioners should stimulate children, be sensitive to individuals and give autonomy to learners.

Indeed, the INTERPLAY Guided Interaction Approach (Plowman and Stephen 2007, Stephen and Plowman 2008) showed that practitioner intervention, whilst using technology with the young children, can help to make activities engaging and to support learning; in cases of the development of skills, confidence and disposition to learn. However, the dialogue exchange between the practioner and children were no more than explicit instructions leading to specific outcomes rather than the extension of interests for children to build upon and expand upon learning.

> "Children needed the support of an adult to overcome the operational difficulties they experienced, to compensate for their inability to read instructions and sometimes, for conceptual difficulties with verbal interactions".

There is also claim that the Guided Interaction Approach points to the physical, emotional and supportive role of the interactions between the adult and child. Developing on Vygotsky's view, the EXE model (Laevers 1997) stresses the important of the role of the adult and/or capable peer but further advocates focusing on the emotionally strong and well-being relationship between the teacher and child as:

> "Learning and development are facilitated by the participation of the developing person in progressively more complex patterns of reciprocal activity with someone with whom that person has developed a strong and enduring emotional attachment and when the balance of power gradually shifts in favour of the developing person" (Brofenbreener 1979, p.60).

3.4. Shared Pedagogical Qualities

The literature shows that although the technological pedagogic approaches have adopted well-established and effective pedagogical qualities from early childhood education models, the uses of these approaches are not necessarily individually appropriate, within the context of technology use in the classroom. In determining the qualities which have the potential to constitute an appropriate technological adapted pedagogy, a number of interesting commonalities were found between the successful ECE models (Pramline et al., 2004). In investigating the three early childhood models of the High/Scope, Regio Emillia and EXE approach, the following distinct and common pedagogical qualities emerge and are outlined below:

1. A balanced mix of adult-initiated and chosen child-initiated activities, where although freely chosen, are yet potentially instructive (Regio Emillia);

2. Active learning where children learn through active experiences with people, material, events and ideas (High/Scope);

3. The quality of meaningful and shared dialogue and interactions between adults and children (Regio Emillia-High/Scope);

4. The quality of well being and involvement of the young children, in a safe and supportive learning environment, within challenging yet achievable experiences with young children (EXE).

Vyogtsky, in *Mind and Society,* wrote that "just as a mould gives shape to a substance, words can shape an activity into structure (1978, p. 28). There is new evidence from Supporting Playful Learning with Information and Communications Technology, SPLICT project, (Siraj-Blatchford, 2011) to suggest, that the early years Communication and Collaboration approach (Siraj-Blatchford, I., 2007) has the potential to support learning through the pedagogical qualities highlighted above, when applied with technology within the early years.

> "The study shows that when the preschools were provided with software for use in the home and in the preschool, along with the limited pedagogic support that adults (families) required to use it effectively, this had a significant positive effect upon some aspects of early learning in language and number of the children aged 3-5. We now know that: Supporting Playful Learning with Information and Communications Technology (SPLICT) in the Early Years Really Works…" (Siraj-Blatchford (SPLICT), 2011/2012, p.1).

The EPPE (2003 – 2007) and REPEY (2002) project evidence shows that the use of Communication and Collaborative approach (Siraj-Blatchford, I., 2007) is likely to encourage a more balanced approach of learning settings, which combines the provision of free play with more active focused group work, involving practitioner direct instruction, within a more naturalistic environment. This is potentially reflective of the highlighted effective pedagogical approaches (shown above), that can be applied with technology, in an early years classroom setting. Used extensively in creative environments of the Early Years Foundation Stage (EYFS), and included in the *Key Elements of Effective Practice* (KEEP), the Communication and Collaboration type of interaction stresses the importance of the affective bond that builds between a child and a practitioner; a bond that does not evolve from interactions with a machine but through the nurturing nature of playrooms, where practitioners concerns go beyond the academic (Cuban 2001 and Elkind 1996).

By extending the Guided Interaction approach, the Communication and Collaboration approach points to the more effective interactions between practitioner and child. According to Iram and John Siraj Blatchford (Siraj-Blatchford, I., 2007), there is general agreement among developmental psychologist and educationalists that collaboration is especially important in the early years.

> "When children share 'joint attention' and 'engage jointly' in activities, we know that this provides a significant cognitive challenge in itself" (cited in Siraj and Siraj Blatchford 2007, Light and Butterworth, 1992).

The role of collaboration is very influential in providing opportunities for the co-construction of possible solutions in the learning processes, where both the more experienced peer or practitioner and the child can learn alongside one another, and where they are actively and *jointly* (as suggested by Dewey above) constructing new knowledge (Doise and Mugny 1984). These more successful practitioner and child interactions can inclusively look to adopt the use of Sustained Shared Thinking which, when used correctly, can provide for effective dialogue, and can help move forward the attention and interest of the child. The uses of Sustained Shared Thinking are strongly associated with high-quality interactions and studies have shown that children who engage in these conversations are more likely to do well in school and life (Iram-Siraj Blatchford 2005).

> "These were identified as sustained verbal interactions that move forward in keeping with the child's interest and attention. Unfortunately, in both the EPPE and REPEY studies, the evidence of adult (practitioner) and child interactions suggest that too often there was no adult (practitioner) present at these times to provide the necessary scaffolding and support" (John-Siraj Blatchford (2007, p.6).

The EPPE project quantitative analysis revealed qualities of effective pedagogical interactions, utilising scaffolding with Sustained Shared Thinking, 'where two or more individuals 'work together' in co-construction in an intellectual way to solve a problem, clarify a concept, evaluate activities or extend a narrative'; which was found to most commonly occur in a 1:1 practitioner and child ratio interactions (Siraj and Manni 2008). As Pramling et al., (2004) and Siraj Blatchford (1999) observed, there is a number of interesting commonalities that can be found between the instances of Sustained Shared Thinking and the highly promoted particular strategies applied within the Regio Emilia, High/Scope and EXE early learning models (Siraj-Blatchford, 2007, Appendix 6) where:

> "Teacher's (Practitioners) are there to not only initiate activity through effective pedagogic models using appropriate language, encouraging learning, asking questions and interacting verbally with children but.....also there to extend the activities, in cases of child-initiated activity, where the teacher (practitioner) has a good knowledge and understanding of the curriculum, and of the child development and wellfare" (p.11).

This type of thinking is also seen to resonate with the Vygotskian early years philosophical perspective which suggests that learning occurs on a social plane before it is internalised and made sense by the individual learner. It expands on the theory of constructivism put forward by Piaget (1973) where young children have the potential to construct meaning from prior understandings and meaning with the added emphasis of learning in a more social, cultural and history context, which is the by product of interactions with the practitioners and peers (even though there are not deliberate attempts to provide for interactions). Whereas Piaget's (1973) work is mainly interested in exploring a universal process of development, the Communication and Collaborative approach uses Vygotsky's work (1978), which is more interested in using language for interactions as the driving force behind cognitive development. For learning to take place, the child must be found to be actively involved in the process, within a safe and healthy environment, and there is to be mutuality between learner and practitioner, where collaboration and negotiation is possible, despite the asymmetrical nature of the relationship (Bruner 1996).

In research by Downes et al., (2001), where he explored the educational use of the Internet with children aged eight years in primary school, he found that both teachers and peers could provide varying levels of modelling, scaffolding and challenge when participating in the activity together as co-constructing learners. The findings showed that the co-construction of information and collaboration on its own does not successfully occur when we simply bring children together to share the computer. Instead the teachers often need to orchestrate collaborative interactions if there are to be learning gains (Crook 1994).

There is evidence to suggest that the many programmable toys and technical screen based applications, found in early childhood settings, have the potential to offer the possibility of collaboration, when combined with the provision of free play opportunities in a more focused group work; involving practitioner direct instruction and where there is an increased structure of activities and games (Siraj-Blatchford in project SPLICT, 2012). However, where the Communication and Collaboration approach has the potential to combine a balanced mix of adult and child intiated activity (Regio Emillia), within active learning experiences (High/Scope), and can initiate a meaningful and shared dialogue and interactions between the adult and child, it falls short for measuring the quality of well-being and involvement of the young children, in a nurtured and supportive learning environment (EXE). Laever’s (1997) suggests that learning is a two way interactive process that is effectively driven through appropriate pedagogical instructions. This can bring about the quality of well-being within a planned learning environment, and involvement for the children through engaging pedagogical practices of the educator. Therefore, to disregard the measures of well-being and involvement of the children is to disregard measures of learning in context.

> “Not only does the adults’ style of engagement directly affects the children’s level of involvement, but the children’s involvement effects the adult’s style of engagement” (Pascal and Bertram 1997, p.135).

To date, no research has been conducted in integrating the Communication and Collaboration approach with new forms of technology in learning and development, within the early years classroom. This research will look to adopt the existing framework of the Communication and Collaboration approach, and *extend* its validity by using Laever’s Scales of Well-Being and Involvement, so as to determine if it can support a technological adapted pedagogy, with young children in their early years.

3.5. To Summarise

The literature demonstrated that the social cultural theory, proposed by Vygotsky (1978), has become an important element in re-thinking education for the young children. It showed that children’s cognitive skills begins through social interactions between the child and the practitioner, where the practitioner functions as a tool in delivering knowledge and guidance to the children. However, this does not just happen on its own accord. The nature of pedagogy, defined as the art of instructions in the early years, incorporates all the necessary process that is required to drive learning forward, with young children. These include the many ways that the practitioners work with the children, ranging from modelling, probing, exploration, questioning, scaffolding and nurturing a child's disposition to learn.

In considering the delivery of these instructions, there is widespread belief that early years learning should be playful learning, as part of a holistic pedagogic educational process. There is evidence to suggest that learning and development can be implemented through planned, purposeful play and through a mix of adult-led and child-initiated activity, which when demonstrated correctly, can stimulate learning (DfE 2008 – 2012). However, there is also evidence to suggest, that in the context of free play, where children choose from a range of activities in the classroom, there seems to be very little planning and practitioner interventions. This is particularly problematic, in areas of technology as the use of the computer by young children, was often conducted during times of free play, and often resulted in missed learning opportunities. The literature demonstrated that practitioners need to consider planning learning experiences of the highest quality, for the young children, if they wish to maximise learning opportunities, whilst using the technology, with young children during times of free play.

Through the form of playful learning, the role of the practitioner also plays a major role in the delivery of the pedagogic instructions. Corrine Hut (Hutt et al., 1989) shows that when practitioners are able to focus on what is in the child's interest and is paying full attention to the child, they are able to enhance learning through their social interactions and drive learning forward through meaningful dialogue. However, a balance needs to be reached between the child-initiated and practitioner-initiated learning activities. In reaching this balance, the DfE (2012) suggested that practitioners are required to provide sufficient support in guiding the playful activity; where too much support can hinder any playful learning and too little support can limit learning. The literature demonstrates that if early years educators are to extend the children's learning opportunities, then they ought to receive guidance on appropriate pedagogical insight of what qualities to embed, when looking to achieve a balanced instructional approach.

The literature showed that the qualities of Vygotsky's social constructive learning theory and the nature of the early years pedagogy have formed the basis for most early years education models. While there are many varied education models globally, three effective models of the Regio Emillia, High/Scope and the Experiential Model (EXE) play a great emphasis on the UK EYFS framework. The literature showed that many childhood settings recognise the need to integrate technologies across their childhood settings. There is also evidence to suggest that many approaches have been tried and evaluated; of which these approaches have developed from established early years education models and their pedagogical qualities. There is evidence that the developmentalist Drill and Practice approach is highly unsuitable, whilst using technology, with young children in their early years. The Exploratory approach, adopting the High/Scope early years quality, allows for free play to liberate the young children, but does little to take account of social interpersonal interactions to facilitate learning, and there is evidence to suggest that learning opportunities are going missed. The Adult Interaction approach adopts the quality from the Regio Emillia early years models and seeks to recognise the social nature of learning and the important role of the adult within the setting. Unfortunately, there are studies that show that even though adults are present in the classroom with the children, their passive interactions with the technology have done little to improve or develop learning in any meaningful way (Siraj-Blatchford 2005, 2007).

While the Guided Interaction Approach facilitated learning through social cultural interactions, adopting the qualities from the Regio Emillia early years model, and encourages for children to learn through active experiences of play, there was evidence to suggest that the role of the practitioner, in providing for meaningful dialectical interactions were minimal. More focus was dedicated to scaffolding outcomes, to pre-conceived educational goals, rather than extending or consolidating the children's interests, to an even greater extent. However, through the Guided Interaction Approach, there is claim that the proximal features of physical touch and gestures have the ability to move forward learning and attention of the children which is in sync with The Experiential Education (EXE) early years model. Although some of these tried and tested approaches have been counterproductive to the children, the other approaches have offered evidence to explore and improvise areas of concern.

The study of various effective early years models in early childhood education, such as the Regio Emillia, High/Scope, and the Experiential Education (EXE), illustrate shared pedagogical qualities that can drive forward the totality and holistic approach, for the child's learning and development. Although there are many varied and significant early years models, within early childhood education, the three listed above have influenced much of the UK Early Years Foundation Stage (EYFS). Effective pedagogical qualities have emerged that can serve as a foundation in structuring an activity, when applied with technology in early years settings.

These shared pedagogical qualities include the following:

1. A balanced mix of adult-initiated and chosen child-initiated activities, where although freely chosen, are yet potentially instructive;
2. Active learning where children learn through active experiences with people, material, events and ideas;
3. The quality of meaningful and shared dialogue and interactions between adults and children;
4. The quality of well being and involvement of the young children, in a safe and supportive learning environment, within challenging yet achievable experiences with young children.

The literature demonstrated that the Communication and Collaboration approach is found to be able to combine the social constructive theory, within the provision of active learning through play, in more focused group work, and involves both hands on and active practitioner instruction, within a naturalistic environment. This takes into account the majority of effective pedagogical qualities highlighted above and points to the more effective interactions between practitioner and child. This approach, driven by the use of Sustained Shared Thinking, has the potential to provide for appropriate pedagogical instructions and can help move forward the attention and interest of the child (Iram-Siraj Blatchford 2005). However, the Communication and Collaboration approach lacks the potential to measure for well-being and involvement, which within the EXE early years model, has the potential to provide for a conducive planned learning environment, and through which both parties are contributing holistically to the learning experience. This research, therefore, looks to extend the Communication and Collaboration approach to include the measures of care and involvement for the young children, in a technological adapted pedagogic environment.

The overall conclusion reached from the analysis of the available literature suggests that although there are possibilities and opportunities for the use of technology within early years settings, that can possibly be armed with a clear set of pedagogical approach and qualities, there is still no guarantee as to how can it work in a particular context or subject matter.

> "This is a mantra I find very disheartening. I believe that, when used appropriately and meaningfully, technology truly can enhance a young child's educational experience....Yet, I am troubled by the fact that the value and meaning of these technologies may never be seen, if opportunities are not presented for early childhood educators to learn about them. How can early childhood educators begin to see, and classrooms grow to include, technology as a pedagogically valuable enhancement if the response is always "no" and there are no opportunities for teachers to learn more "(Powers 2012 p.1).

4. Phonetics and Technology in ECE

> “Phonetic work for young children should be multi-sensory in order to capture their interest, sustain motivation, and reinforce learning in imaginative and exciting ways” (Rose 2006).

The evidence from the analysis of the quantitative post-intervention data and test results from The Supporting Playful Learning with Information and Communications Technology (SPLICT) project, (Siraj-Blatchford 2011-2012) showed that the Communication and Collaboration approach can have a significant effect on children’s performance on the early number and phonetic concepts. The analysis illustrated that the intervention group membership (using ICT) had a positive effect on the children’s performance on the “*early number concepts* sub-scale of the BAS II and on the *Bryant & Bradley test of phonological awareness”* (Siraj-Blatchford 2012).

As there is evidence to suggest that the Communication and Collaboration approach had an underlying connection for introducing early phonetic concepts with children, this research looked to progress this study in this area in determining an appropriate pedagogy with the use of new technology. This was compounded by the fact that this study came at a time when there was a political commitment to improve children’s reading results from an early age (Rose 2006), in which new changes of phonetic approaches were filtering into the early years *Letters and Sounds* EYFS curriculum.

The study of phonetic learning has been a continuous debate and intensively researched area since the publication of *Learning to Read: The Great Debate* (Chall 1967). At the time of this research, there was much debate about introducing a more systematic and synthetic study of phonetic awareness in the Early Years Foundation Stage (see Rose Report 2005). Despite the introduction of the National Literacy Programme (1998) analytical phonetic approach and the improvements of children’s reading attainment, there was still a great decline and many children ‘lagging behind’ or ‘failing to learn to read’ by the age of eleven and ‘not meeting expectations’ at age seven (Vermes 2006). Opinions have been polarised, particularly in terms of how to teach children the ‘alphabetic code’, to encourage the progress of reading of the written English.

With respect to young children, Sir Jim Rose (2006) argues that the new curriculum needs to reflect changes in children’s learning where the use of technology is to be central to learning as the three ‘R’s used to be (Cole 2010). Whilst there is some technological research of the analytic approaches of phonetic study, in the early years, there is still no research dedicated to the systematic and synthetic approach, applied with technology (and in this time, to a new form of technology). Although there is literature evidence to suggest that technology can help make a curriculum based phonetic program more effective, in encouraging children to learn their letters and sounds of the alphabets, the value of the application of the technology mainly depends on integrating appropriate phonetic pedagogical practices, within the early years classrooms.

Overall, this chapter demonstrates that the use of new technology has the potential to make a phonetic awareness with young children more effective; however, its use would depend on the quality of the adopted phonetic approach and the appropriate phonetic pedagogical practices, with the young children. This chapter highlights that the systematic and synthetic approach is found to become the more effective approach, in establishing the building blocks of phonetic acquisition, with young children learning to read. This chapter shows that in providing for an enriching phonetic learning experience in the early years, children are encouraged to learn in social and informal learning settings, through the experiences of playful and active learning experiences. Through various engaging and purposeful activities, the literature shows that children can be found to become motivated to learn, and the teachers/practitioners, can play a guiding role in scaffolding their interests and increasing the learning experience for them. The following is outlined below.

4.1. Phonetic Awareness

Learning to read is a complex task and involves a cognitive process of decoding symbols in order to construct or derive meaning from words. The process of reading is conducted through the means of language acquisition, of communication and of sharing information and ideas. As seen in all languages, it is complex interaction between the text and reader, which is shaped by the reader's skills and experience of language acquisition. The reading process requires continuous practice, development and refinement, which is a life-long process.

Research from the United States National Reading Panel (2000) has shown that there are six early literacy skills which are essential for young children to become familiar with in order to become successful readers. Most young children need a variety of skills to achieve the basics of reading skills and adopt them, more or less, within stages. These include (mostly in ascending order):

- Phonological Awareness– Ability to hear and play with the smaller sounds in words. It is being able to hear that words are made up of smaller sounds and playing with those sounds by rhymes and making up silly words by changing the first sound in a word e.g. milk, nilk, pilk, rilk filk.
- Phonetic Awareness/Letter Knowledge – Awareness that letters are different from each other and children will know the names of their letters and sounds. Letter knowledge is the understanding that letters look different from one another and have their own name and sound.
- Narrative Skills – Ability to create stories and describe things
- Print Awareness - Knowledge of how to handle a book and how to follow words on a page.
- Print Motivation – Interest in and enjoyment of books.
- Vocabulary – knowledge of the names of things of at least 3000 to 5,000 words.

This research is concentrated on the second level of reading with children in their early years of phonetic awareness/letter knowledge. There is evidence (Yopp 1992) to show that children tend to struggle at the phonemic stage of letter awareness, and if not dealt with appropriately, can often lead to a poor start in literacy practices of reading. This research interjects at a critical time of reading progression for young children, and more focus was paid attention to developing phonetic awareness with the young children, in which they should be able to:

> "….hear and say sounds in words in the order in which they occur as well as link sounds to letters, naming and sounding the letters of the alphabets...Explore and experiment with sounds, words and texts" (DfE 2007, 2012, p.13).

The awareness that language is made up of individual sounds, namely phonemes, is a crucial factor in children learning to read (Stanovich, 1993-1994). Once beginning readers have some awareness of phonemes and the graphic representation attached to them, research indicates that further reading instruction can heighten children's' awareness of language (Ehri, Nunes, Willows, & Schuster 2001). Studies show that young children have to develop the awareness of sounds first before they can even learn basic use of phonetics in phonic study (Ehri 1975; Goswami and Bryant 1990; Lundberg et al., 1988). Byrne (1991) demonstrates that when a child becomes phonologically aware of speech sounds, they can devote better their mental energy to analysing the sound structure of difficult words or concepts.

There is substantial evidence to suggest the connection between the awareness of phonemes and reading achievement (Adams 1990), is the single most reliable predictor of a successfully reading process (J. Wanzek, B. Bursuck, S. Dickson 2003). Therefore, by demonstrating to children that words are made of smaller pieces such as, the individual phonemes of /b/ in bat, can play an enormous role in a child's ability to read. Predictive studies show that when children enter their preschool years with phonetic awareness and the ability to manipulate phonemes and identify the letters attached to them, they progress at a faster pace in learning to read (Ehri & Roberts 2006) and there is longitudinal evidence to highlight the relationship between early phonological awareness skills and later reading ability (Byrne & Fielding-Barnsley 1995; Torgesen, Wagner, & Rashotte 1994; Wagner, Torgesen, Rashotte, Hecht, Barker, Burgess, Donahue, & Garon 1997).

> "By teaching children phonological awareness, early childhood education greatly improves their reading success as they enter elementary school" (cited in Facts in Action 2003, p.1)

However, in developing phoneme awareness with the young children, there have been many phonetic approaches, where children are shown the letter sounds, so as to guide the pronunciation of words. Researchers have identified several different ways of the teaching of letters and sound relationships, in explicit and structured methods of fashion. These include embedded phonics, analogy phonics, onset-rime phonics, analytic phonics and synthetic phonics (Appendix 7, p.186). At the time of this study, there was much debate between the analytic vs. the synthetic approach of phonetic instruction, within the UK early childhood curriculum. During the time of this writing, the systematic and synthetic approach was tried and tested in many early years settings (The National Strategies 2007-2008), and through analysis was deemed to become the far more effective form of phonetic study. The new systematic and synthetic approach was then established within the EYFS curriculum, as the new *Letters and Sounds* approach (EYFS 2010-2012).

The next section will briefly outline the historical progression from the analytic to the systematic and synthetic phonetic approach of study. Although, the analytic phonetic study is no longer continued, it is worth nothing that the development and evolution of the approach, has made great impact on the study of phonetic awareness within the EYFS curriculum.

4.1.1. Analytic Approach

In the first third of the 20th century (1900-1935), the analytic phonic approach of teaching phonemes to begin early reading was introduced (Vermes 2006). This approach of teaching phonemes encourages letter recognition, with young children, when a hundred or so sight words have been memorised. In such cases, children are encouraged to identify the common phoneme in a set of words such as 'p' in 'pat', 'pet', 'pen' etc… In this way, children can become increasingly aware that spoken words are composed of sequence of sounds that relate to letters (Bryant 1993). This type of teaching adopted the move towards a more child-centred education, which looked to introduce a greater emphasis on meaning and purpose with educational activities. It adopted the Piagetian view that children are active learners who are able to construct knowledge for themselves. Although Piaget did not specifically address learning to read, his work encourages teachers to tailor their teachings of reading and writing to the individual's child's learning and developmental rate (Abbott et al., in BERA 2003).

In 1998, the National Literacy Strategy (NLS) (House of Commons 2005) introduced the phonics route into education adopting the analytic approach. They set up the *Framework for Teaching* in schools, and recommended a mixed approach for the Primary Years Foundation, which included an element of both phonics and phonetic instruction. Adopting the Searchlights Model, the National Literacy Strategy promoted the teaching of reading in its broadest sense from the beginning of the child's education. This included areas of decoding, comprehension, grammatical understanding and a more general experience of different books and texts.

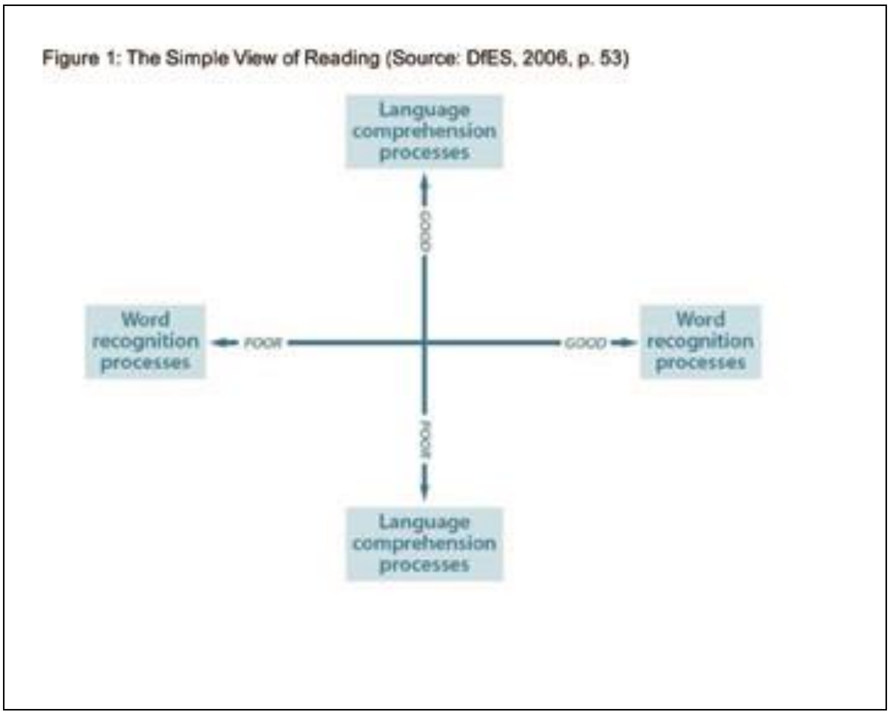


Figure 2 - The Searchlights Model

The Searchlights model assumed that reading can best be taught using by using a range of strategies simultaneously. The rationale for this approach was that children will learn to read most effectively by exploiting a diverse range of strategies, but it also claimed to be more effective for those children who respond better to one particular approach than to others. Incorporating the Searchlights Model as part of their focus for early reading with young children in their early years, the NLS introduced *Progression in Phonics* (PiPs) in 2004 where:

> "Phonics consists of the skills of segmentation and blending, knowledge of the alphabetic code and an understanding of the principles which underpin how the code is used in reading and spelling" (see *Playing with Sounds* in DfE 2004).

However, despite the NLS active role in introducing a more mixed and varied approach model in the primary and early years foundations, there were particularly urgent concerns nationally about the comparatively weak performances of the 15% children who were not able to reach the target level in reading by the end of Key Stage 1 (level 2) and the 16% of children who did not reach the target level by the end of Key Stage 2 (level 4), with more concerns about the general weaker performances of boys to girls. There was also the heated debate regarding the speed of coverage of the letter and sound correspondences (the alphabetic code) at the earliest stages and the degree of importance given to blending.

Ofsted argued that the Searchlights model did little to prioritise the importance of phonetic work and that the mixed approach to learning leads to confusion among young children (see Rose 2005).

> "The 'searchlights' model proposed in the framework has not been effective in terms of illustrating where the intensity of the 'searchlights' should fall at the different stages of learning to read. While the full range of strategies is used by fluent readers, beginning readers need to learn how to decode effortlessly, using their knowledge of letter-sound correspondences and the skills of blending sounds together" (Ofsted 2002, p.17, paragraph 58).

It would seem that the analytic approach fell into disfavour because it was carried out without any definite structure and without specific reference to the reading of meaningful text. As part of the emphasis on children learning for themselves and carrying out meaningful activities, the whole language approach depended on the importance that children read meaningful material, where they can learn to familiarise themselves between the relationships of letters and sounds (Wyes and Skyles 2007). While this approach seems liberating and offers choices for the young learners, unfortunately there was evidence to suggest that analytic approach was too much of an ambiguous approach of study and many children were failing to reach the expected standards of literacy tests (see Rose Report 2005).

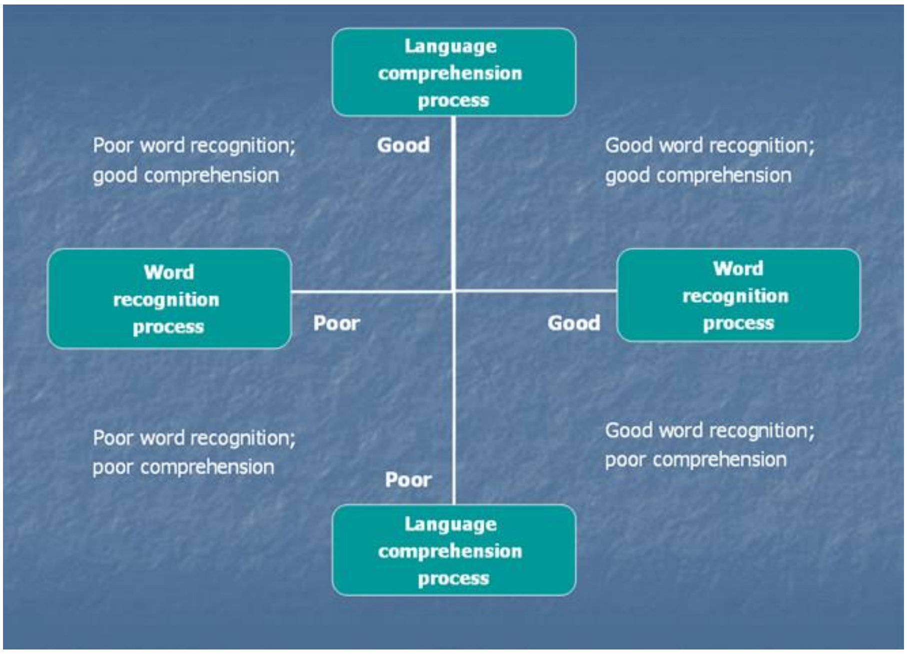
This resulted in a recommendation by England's Education Select Committee that there should be government intervention into the teaching of reading (House of Commons Education and Skills Committee 2005). The independent review of early reading, conducted by Jim Rose (2005, 2006) showed that systematic 'high quality phonic work' should look to be included as the prime means for teaching children how to read and spell words. The Rose Report emphasised the importance of the systematic study of phonics as the one and only approach to teaching word recognition.

4.1.2. Synthetic Approach

The Rose Report stated that high-quality phonic work should be taught discretely as the prime approach used in the teaching of early reading. This simply means that early years settings and schools should put in place a discrete programme, as the key means for teaching phonics. The Rose Report (2006) suggested that the use of the systematic and synthetic approach of study was the most effective. Put simply, the study of the systematic and synthetic approach involves teaching children to recognise the different sounds represented by letters to them. Before children are introduced to books, they are taught the different individual sounds to construct words. So for example, when taught the sounds for the letters of t, p, a and s, the children can build up the words "tap", "pat", "sat". This approach to teaching the initial stage of reading is what is known as

‘Simple View of Reading’ which consists of two processes: ‘decoding’ and ‘comprehending’ – where the reader listens to what he/she is decoding and thus understands it (Vermes 2006).

(The simple view of reading; analytic vs synthetic reading; word recognition vs. language comprehension)



Rose Report, March 2006

Figure 3 - The Simple View of Reading

The critical difference between that of synthetic phonics and analytic phonics is that the former approach teaches children to sound and blend sounds from the alphabetic code, apply their phonic knowledge and skills as they decode words and to develop a store of familiar words. In the analytic approach, children first learn words by sight, having their attention drawn only to the initial and relevant sounds of that stage and only once these letters sounds have been learned are they introduced to the sounding and blending of phonemes.

The Clackmannanshire seven-year longitudinal randomised control based trial (RTC) (Johnston and Watson 2004), found that using a method of systematic phonics teaching is associated with better progress and reading accuracy (DfE 2005). These cohorts were tracked until children were at year seven in their primary school years (aged eleven years). Although the review found no determining factor to suggest that the superiority of either synthetic or analytic phonics instruction is better or more effective than the other, the findings did overall suggests that the introductory element of a taking a more synthetic approach resulted in better learning of the sounds in the alphabets and thereby was able to lead children blending various sounds together to build words.

It was found that the Education and Skills Committee in the UK placed great importance to the Clackmannanshire study which has become an important addition to the research of study of synthetic phonics. Professor Rhono Johnston, leading researcher in the Clackmannanshire study stated in her comments of the review, that ‘analytic phonics is good, but synthetic phonics is better’ (Rose 2006). However, researchers argue that due to the small sample of only three small RCT’s on which to base this comparison, it is not therefore possible to conclude and analyse how different approaches can be better or worse than each other.

Yet, what is determined and well-established is that a more:

> "Systematic phonics instruction within a broad literacy curriculum appears to have a greater effect on children's progress in reading than whole language or whole word approaches. The effect size is moderate but still important" (DfES 2006, p.3).

Sue Lloyd, the developer of *Jolly Phonics*, a commercial phonics scheme used greatly in the early years, claims that:

> "Synthetic phonics provides the necessary skills that enable the majority of children to read and write above their chronological age. The 20% of the Clackmannanshire study who have literacy problems still have a good foundation of the basics and just need more time and input' with a well-structured programme (McGuinness 2005)

The Rose Report (2005) advocated that given a well-structured systematic synthetic programme, the majority of children, including young five year olds, will learn to enjoy learning phonics, will come to have positive attitudes and can progress rapidly in learning to read. The Rose Report made an impact on the National Educational Policy in the United Kingdom and began to influence the changes of the literacy programmes of study in the National Curriculum, within both primary and early years. The new *Letters and Sounds: Phase One* (The National Strategies 2007-2008) were distributed to a selection of early years settings in April 2007. For five of the schools, the processes had trigged the introduction of a systematic programme for the first time and those already teaching the programme welcomed the re-iteration of key concept and affirmation of pedagogy in review (Ofsted 2008).

> "Some schools re-emphasises that the impact of a more systematic approach to teaching phonics and raised their expectations of how quickly and well children could learn to read and write" (Ofsted 2008).

The Independent Review of the Primary Curriculum Final Report (2009) recognised that far more attention needs to be given to phonetic development with very young children and when drawn together can help promote and begin systematic phonic work as they get older.

> "Having followed those directions and notwithstanding the uncertainties of research, there is much convincing evidence to show from the practice observed that, as generally understood, 'synthetic' phonics is the form of systematic phonic work that offers the best route to becoming skilled readers" (Rose 2006, p.19).

As it is a statutory requirement that all schools and early years settings in England teach phonemic awareness and phonic knowledge, the new phase one of *Letters and Sounds: Principles and Practice of High Quality Phonic* replaced the *Progression in Phonics and Playing with Sounds* (The National Strategies 2007 – 2008, DfE 2011). The new phase one of *Letters and Sounds*, aimed at the early years, falls largely within the Communication, Language and Literary area of learning in the Early Years Foundation Stage (The National Strategies 2010-2012) was firmly established by 2010, which was widely distributed to local authorities, schools and settings. The new early years phonetic curriculum is designed to follow a more systematic and synthetic model of study which supports the linking of sounds and letter in the order in which they occur, along with children blending various sounds together to build words.

While the new *Letters and Sounds* curriculum offers various activities (ie. songs, rhyme, magnets and sand play etc.) to enrich the new systematic and synthetic approach of phonetic study with young children, there is very little evidence of applying technology alongside the early years *New Letters and Sounds* phonetic approach. The UK government (DCFS 2009a) has actively published case studies for exemplifying the use of new technologies in early years settings, the early learning goals for 'Communication, Language and Literacy' in the Early Years Handbook, which establishes expectations for what most children will achieve by the age of five years (DfE 2010, 2011). However, in the framework of new phonic study, it contains no reference of children's learning acquisition whilst using technology, and for it to become integrated within curriculum development. Yet, there is literature evidence to show that technology literacy practices can encourage and enrich phonetic related learning practices.

4.2. Technology in Curriculum

Despite the increased recognition that new technologies should be effectively integrated within the early years curriculum (Plowman and Stephen 2005; Rose 2005, 2006), the early years guidelines, relating to uses of literacy and technology, are inconsistent. There is evidence to suggest that schools have largely been either slow to react or have missed the mark completely when it comes to capitalising on educational benefits (Graber and Mendoza 2012).

There is evidence to suggest that young children's home lives are becoming increasingly shaped by their engagement with a wide range of new technologies (Marsh et al., 2005; Rideout, Vandewater and Wartella 2003). Parents are found to be taking a supportive role in using new technologies with young children in their home environment to support computer operational skills with learning whilst the children are playing. A report by the Interactive Digital Software Association (NAEYC 2012) shows that children are becoming more immersed in using technology and are living in a world where they are growing up at ease with digital devices that are rapidly becoming the tools of the culture at home, at school, at work and/or in the community. So, it comes to surprise that schools have not taken advantage of the use of technology within curriculum, especially as there is evidence to suggests that "when used widely and appropriately, technology and media, can support learning" (NAEYC 2012, p.1).

There is early literature to demonstrate the role of technology in literacy practices, within the early years settings. In the time that the analytic approach was adopted, the use of electronic talking books (Chera 2000) was designed in consultation, with teachers and researchers, to help develop and promote phonological awareness, for children beginning to read. Adopting the analytic whole word recognition approach, where children are encouraged to remember words that share a common phoneme, the findings showed that the technology has the potential to promote phonological awareness between four to six year old children (Chera and Wood 2003), in which they were able to recognise words from memory. This was also demonstrated in a second more recent study, again using the analytic approach, with the use of talking books and phonological awareness with boys (Littelton, K, Wood and Chera 2006). Overall, the outcomes showed that the use of the talking books technology, improved the test scores of lower phonologically proficiency boys, in comparison to the higher attaining boys. Whilst the results may look favourable, there is no reason to suggest that technology, on its own, was the catalyst of change. The findings illustrated that there was much interaction and communication, taking place between the teacher and children, and the technology's added benefit was keeping the children engaged for a sustained period of time.

The most comprehensive review of studies and the impact of information technology on broad level literacy with young children was initially conducted by Torgerson and Zhu (2003). Using Randomised Control Trials (RTC), Torgerson and Zhu concluded that there was not sufficient high quality evidence available to justify that the use of technology can support the various types of literacy learning, and that more rigorous designed RTC studies of the impact of technology in literacy were urgently required. Extending the Torgerson and Zhu (2003) trials, Coamasky, Save and Abrami (2004-2005), explored the two methods of computer based interventions using the synthetic phonics approach verses the analytic phonics approach, to determine the effects of phonological awareness with young children (with respect to children in their foundation and year 1). Adopting the *ABRACADABRA* technology (A Balanced Reading Approach for Canadians Designed to Achieve Best Results for All designed by the Centre for the Study of Learning and Performance), the study looked to determine whether the ABRACADABRA tool can be efficacious in teaching phonics to the children. The results showed that whilst the tool is applicable to the teaching of phonics, and showed enhancement of letter recognition, it would seem that teachers still require additional training, in using the tool to measure its overall effectiveness and pedagogical delivery in classrooms. Interestingly, the findings also illustrated that there was no significant difference, to highlight one phonetic approach, was better than another, in increasing phonetic awareness with the children.

At present, there is no evidence of applying new technology, within a systematic and synthetic mode of study with young children, in new *Letters and Sounds* early years curriculum. The available research shows that the synthetic phonetic approach does have the potential to enhance phonetic recognition with young children, as seen in the Clackmannanshire Study of Scotland (Watson and Johnston 1998) and can bring about enhancement of letter awareness (Coamasky, Save and Abrami 2004-2005) through the uses of technology. However, the findings from the literature show that while technology can look to enrich phonetic learning, it is not necessarily the catalyst of change. Successful integrating of technology into phonetic learning will depend on appropriate phonetic pedagogical practices, which are used to encourage letter recognition and knowledge, with the young children.

4.3. Phonetic Pedagogical Practices

Although The National Literacy Strategy (NLS) analytic phonetic approach is no longer continued in the early years curriculum, it has been beneficial in providing direction for introducing young children to phonological awareness and phonetic development of the sounds in the alphabets. Even though there is no evidence of using new technology to support phonetic development, within the systematic and synthetic approach of the *Letters and Sounds* early years curriculum (EYFS 2010, 2011), two areas of appropriate phonetic pedagogical practices have emerged from the other various activities enlisted in the curriculum (ie. songs, rhyme, magnet and sand play, etc.), that can be found to help drive and extend phonetic learning forward, with the young children.

4.3.1. Informal and Engaging

Learning in the early years is very much a social and socialising activity for young children. Early years literature (DfE National Guidelines 2011) suggests that early years settings should look to provide informal and engaging learning opportunities for young children to develop their speaking and listening skills. There is more to reading than just the study of systematic phonetics and this is more noticeable in the early years of young children where structured instruction, assessment and procedures, as applied by the systematic synthetic route, are deemed too formal for young children's playful learning settings.

Janet Moyles (Gaunt 2011), early years consultant and former chair of TACTYC (Association of Training, Advancement and Co-operation in Teaching in Early Childhood Education), argues that a formal programme of phonic study for children in their early years is inappropriate. Young children are at a stage where phonological awareness and phonemic recognition through various engaging activities is enough. She argues that various approaches to learning, with techniques of syllable clapping of their names, the use stories and favourite words, nursery rhymes and singing songs can encourage children to develop their awareness of words that are composed of smaller units of sound and children can come to see how smaller units can be identified, played with and combined in new ways (DfE National Guidelines 2011).

In providing for an informal learning setting, the Early Years Foundation Statutory (EYFS) framework suggests that learning with young children should take place in playful learning settings. This in its true essence is the basis for early years education. This type of playful learning is in line with the nature of early years pedagogy (see chapter 3.2.1), in which the literature suggests that pedagogic instructions with the young children should look to occur in playful learning settings and should look to be positive and an enriching experience for the young children. Therefore, by combining the informal phonetic learning through the nature of playful learning, requires creating appropriate conditions for young children so that they can:

> ".... interact with others: engage frequently in worthwhile talk and attentive listening, build a good stock of words, explore how language works, understand what is said to them and be able to respond appropriately" (Rose 2006, Aspect 2, p.15).

Key features of a rich and purposefully engaging curriculum in the *Letters and Sounds* early years curriculum is considered crucial to the range and depth of language experience by the children (EFYS 2012). Literature shows that engagement is crucial to effective literacy learning (Guthrie and Wigfield 2000; Justice et al., 2003; Mc William, Scarborough and Kim 2003), where engagement can be related to the child's attentiveness, persistence and enjoyment.

> "Engaging children in interesting and worthwhile activities has always been at the heart of discussion and is found to pave the way to make a good start in phonemic awareness with young children" (Rose 2006, p.3).

Engaging activities have found to exploit: the power of story, rhyme, and drama to use of various songs to fire children's imagination and interest to engage children's curiosity about language (Yopp and Yopp 2000). In the new *Letters and Sounds* (2010, 2011) early years curriculum, information is made available of how to enliven phonetic instructions through the various informal uses of small white boards, magnetic letters and simple but imaginative techniques, such as mnemonics and physical movements, to support the children's recall of the relationship between letters and sounds. Yet, there is no information to show how technology, and in this context new technology, can be used as and informal and engaging activity, in encouraging phonetic awareness.

The early years literature shows that although early years classrooms have an influx of technology filtering into their settings (see chapter 2), there is very little evidence to show how some of the newer forms of technology have been used as informal and engaging experiences, with respect to phonetic acquisition, for the young children. There are early experiences to indicate that even when computer were taken away, there was still the enthusiasm for learning to persist (Moxley & Warash 1990-1991). Presented with comparable paper and electronic resources, kindergarten and first-grade students preferred to wait for an opportunity to use the electronic version, even if a print version was immediately available (Mitchell and Fox 2001). This type of technology instruction can have a powerful effect on the child's motivation to learn.

Bruce Perry (1999) argues that technologies can be very powerful because they rely on one of the most "powerful genetic biases that we, as humans, do not have; the preference for visually presented information. The human brain has a tremendous bias for visually presented information" (Kneas 1999, p.1), and can keep individuals engaged for long periods of time. He advises that there a number of specialised software applications that allow children with multimedia presentation of content so that they can better understand and process the material. With some more appropriate designs of software, children are able to see words and see a visual image and also hear the sounds – all the same time. This does not work as a limitation, as some researchers would argue, but by combining these sensory-modalities, it helps a child to more efficiently internalise information about a topic. Indeed, some of the newer forms of technologies are constantly evolving at a phenomenal speed, with new designs that are able to fuse both narrative dialogue and educational content together, with reasons to make the whole education an engaging experience (Shalom Fisch et al., 2008).

The literature evidence, therefore, shows that combining informal and engaging experiences is especially important with young children as it demonstrates that this area of learning needs to be made playful and motivating, rather than the chore it can become if conceived and presented too rigidly. This can be especially important when looking to apply technology, within a systematic and synthetic phonetic approach, with young children in their early years settings. Unfortunately, there is also evidence to show that teachers believe that learning can be shaped and guided by the design of technology and as a result will take a back seat in computer mediated instructions. Clements, Nastasi and Swaminathan (1993) advocate that this is not good instructional practice and computer use facilitated or mediated by a practitioner is not consistent with best practice, in the early years.

4.3.2. Phonetic Scaffolding

The importance of young children learning co-operatively in language-rich contexts, should not look to be undervalued and it is generally agreed that early years settings should ensure that at least one member of staff, interacting with the children, is fully able to lead on literacy instructions, especially in developing advanced phonic work (National Standards 2007-2008). Rose (2006) advises that just as it is important for early years practitioners to know about the structure of language and study of phonics, it is just as for them to become aware of each child's individual nature of learning, so that they can build upon the child's various interests and experience. This is particularly interesting and is in line with the nature of pedagogy again, as the role of the practitioner is argued to be beneficial in guiding and developing learning opportunities (see chapter 3.2.2).

In an early study in the Netherlands (Reitsma and Wesseling 1998), it was observed that children who received phonemic awareness instruction through the use of software application significantly outperformed classmates who received no instruction at all and performed on par or just slightly below a group of children who worked directly with the teacher. However, the children who received instruction from both the teacher and the computer improved significantly more than those children who only worked with the teacher. Similarly, in a study by Mitchell and Fox (2001), kindergarten and first grade students who were at risk for reading problems received software instruction on blending phonemes. The results show that these students improved their skills, as much as a group of peers, who worked directly with a teacher. A third group of children, who had no practitioner intervention and only computer mediated instructions showed no improvement at all in phonetic development.

This type of thinking supports the Regio Emillia early years education model of which its distinct pedagogical quality places greater importance on explicit adult involvement, in actively supporting and enhancing children's interaction, through means of scaffolding within the child's interest (see chapter 3.3.3). This can be reflected in a more recent study (2007) byVoogst and McKenney (2007) who used technology supported software, PictoPal, to support the development of emergent reading and writing skills in four to five year old children. Where the first half of the study findings indicate that children were able to use the technology independently after a few instructed sessions, a second follow up study showed a statistically significant learning effect using the technology when the children were accompanied by a practitioner or parent volunteer. The study showed that the interactions between the child and the involved practitioner fostered dialogue and reflection and reinforced immediate feedback mechanism that were not already present in the software (Voogst and McKenney 2007, pg 92).

There is literature evidence to show that it is not sufficient for practitioners to give children access only to technology, but regardless of the efficiency of the software, it is when the practitioner assists and guides the child, that full benefits can be realised.

> "The aim is to embed the Phase One adult-led activities in a language-rich provision that serves the best interests of the children by fully recognising their propensity for play and its importance in their development through various activities" (DfE 2007, p.3).

Much of the literature points to the role of the practitioner in guiding and steering learning with young children (see chapter 3). It would also seem that same concept applies to the crucial role of the practitioner in scaffolding phonetic interests, for extending and enriching phonetic development with the children. Whilst there is evidence to show that technology can play a role in enriching phonetic awareness, there are implications that the involvement of the practitioner along with informal and engaging learning sessions are important phonetic pedagogical practices, when looking to apply new forms of technogy in an early years setting.

4.4. To Summarise

The literature suggests that the use of technology can help make a phonetic program of study more effective but it would seem that its value would depend upon the quality of the overall phonetic approach of study and the implementations of appropriate pedagogical phonetic practices, with children in their early years.

Whilst there is evidence to suggest that young children's home lives are becoming increasingly shaped by their engagement with a wide range of new technologies, to the extent, that most early years settings now include a wide range of technologies (i.e. digital cameras, Internet, and in some cases, iPads), there is to date, no implications within the early years guidelines of integration the uses of new technology, in the early years curriculum. This is particularly directed towards using the systematic and synthetic approach, established within the *Letters and Sounds* EYFS curriculum (EYFS 2012; DfE 2008), for children to practice blending phonemes and matching them to letters (EYFS 2012).

> "Having considered a wide range of evidence, the review has concluded that the case of systematic phonic work is overwhelming and much strengthened by a synthetic approach" (Rose 2006 p.20)

What is made clear is that phonetic learning in the early years is very much an informal and socialising event for children. Children in their early years learn through playful learning activities and the literature shows that engaging young children in interesting and worthwhile pre-reading activities helps pave the way for the great majority of young children to make a good start on more formal measures of phonic work by the age of five when they enter primary schooling. This is supported by the active role of the practitioner. Rose (2005) suggests for learning experiences to create conditions in which children can interact with the practitioner, engage frequently in worthwhile talk and provide for attentive listening, where the importance for young children is to learn co-operatively within language-rich contexts with their practitioners and/or peers. These phonetic pedagogical practices are found to be valuable in creating appropriate conditions for young children to learn.

In providing for a well planned systematic and synthetic approach, with appropriate phonetic pedagogical practices, Stephen Heppell, professor of new media environments at Bournemouth University, advocates that technology is "the key that unlocks the door and children should be using technology imaginatively and creatively" (cited in Cole 2010, p.1). What is awaited is for new research to make this all possible.

5. Research Philosophy

> "Epistemology asks, how do I know the world? What is the relationship between the inquirer and the known? Every epistemology...implies an ethical – moral stance towards the world and the self of the researcher" (Denzin and Lincoln 2000, p.157)

The review of the literature has identified a gap of an appropriate pedagogy whilst using new technology with young children, with respect to phonetic awareness. As a result, this has prompted an interest in this area of study and has identified the substantial research focus:

Research Question: To what extent can new technology be used appropriately in extending learning and development with young children?

1. In what ways can early years technology based classroom settings provide for an appropriate learning environment with young children?

2. In what ways can existing early childhood technological practices provide for appropriate use of new learning technology, within early years settings?

3. What is the relationship between effective pedagogical qualities, in early childhood education, and in determining an appropriate pedagogy, whilst using new learning technology?

4. To what extent can the appropriate pedagogy applied with new learning technology, support phonetic awareness and learning in early childhood education?

5. To what extent can the appropriate pedagogy applied with new learning technology, support the quality of well-being and involvement with young children, in a planned learning setting?

Early research in investigating the role of pedagogy in ICT (Plowman and Stephen 2005, 2007; Siraj-Blatchford 2003, 2005, 2007) have often adopted an interpretive frame of reference, taking into consideration Vygotksy's social constructive philosophy established in the early years, and the feelings, emotions and subjective analysis of the participants in the study. The analysis of the interventions and data collected tend to originate in forms of observations, interviews, documentary analysis and anectodal evidence. These methods have been found to be successful with young children in their early years and illuminate the findings from an interpretivist view based on the truth value of the social reality, which stress the need to study the details of the situation to understand the reality or perhaps the reality surrounding the participants.

While the Interpretivist approach is applicable to this research and is relevant to the first three stages of this study, it does not suitably encapsulate the later stage of this research. In determining an appropriate pedagogy, whilst using new technology with young children, a last stage of well-being and involvement uses Laever's Scales (1997), which adopts a more objective frame of reference and a quantitative approach of numerical analysis of data. These scales were adopted into this study with the intention to establish the appropriateness of the proposed pedagogy and in validating the quality of care and exchange of instructional practices, between the practitioners and the young children in a planned learning setting. The paradigm associated with Laever's Scales are also found to be holistic in nature, in that they are created for young children in the early years, and that the assessments are based in real life circumstances, by using observations of naturalistic inquiry. However, by using these observations in a controlled environment, they adopt an objective stance in assessing the quality of an education setting (Stein 2006), thereby providing a positivist frame of reference.

Therefore, in order to investigate the research area and questions, this study adopted the research philosophy of pragmatism to allow for a combination of both positivism and interpretivism paradigms within the research design processes. This research is interested in using pragmatism as an instrument to conduct research with an appropriate degree of epistemological and methodological awareness in order to find the truth. Whilst there is great debate regarding the uses of mixed methods within the pragmatic epistemology, this study shows how using the mixed methods approach pragmatically has heightened the practical relevance of philosophical pragmatism to research methodology, in particular, but not exclusively to mixed methods research choice of design.

The following section will illustrate the reasons for adopting Pragmatism as the choice of research philosophy. It will discuss the nature of Epistemology, consider the benefits and limitations of the Positivist and Interpretivist paradigms and will conclude with the reasons for selecting the Pragmatic approach for this study.

5.1. Epistemology

The research philosophy relates to the development of knowledge and the nature of the knowledge itself. In terms of research, this simply means ‘developing knowledge in a particular field’ (Saunders, Lewis and Thornhill 2009). Where it is easy to fall into the trap of thinking that one research philosophy is better than another, as always, which is ‘better’ depends on the design of the research questions (Saunders, Lewis and Thornhill 2009). In determining an appropriate philosophy for this study, the important issue is not so much whether the research should be philosophically informed, but rather how well the researcher can reflect upon the philosophical choice selected and defend it in relation to the alternatives that could have well been adopted (Johnson and Clark 2006). This research has adopted Robson’s (1993) dictum of being ‘deliberately promiscuous.’ It is not restrained to one particular approach and has made use of different methods of choice to meet particular design issues.

Epistemology, as part of the research philosophy design, determines what constitutes as acceptable knowledge in a field of study. Indeed, it would be suggested that those who take a particular epistemological view take on a particular paradigm, or a way to “see the world and organise it into a coherent whole” (Hughes 1994, p.31). It has been argued that “to be located in a particular paradigm is to view the world in a particular way” (Burrell and Morgan 1979, p.24). Just as a picture frame ‘frames’ a picture, a paradigm ‘frame’ influences how we see the picture within it and likewise, so the choice of paradigm that influences the research design. Bryman (2004, p.453) identifies a paradigm as a cluster of beliefs and dictates, which for scientists in a particular discipline influence what should be studied, how research should be done (and) how results should be interpreted. The natures of particular paradigms are opposing worldviews or so called belief systems that are a reflection and a guide that researchers take (Tasakkori and Teddlie 1998).

Most often the debate around the choice of epistemological paradigm tends to stem between the choices of positivism and interpretivism. Whilst the philosophy of positivism takes more of the stance of the ‘natural scientist’ working alongside observable social realities and producing end products of law-like generalisations of credible data (Remenyi et al., 1998), interpretivism, on the other hand, advocates the necessity for the researcher to understand differences between humans in our role as social actors, taking a more emphatic stance, and understanding their world from the participants point of view. Researchers often use the terms ‘quantitative and qualitative’ to describe different methods of research, when in fact, these terms refer to different *approaches* to research, and are characterised by the specific types of knowledge it produces. Yet, these measures of data collection can become an important factor when selecting a paradigm for the research design.

There are strong views held in early childhood education (Sylva 1995) that the divide between the scientific, positivist paradigm and the interpretivist or naturalistic approaches should be kept well separated. Researchers often link the term ‘quantitative’ to positivism and scientific approaches where the approach lends itself more to producing facts and figures in some form of numerical, possibly statistical data (Hughes 1994, p.53). On the other hand, qualitative design approaches generally aim to show meaning or significance to a particular people or group of people, in which the data collected results in knowledge that is descriptive, descriptions of how and what is happening, and is mainly concerned with the quality of the data that is produced.

However, early childhood education studies, as the literature suggests, are not always straightforward and it is first important to the status of the field that not only are the research studies credible, rigorous and systematic, but that also if the need arises to make methodology more flexible, to create own techniques and strategies, then they must not be dependent on the traditions of the past. To accept Guba and Lincoln’s (1994) argument that questions of method are secondary to questions of epistemology and ontology, having to choose between one position and the other is not always realistic and to forcefully apply a stance only to justify a type of research philosophy would be *accommodating* the research design. Fielding et al. (1986) recognises the need for collaboration rather than competition and David (1996) argues that is it not the methodology but the paradigm in which it exists, which is the dominant feature of the research; that our view of the way the world is ordered leads us to look at it from a particular perspective and find a methodology which ‘best fits’ our philosophy.

It would appear that the solution then is to develop methodologies and strategies which are uniquely suited to this early years research (Bertram 1995: Pascal and Bertram 1993). Other researchers, (Bryman 1988; Giarelli 1988; Dey 1993) have suggested that rather than counter posing two extreme sides of the methodologies, there are ways for them to complement each other. This type of research paradigm, combining both methods, with practical consequences of intervention is commonly known as pragmatism. This research has adopted the paradigm of pragmatism. The following section will expand on the dominant paradigms of positivism and interpretivism and will demonstrate the limitations of each approach when used individually, but when combined together to produce pragmatism can be found to suit the research questions of this study.

5.2. Positivism

The paradigm commonly associated with the objectivist epistemology is known as positivism. Borg and Gall (1989, p.17) describe positivism as “a system of philosophy that excludes everything from its consideration except natural phenomenon and their interrelationships”. Positivism is found to define knowledge solely on observable facts and is not found to give credit to non-observable entities such as feelings and values. The theory of positivism is closely tied to quantitative methodologies and more experimental methods of data collection and analysis. In terms of the positivist ontology (the nature of reality), positivists believe that there is a single reality and this reality is perceivable. This makes a direct relation to the nature and traditions of science. As Crotty (1998) notes that:

> "Whereas people ascribe subjective meaning to objects in their world science really 'ascribes' no meanings at all. Instead, it discovers meaning, for it is able to grasp objective meaning that is, meaning already inherent in the object it considers. To say that objects have such meanings, is of course, to embrace the epistemology of objectivism (Crotty 1998, p.27).

Positivist researchers believe that both the researcher and the research are independent of each other and therefore, the research enquiry is value-free. They hold the view that by using more rigorous, scientific methods correctly, 'one can make unbiased and objective observations' (Borg and Gall 1989) and that the results drawn from the analysis of the data may lead the researcher to draw time and context free generalisations (Guba and Lincoln 1994). Positivists believe that the testing of knowledge claims should be restricted to conditions that are observable (Borg & Gall 1989) and any studies of observable behaviour such as test performances or measurements can and should be scored objectively. One of the greatest strengths of positivism is that knowledge can be replicated and if the results of using law bounding governing rules provide for valid results, then they can be replicated whenever, wherever and by whomever the project is repeated. This allows for positivist researchers to make generalisations about their data analysis.

The positivist paradigm is particularly important for the later stage of this research where the study is undertaken in a value-free way and takes an objective stance in which the researcher is independent of the data production. However, alongside the positivist view, this research also adopts an angle where the research advocates the need to focus upon details of the situation, along with interactions between participants and the reality behind the details, subjective meaning and motivating actions. Critics claim that positivism falls short in providing for study of feelings, intentions and social dynamics of collaborative encounter (Pansiri 2005). Borg and Gall (1989) contend that there is no convincing reason to believe that observable behaviour is more real than internal phenomenon such as feelings and intentions or the fact that there is no such thing as value-free, complete-objectivity and neutral observation to test a hypothesis (Bogdan and Bilen 1992; Carr and Kemmis, 1986).

The interpretivist paradigm, on the other hand, can provide an understanding how people create and maintain their social worlds through more detailed observations of participants in natural settings.

5.3. Interpretivism

Interpretivist epistemology requires a social scientist to recognise the subjective meaning of social action and has more of an influence on qualitative researchers, which generally assumes rather than demonstrates. They hold the view that:

> "That all acquired knowledge is from interpretation; by studying what people do, how these people act, think, their ideas and what is important to them".
> (Mcimicata 2013, p.1)

Interpretivism suggests that the social world is socially constructed and reproduced on a daily basis by people. Therefore, the truth that holds for now, within social constructs, may not necessarily hold true at a later date. The fact that people actively create their own world (perceptions – though not consciously or deliberately) means that the attempt to establish a 'cause and effect' relationship and laws does not also hold necessarily true. In this respect, the social world has no 'external features' or 'social structures' as implied and assumed by the positivists and realists and as such, cannot be empirically established because the conditions under which a relationship is theoretically established will have changed by the time we have established such a relationship. Therefore, the objective ontological stance, as adopted by the positivist, has no bearings within interpretivism.

One of the limitations to interpretivist research for this study is that it abandons the 'scientific procedures' or 'rationales' that the positivist paradigm provides for procedures of verifications and for data replication, which can be repeated by another and if necessary, be generalised to other situations. The mere fact that social constructivists do not claim to provide the truth and base their truth on subjectivity alone, invalidates a point of reference and the credibility of data for this research at a later stage of the design process. This limitation is an important instrumental design in determining an appropriate approach for this study (this is elaborated further within the research's approach in stage 4).

Nevertheless, this research also stresses the need to study the details of the social situation in considering the feelings, intentions and social dynamics of the participants and adopts the Interpretivist view based on the truth value of social reality. Remenyi *et al.* (1998, p.35) stresses the necessity to study 'the details of the situation to understand the reality or perhaps a reality of working behind the participants'. This is often associated with the term constructivism, and/or social constructivism. Constructivism as a paradigm suggests that learning is an active, constructive process and that all knowledge and truth are the result of perspective (Schwandt 1994, p.125) hence all truths are relative to some meaning context or perspective. Constructivists follow a subjectivist epistemology signifying that the knower and the learner co-create understanding upon a base of knowledge.

Constructivist, like Dewey (1916), believed that one way to interpret specific individual behaviour is to confirm it to a rule – making it rule bound, to see how closely it confirms to a social rule. An action makes sense to others to the extent that it follows a social rule; and we explain what a word or an action means by describing the rule-bound (or rule breaking) way that we use it (Winch 1958, p.121-133). For Dewey (1916), construction in education depends on action. Knowledge and ideas emerge only from a situation in which the learners have to draw them out of experiences and which have meanings and importance to them. Therefore, following the interpretivist philosophy, it is necessary to be able to explore subjective meanings motivating the actions of the social actors, in order for the researcher to be able to understand their actions and provide for validity of their truth statements.

This can be further enhanced by social constructivism and its relations to the use of language and dialogue between participants which is particularly relevant to this study. There is a great deal of overlap between constructivism and social constructivism, the latter extended by Vygotsky (1986). In essence, social constructivism is:

> "The claim and viewpoint that the content of our consciousness, and the mode of relating we have to other, is taught by our culture and society; all the metaphysical quantities we take for granted are learned from others around " (Owen 1992, p.386).

Vygotsky's (1986) theory of language, thought, and its mediation by society are relevant to the ideas of social constructivism. He argues that a process of knowing and constructing knowledge is through the involvement and agency of other people, and mediated by community and culture through the power of language. From a social constructivist perspective, language is more than just a way of connecting people. People 'exists' in language and the focus is not on the individual person but on the social interactions where language is generated, sustained, and abandoned (Gergen and Gergen 1991). A social constructivist locates meanings in how ideas and attitudes are developed over time within a social, community context (Dickerson and Zimmerman 1996, p.80).

Hoffman (1991, p.5) states:

> "All knowledge in space evolves between people, in the realm of the 'common world', or 'common dance'. Only through the on-going conversation with intimates does the individual develop a sense of identity or inner voice".

Whilst the interpretivist position, extended by the use of language in communication, within the realms of social constructivism, can provide for considering the behaviours and feelings of the participants involved, the interpretivist epistemology and ontological realities unfortunately fall short in providing for objective reality, as found in positivism, which is important in the latter half of the research process. This study, therefore, takes a more pragmatist approach, lending itself neither solely to the positivist or the interpretivist view but rather focuses purely on the most important determinant of the philosophy. That is of the research question itself and encourages the researcher to "study what interests you, study in the different ways which you deem appropriate, and use the results in ways that can bring about positive consequences within your value system" (Taskhakkori and Teddlie 1998, p.30).

5.4. Growing Pragmatism

> "Pragmatism has been hailed as the best paradigm for justifying the use of mixed- methods research" (Tasakkori and Teddlie 1998; Teddlie and Tashakkori 2003; Rallis and Rossman 2003)

Finding this research between the 'paradigm wars' of an objective positivist epistemology and a subjective interpretivist epistemology, pragmatism offers an "immediate and useful middle position both philosophically and methodologically" (Johnson & Onwuegbuzie 2004, p.17). Pragmatism sidesteps the contentious issues of truth and reality, accepts philosophically that there are "singular and multiple realities that are open to empirical inquiry, and orients itself toward solving practical problems in the real world" (Creswell & Plano Clark 2007, p. 20-28).

Originating from American philosophy (Aune 1970; Blosch 2001), the theory of pragmatism is traceable to the 'metaphysical club' – the legendary, short-lived discussion group in Cambridge, Massachusetts, in the early 1870's that brought together many of the founding-fathers of American Pragmatism – (including Justice Oliver Wendell Holmes, Jr. (1841–1935), William James (1842–1910), Charles Sanders Peirce (1839–1914), John Dewey (1859 – 1952; Chauncey Wright (1850–75) and Nicholas St. John Green (Stuhr, 2000; Purcell Jr. and Erlanger, 2002). Their ideas constructed the views of Pragmatism premised on the reflections of the Kantean/Fichte/Dilthy philosophical thought of the 'projections of our minds' (Laughlin 1995, p.72).

These researchers all believed:

> "ideas are not 'out there' waiting to be discovered, but are tools – like forks and knives and microchips – that people devise to cope with the world in which they find themselves. They believed that ideas are produced not by individuals, but by groups of individuals – that ideas are social. They believed that ideas do not develop according to some inner logic of their own, but are entirely dependent, like germs, on their human carriers and the environment. And they believed that since ideas are provisional responses to particular and irreproducible circumstances, their survival depends not on their immutability but on their adaptability" (Menand 2001, p.1; Snarey and Olson 2003, p. 92).

Although Pragmatism is fairly recent in comparison to other philosophical positions, it has positioned itself as a contending paradigm. Powell (2001) argues that the pragmatist epistemology stands in contrast to prevailing positivist and anti-positivist views of scientific discovery. Whereas positivism emphasizes the objective, law-like properties of a brute reality independent of observation (Wicks and Freeman 1998), anti-positivism, or the likes of interpretivist, emphasize the role of active, subjective participants, none of whom own a privilege claim on truth (Martin 1990; Astley 1985). Pragmatists take a view of the world which is very much an 'existentialist reality' (Dewey 1925, p.40), making a reference to an experiential world with different elements or layers, some objective, some subjective, and some a mixture of two. There are layers of the "stable and the precarious" (Dewey 1925, p.40), layers of "completeness, order, recurrences, which make possible prediction and control, and singularities, ambiguities, uncertain possibilities, processes going on to consequences as yet indeterminate" (Dewey 1925, p.47).

The idea that pragmatism is not committed to any one system of philosophy or reality is particularly relevant to this research. This study focuses on the 'what' and 'how' of the research problem and seeks to find the truth – "whether it is an objective truth or the relative truth of multiple realties" (Dewey 1925, p.47). By adopting pragmatism and calling for a convergence of quantitative and qualitative methods, the research highlights that a combination of both approaches can share many commonalities in the approaches to the research inquiry; where both objective as well as subjective inquiry attempts can produce knowledge that best corresponds to, or represents, reality (Rorty 1999).

5.5. The Pragmatic Approach

Values, or Axiology, within pragmatism as a framework play a large role in interpreting results. The pragmatist decides what to research, and makes knowledge claims in terms of what knowledge is, how this can be known as knowledge, the role of values and the methods of study (Creswell 2003). This process is guided by the researcher's personal value system and study's what is important in the research. David Morgan (2007, p.71, cited in Groenewald 2010) concisely captures the pragmatic alternative to the key issues in social science research methodology a table that summarises a framework:

Research approach:	Qualitative	Quantitative	Pragmatic
Connection of theory and data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Intersubjectivity
Inference from data	Context	Generality	Transferability

Morgan acknowledges Michael Patton's 1975 divisions.

Figure 4 – Pragmatist Framework

To a pragmatist, the mandate of science is not to find truth or reality, the existence of which are perpetually in dispute, but to facilitate human problem-solving and "to gain the kind of understanding which is necessary to deal with problems as they arise" (Powell 2001, p. 884). Therefore, it must be realised that pragmatists do not in any way try to offer any alternative methods and they agree with the positivists regarding the existence of an external world independent of people's minds whilst also with the non-positivist emphasising on choosing explanations that best produce desired outcomes. This is particularly important in this research as it results in pragmatism to provide no separation between the deductive and inductive approaches.

The theory of deduction owes much to what we would think of as scientific research and therefore, is often linked to positivism. In order to pursue the principle of scientific rigour, deductive reasoning dictates that the researcher should be independent of what is being observed, therefore, taking quite an objective view of the whole process. This is unlike the inductive approach which takes into account more of an understanding of the way in which participants interpret the world and the context in which the research processes are taking place. Researchers, within this approach, tend to work with more qualitative data, adopting more of an interpretivist position.

Dewey argues that the acquisition of knowledge is both an inductive and deductive process and that "knowledge in some form exists as a 'reality' and in other forms where the 'knower' constructs it" (Maxcy 2003, p.72).

> "Science becomes understandable only if we drop the conception of science as a system of absolute truths" (Maxcy 2003, p.72)

By adopting the pragmatic approach within this study, the research processes can break away from the rigid structures of traditional educational and social sciences, and propose methods where qualitative and quantitative mixed-methods can co-exist to inform the research question, within a sequential design (Johnson & Onwuegbuzie 2004).

The particular approach of the pragmatic *abductive* process combines both qualitative and quantitative methods in a sequential fashion (Ivankova, Creswell and Stick 2006) without having to combine them both together within one specific stage. In which the inductive results from the qualitative approach serves as inputs to the deductive goals of the quantitative approach (Morgan 2006). Morgan (2006) places great emphasis on using theories to account for observations through an aspect of inductive inferences and the only way to assess these inferences is through the method of ‘actions’. The idea is that knowledge claims arise out of actions, situations and consequences, rather than through antecedent conditions (as in positivism).

In determining an appropriate approach for this research design, the process of abduction, taking into account the inductive-inductive-inductive-deductive sequence has been adopted where the first inductive cycle lends itself to scoping out the research gap and relevant questions for this study. The second inductive cycle leads to understanding the nature of the research question and in understanding the current practices of technology use in the early years playrooms. The third inductive process builds upon an appropriate pedagogy and the framework of data analysis. This eventually leads to the fourth and final approach of deductive reasoning in transferring the proposed pedagogy over to the early years practitioners and in using Laever’s scales of Well-Being and Involvement for validating the data. The table below shows the combination of both approaches for this particular research design (adopted by Saunder, Lewis and Thornhill 2007).

Abduction (research-oriented)	
Induction Emphasis	Deduction Emphasis
• A close understanding of the research context. • The collection of qualitative data • A more flexible structure to permit • A realisation that the researcher is part of the research process • Gaining an understanding of the meanings humans attach to events • Less concern with the need to generalise	• Moving from theory/concept to data • The collection of quantitative data • A highly structured approach • The application of controls to ensure validity of data • Researcher independence of what is being researched • More need to generalise (although not necessarily indented for this study).

In terms of subjectivity and identity in research, the pragmatist view also believes in *intersubjectivity* where pure or complete subjectivity and objectivity are theoretical concepts. Where there is criticism of both ‘complete objectivity’ and ‘complete subjectivity’, between the various types of quantitative and qualitative methodologies, pragmatism argues that within a research process it is acceptable to work back and forth between various frames of references. In reality pragmatists believe that the researcher often works through the research *interchangeably* and therefore the theory of the pragmatism approach adopts a more philosophical stance which is determined by how well it works in solving given problems (Morgan 2006). Consequently the research fits into a situation where there is a degree of mutual understanding between the participants in the research (including the researcher), but also at the same time with the colleagues who review the products of the research and adopts the appropriate theoretical concepts.

The final dualism of pragmatism is the distinction between knowledge that is either specific and context-dependant, or universal and generalised. The pragmatic approach rejects having to choose from one of the pair of extremes where research results are either completely specific to a particular context or an instance of some more or generalised set of principles. This concept of *transferability* is questioned by Lincoln and Guba (1985, p.297) “on whether the things learned in one context can be applied in another as an ‘empirical’ issue”? The answer is not in selecting methods and/or approaches that can make the results both context-bound and generalizable. The solution is in investigating the factors that affect whether the knowledge the researcher gains can be transferred to other settings taking the approach:

> “On what people can do with the knowledge they produce and not on abstract arguments about the possibility or impossibility of generalisations. Instead, we must always need to ask how much of our existing knowledge might be usable in a new set of circumstances, as well as what our warrant is for making any such claims” (Morgan 2007, p.72).

From this perspective, this research is concerned with not one extreme of a specific set of data analysis where findings are so unique that it has no implications for other settings, and neither are they so generalised that the findings can be applied in every possible early years learning settings. The important determinant is the extent to which “we can take the things that we learn with one type of method in one specific setting and make the most appropriate use of that knowledge in other circumstances” (Morgan 2007. p.72).

5.6. Limitations

Like all other philosophical epistemologies, pragmatism has also been criticised from two simple notions of ‘naive realism’ and ‘radical relativism’. Pragmatists are frequently criticised for their short sighted practical approaches which does not lend itself to any particular ideals and values. However, where positivism believes that inquiry is value-free, and where interpretivism believes that enquiry is value-bound, for pragmatists values play an important role in conducting research and interpreting results, and the researcher accepts external reality and is able to choose explanations that best produce the desired outcomes.

Pansiri (2005, p.1) takes the view that pragmatism is a vague ‘philosophy’ that should not be relied upon, particularly in terms of its validity and reliability. Guba (1990) and Burrell and Morgan (1979) suggest that the human mind can only work within one type of paradigm at any one time and that by using mixed approaches is an egregious act that cannot be entertained upon pain of death.

Unfortunately, this is quite a narrow frame of mind, and as Andrew Armitage (2005) shows:

> “Much of our work like that of the authors focuses upon the multiplicity and pluralism of the ‘real world’ which is occupies by ‘real problems’ that are possessed by ‘real people’ in ‘real situations’ and we content that is impossible to separate our lives as researchers into neat partitions that cannot be crossed in fear of being ‘reprimanded’ by those who occupy the esteemed high ground of the research undertaking” (p.6)

Humans are complex, and to accept the argument that the human mind cannot adjust itself to partitions of paradigms is not reasonable, and those “that oppose this view are privileging their knowledge in such a way as to suppress human creativity and thought” (Armitage 2005, p.6). Tashakkori and Teddlie (1998) suggest that it is more appropriate for the researcher in a particular study to think of the philosophy adopted as a continuum rather than opposite positions. They note that at some points the knower and the known must be interactive, while at others, one may more easily stand apart from what one is studying (Tashakkori and Teddlie 1998).

5.7. To Summarise

This research has adopted pragmatism as an immediate and useful middle position both philosophically and methodologically. Taking Guba and Lincoln’s view (1994) that having to choose between one position of paradigm and the other is not always realistic, and therefore to forcefully apply a stance only to justify its relevance in research would be *accommodating* the research design. Mende (2005, p.190) points out that research is “a process of producing new knowledge with researchers needing knowledge of different types of research processes and knowledge products”. Without an appropriate method of structuring this knowledge and a flexible way of devising a theoretical framework, Mende (2005) argues that researchers will find it difficult to operate effectively and produce reliable outcomes. By combining the dominant world views of positivism and interpretivism sequentially within the research process, the pragmatic philosophy was found to suit the research questions of this study, and provided an opportunity to investigate what is important to this research.

6. Research Methodology

> "You cannot claim to have no methodology. Those who so claim have nothing but a bad epistemology. Every description is based upon, or contains implicitly, a theory of how to describe" (Bateson 1977, p.84).

This study is set in the pragmatic paradigm and draws on both quantitative and qualitative approaches of methodologies. It is an action-oriented research (Carr and Kemmis 1986) in that its purpose is to develop a methodology to provide for an appropriate pedagogy whilst using new technology in an early years classroom. Two types of methodologies were employed in this research: Action Research and Piaget's Methodology. A total of thirty telephone interviews and nine preschools studies were conducted in this research.

Used extensively in early childhood studies (see Carr 2006), Action Research was initially selected as an appropriate research methodology to scope out the study and work alongside the early years practitioners. It was adopted into this research with the view that it,

> "....can be undertaken by the individual teacher, a group of teachers working together co-operatively within one school, or a teacher or teachers working alongside a researcher or researchers in a sustained relationship, possibly with other parties like advisers, university departments and sponsors (Whitehead 1986, p344).

Action Research is about researching with people involved to create, understand and study change in the research process. Within early childhood settings, it can produce changed ways of doing things and changed ways of understanding why we do what we do (MacNaughton 2001). In stage 1 of this research, Action Research was used to help unravel the current practices of pedagogy, when applied with technology in early years settings. Following from the results of stage 1 in an iterative research design process, Action Research was continued into stage 2 of this research to provide an understanding of what was happening, how to improve and/or make changes to current practices whilst using technology in the classrooms.

Stages 3 and 4 of this research then followed on with Piaget's Methodology. Piaget's Methodology follows a semi-structured diagnostic interview which typically involves face to face interaction and dialogue between the researcher and participants, in which the researcher asks the question and the participants offer verbal answers. This stage adopted the Communication and Collaboration early years dialetial approach (see Chapter 3) in developing an appropriate channel of communication, so as to afford for learning opportunities in co-constructing and creating joint interactions for possible learning solutions within the interview process. Stage 3 of the research design developed an inductive and qualitative approach of Piaget's Methodology, so as to determine an appropriate pedagogy and pedagogical strategies, based on the interpretations of the child's language and actions. Stage 4 looked to validate the applied pedagogy and pedagogical strategies, generated from the previous stages of the research process. The final stage also included Laever's Scales of Well-Being and Involvement Methodology, in determining the appropriate quality of care for young children within the planned learning environment, and the appropriateness of the dialogue between the participants, which took the form of a deductive and quantitative approach.

In determining a second methodology to develop from and complement Action Research, Piaget's Methodology was selected. Both methodologies are principally grounded in pragmatism and share common threads: Both these research methods:

- Adopt a natural feel to the settings and are concerned with the research processes occurring in a real or authentic setting.
- Are participatory where the researcher is, in one form or another, actively involved in the process of action and/or change.
- Include a cyclic/iterative process where in Action Research there is a continuous cycle of planning, action and reflection and in using Piaget's Interviews, there is an iterative process of refinement, action and reflection.

While there are similarities in the methodologies, adopting Piaget's approach in this study, also highlights an important distinction. Whereas Action Research epistemologically is closely aligned to interpretivism and places greater emphasis on social action and change, taking a subjective ontological stance of data collection and analysis, Piaget's Methodology is aligned along the lines of a positivist epistemology in providing for empirical evidence and for objectively developing and testing a theory.

> "The Piagetian Methodology emerges from the outset as an attempt to associate the three traditionally Western approaches that had hitherto remained separate: the empirical method of the experimental sciences, the hypothetico-deductive method of logico-mathematics and the historical-critical method of the historical sciences" (Munari 1985a, 1985b, cited in Munari 2000 (UNESCO), p.1).

As this study has adopted pragmatism, and has the flexibility to combine interpretivism and positivism epistemology, it is worth nothing that this study takes a firm stance in social constructivism as its ontological position. Most often Piaget is cited as a firm ontological constructivist in his work, where social cultural interactions (or social constructivism) have a limited role in developing children's developmental stages of intelligence, and the essential way of knowing the real world is not directly through our senses, but first and foremost through our material or mental actions (Sinclair 1990). Piaget identifies the development of intelligence in children through fixed stages, where he incited teachers to gear their teaching methods more effectively to the level of the operation attained by the pupil; by constructing individual knowledge and to continue *no further* unless the child has reached the appropriate stage of development.

However, in light of Piaget's *epistemological* approach in his interviews, he takes a different approach and suggests that teachers should take the view to becoming more "broadly aware of the *cultural contexts*" (Munari 2000, p.6); thus taking into account the various lines of progression and historical paths of development followed by the very concepts that they are setting out to study or to teach. Piaget's epistemological approach is particularly relevant in this research, as his Interview Methods theorise about the environment influences on development (Chapman 1988), whereby the child increasingly come to appreciate the divergent perspectives of others, and in which learning is facilitated through *social and intellectual exchange* (Mayer 2005, p.369). Complimenting the social constructivist philosophy put forward in this research, Piagets' epistemology supports the type of interaction between the teacher and the child, where the interviews are conducted in a process "of structuring or sudden restructuring, partially unpredictable, always temporary and unstable, of a complex network of relations and mental operations," (Munari 2000, p7), looking to result in a dialogue of language, in which there is a process of learning.

While Piaget's epistemology was interested in the ways in which social processes might promote intellectual development, as a researcher in his experiments his ontological developmental approach was primarily concerned with identifying the rigid 'structures' of learning that developed (Mayer 2005, p.370) through means of hypothesis and objective testing. In other words, while Piaget's constructive developmental approach places greater emphasis on the *psychology* of the child, and considers a stage to be a degree, a precise and necessary step in progression to the next developmental stage for the child, his *epistemological or philosophical* position is more concerned with "the need to develop all learning processes, as a description of metalanguage in which to talk about the very processes of learning (Munari 2000, p.6). It would, therefore, seem that Piaget's social, interpretive epistemology and objective, ontological views are in two opposite directions of each other.

While this research adopts Piaget's interpretive epistemological position, it also looked to *correct* Piaget's ontological approach to consider the 'subjective social processes' and implications in providing for construction of knowledge with young children. This study, therefore, *extends* Piaget's Methodology to take a form of social constructivism (Vygotsky 1978). It goes beyond just asking the child 'what do you think you are doing' to more detailed analysis of the interactions of the social interactions between the teacher and child, including behaviour, feelings and attitudes, which is particularly important when dealing with young children for a type of learning to take place, within the pre-school settings.

6.1. Method 1: Action Research Methodology

As its name suggests, Action Research concerns *actors* and their *actions* within the research process. It is about researching with people to" create and study change in and through their process" (MacNaughton 2001, p.208). Carr and Kemmis (1986) describe action research as being about:

- The improvement of practice;
- The improvement of the understanding of practice;
- The improvement of the situation in which the practice takes place.

This requires groups of participants to share individual research findings and question actions and purposes, whilst at the same time become critical as to why things are happening and how they happened, in order to drive the Action Research forward.

> "Action research is a form of collective self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situation in which these practices are carried out" (Kemmis & McTaggart, 1988, p.5).

The emphasis of Action Research, within this research, is that it is based on the study of a social situation with a view to improve the quality of action within it (Elliot 1991, p.69) and is concerned with developing practices in those settings. In this respect Action Research is seen as being an *interventionist* approach to achieving change, and one which is based around the experiences of actors in particular settings, which is participatory in aspiration.

The origins of Action Research are attributed to a range of different sources but Kurt Lewin is often identified as being the pioneer of this approach (Adleman 1993; Hopkins 1993). Developed by Stephen Kemmis, Action Research is a model of a cyclical nature that includes four steps of planning, acting, observing and reflecting.

> "[Action research is]…composed of a circle of planning, executing, and reconnaissance or fact finding for the purpose of evaluating the results of the second step, and preparing the rational basis for planning the third step, and for perhaps modifying again the overall plan" (Lewin 1946, p.38)

The first step of planning is considered more of a fact finding and analysis stage which enables action planning and a decision about the actions to be taken. These are then taken, and the action is evaluated (usually generated in cycle 1). Subsequent cycles then involve further planning, taking into account previous evaluations, planning further actions, taking these actions and evaluating (Saunders, Lewis and Thornhill 2007).

Action Research Cycles and Spirals Diagram:

Source: State of New South Wales, Department of Education and Training

Figure 5 - Action Research Cycles and Spiral Diagram

At its heart, Action Research involves the careful monitoring of planned changes in practice through a collaborative manner, and therefore, a decision to take an action may either yield improvements or provide information to direct or change the nature of the teaching situation (Whitehead 1985).

> "The action is thus used as a research tool. Both elements of action and research are of equal prominence in the approach. It can be thought of as:

research on action
by using
action as a tool for research"

(Waters-Adams 2006, p.1)

Although Action Research shares a number of perspectives with the interpretive paradigm, and makes considerable use of its qualitative methodologies, particularly in educational research, there are some researchers who feel that it takes neither the interpretive or positivist distinction and can go one way or another (Lather 1986; Morley 1991). However, "mostly though, in accordance with its principles, it is chosen when circumstances require flexibility, the involvement of the people in the research, or that change must take place quickly or holistically" (O'Brien 1998, p.1)'. By taking a focus on the processes of interactions between the teacher, participants and the children in this research, Action Research Methods adopted a qualitative stance and has a vested interest in the meanings, perspectives and understanding about how and why things are done the way they are.

Action Research was conducted in both the pre-pilot and pilot stages of this research. The main purpose of adopting Action Research in the two early stages of pre-pilot and pilot studies was to emphasise the purpose of this research, so as to gather information that is confirming, if not conclusive, and then to work alongside early childhood practitioners, in a collaborative experience, to provide for further understanding, and make changes. The following is outlined below.

6.1.1. Action Research Pre-Pilots

The pre-pilot study was used as a small scale version and trial run, to validate the literature gap in this study. Based on the literature evidence which shows that there is limited knowledge of what constitutes appropriate pedagogy whilst using technology with young children, the pre-pilot served as a pre-testing or 'investigation tool' in determining if this is still true. As a prelude to the start of the main research, a phone call interview was conducted with a random selection of thirty preschools based in the UK, each following the Early Years Foundation Stage Framework (EYFS). The preschools interviewed were not regionally defined, but served a basis for the beginnings of this study.

The responses from the pre-pilot phone interviews showed that practitioners believe they have a responsibility to encourage the balanced uses of technologies for the best interests of their children within their classrooms, yet it would seem that the majority of practitioners (28/30) still have a general lack of pedagogic understanding while using some of the new forms of technology in their settings. One of the advantages in conducting the pre-pilot study was that it provided a conceptual understanding of the role of technology in preschool education and showed the apparent widening gap between that of technology and pedagogy in the classroom settings. This was particularly important for this research, as much of the literature evidence was relatively dated and the responses from the practitioners worked as evidence in highlighting the need to progress with research in this area.

Much too often, there is the argument that pilot studies are likely to be 'underdiscussed, underused and underreported' (Prescott and Soeken 1989, p.60) but within the context of this research, the pre-pilot study was dominantly used to scope the research project. In the words of De Vaus "Do not take the risk. Pilot test first" (cited in Teijlingen and Hundley 2001, p.1). The pre-pilot study was based on the four steps of Action Research: planning (planning the telephone calls), acting (doing the telephone interviews), observing (noting the common theme or occurrences) and reflecting (using the data to identify the research gap and informing the design of the next cycle(s)). Each interview included a review session soon after the interview was terminated. This, in itself, constituted an Action Research cycle.

The pre-pilots adopted the use of a non-standardardized, semi-structured, open-ended qualitative interview questions in the research design. Conducting interviews was a good way to collect data as well as to gain knowledge from the individuals, where both the interviewer and the participants were able to talk about their views in addition to discussing and interpreting their perceptions of the questions. In this way, the interviews adopted an interpretivist position and regarded the pre-pilots as "an interchange of views between participants...and emphasised the social situated(ness) of the research data (Kvale 1996, p.14).

Cohen, Manion and Morrison (2007, p.267) explains:

> " … the interview is not simply concerned with collecting data about life: it is part of life itself, its human embeddedness is inescapable" (Cohen, Manion and Morrison 2000, p.267).

The pre-pilot study took the form of interpretative data analysis, seeking for opinions and establishing common responses by the early years practitioners. The telephone interview data included a combination of note taking and audio-recording. The results from the pre-pilots confirmed the hunch, as predicted prior to the commencement of the research. Although much of the literature research is dated for this thesis, the pre-pilots confirmed the lack of knowledge in this area of learning with new technology and highlighted a growing need for research investigation. This reflection of experience, supported by the existing literature evidence, helped formulate the formation of the next stage of analysis and investigation (Kolb 1984).

The results from the pre-pilots informed the next cycle in Action Research which demonstrated that there is an apparent gap in knowledge of what constitutes appropriate pedagogy, when using technology with young children, in early years settings. In the pilot study, more importance was dedicated to work closely with the practitioners in collecting data of their current situation and making sense of the information; even modifying the line of inquiry in response to developing understandings (Appendix 10, p. 212).

6.1.2. Action Research Pilots

The pilot stage continued with Action Research Methodology and was used in three further preschool settings. Following a similar format to that of the pre-pilots, the pilot stage consisted and emphasised the iterative nature of the process of planning (planning the process with the preschools practitioners), acting (implementing the changes), observing (understanding the implications of the changes), and reflecting (using the data to highlights areas of improvement and/or changes). Within this context, the role of the researcher developed from that of a telephone interviewer to a 'critical friend' (Waters-Adams 2006), not in terms of undermining practices or in criticising current approaches, but rather in facilitating a non-hierarchical and collaborative relationship within the research inquiry processes. As discussed with the practitioners involved, the main role of the researcher, in the pilot study, was to take time to facilitate dialogue and foster reflective analysis among the participants involved through means of discussion groups, reports and periodic updates. This was conducted in the iterative Action Research cycles of inquiry.

The Action Research iterative cycles progressed most effectively when the researcher, along with the early years practitioners, critically reflected upon findings, understanding, and practices in the process. Critical reflection can be viewed as the motor force that drives the research process – for when it stalls, the action research stalls (MacNaughton 2001, p.212). During the cyclic phase of reflection, both the researcher and practitioner's shared individual findings, questioned actions and purposes, whilst at the same time, was critical as to why things are happening, and how they happened, in order to drive the Action Research forward (Carr 2006).

This type of close interaction between the researcher and participants tied in with the Interpretivist epistemological view to establish the need to study the details of the situation, and to understand the reality of the working behind the participants; by studying what the teachers are doing, how they interact with the children, and what they find important in providing for appropriate pedagogy, while using technology in the classroom. The role of the researcher using Action Research in this study, took the role of '*participant as observer'* (Gill and Johnson 2002) where the researcher actively participated within the research process so as to gain the trust of the group, working alongside the participants, instead of concealing one's identity (as *'complete participant'* or '*complete observer'*).

> "Participants in an action research project are co-researchers. The principle of collaborative resource presupposes that each person's ideas are equally significant as potential resources for creating interpretive categories of analysis, negotiated among the participants" (Winter 1989).

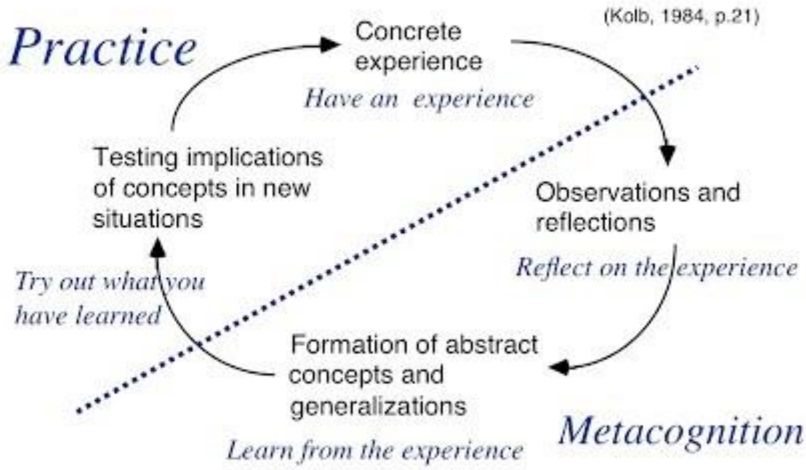
Two prominent types of data collection methods of direct observation and group discussions were used, along with field notes, tape recorders and video recorders which are typical 'characteristics of the qualitative approach' (Hachohen & Zimran 1999). The inductive approach of data collection and findings generated by Action Research cycles and spirals of the test pilots was useful in providing for the start of formulation of pedagogy and a development of understanding the nature of the problem within the context of the pre-school environment.

One of the core reasons for using Action Research Methodology within this research was to provide and understanding of the current ways of 'how' something is happening and what can be done to *better/or improve* the learning processes, while children were using the technology. Whilst initial pilot interviews with early years setting managers and/or supervisors suggests that childhood practitioners are already working with an approach of pedagogy, but are looking for further clarification in how to *better* progress of learning whilst using the technology, it was soon made clear that this is not always the case. During the early cycles of the research process, it was found that children were often exploring on the computer, with little or no pedagogic direction.

> "Children were found clicking on links leading to different programs and would only call on help from an adult if technical assistance was required" (See Appendix 11b and 12b).

The children were found to be playing on the computer and there was evidence to show that 'there was minimum activity' or there was 'very little in process' of children learning through technology, with the current pedagogic practices applied. Upon further reflection of practitioner involvement, it would seem that the early years practitioners felt that they lacked the appropriate knowledge and confidence in taking the lead for determining more suitable practices of pedagogy. The practitioners, therefore, requested the researcher to take a more ‘instructor based’ role, initiating ‘questions’, leading ‘the dialogue through the use of software’ and providing for ‘verbal and emotional gestures’ with the children, whilst they as practitioners, would stand nearby to make notes and observe. In making this change, there was a reversal of roles where the early years practitioner took more of an ‘observer role and the researcher adopted the role of a ‘researcher turned facilitator’.

Adopting Zull (2002) and Moon’s (1999) extended reflective practice, from the orgins of Kolb's experiential learning theory (1984), new found knowledge and learning comes from reflection in which there is the concept of having an experience and then reflection on that experience, through means of observations and understanding. Although this may be useful initially, deeper reflection results from the formation of the abstract concepts and in developing new practice to extend it further, by trying out what has been learned and in testing implications of the concepts in new situations.



Source: Moon 1999

Figure 6 – Extended Reflective Practice

In the same way, by reflecting upon the changes that were taking place within the research design, where the researcher adopted the role as the facilitator in pursuing onwards, this brought about a change in finding a suitable method to continue and progress. While this research was originally deemed as an Action Research Project, in which the Action Research Methodology is driven with the “desire to change practices in a collaborative manner with the teachers and people (practitioners) involved” (MacNaughton 2001, p.210), this was no longer feasible.

The Action Research Methodology helped to highlight the gap in providing an understanding about why and how something happens. The role of the researcher using Action Research is to ‘work alongside a teacher or teachers in a sustained relationship’ (Whitehead, 1986), where the researcher adopts an observer perspective and provides for analytic descriptions and/or reflections of the processes in which the participants are involved. However, as the role of the researcher changed to an active facilitator in leading enquiry and collaboration between the participants, the requirement to continue with Action Research Methodology was no longer possible. By demonstrating the events in which both the researcher and practitioner switched their instructive role, this process aligned itself closely to Piaget's methods of inquiry. As a result, this research continued with Piaget's Interview Methods, where the researcher was given the *flexibility and permission* to function as a facilitator, in preparing and conducting appropriate interviews with the participants in this research.

6.2. Method 2: Piaget's Methodology

> "Although there has been extensive discussion of Piaget's theory, relatively little attention has been given to his research methodology" (Duveen 2000, p.1).

Piaget's (1896 – 1980) Methodology has much in common with that used by psychiatrists in diagnostic interviews, which typically involves face-to-face interaction and active dialogue between the researcher and participant, where the researcher actively asks the questions and the participant offers verbal answers. In child development studies, Piaget's Methodology consists of Interviews and Teaching Experiments where the former is used to *guide questioning* to better understand the cognitive processes of the child's development and the latter *to investigate* what might be going on in the child's communication process to help develop and establish the dialogue.

Claparede points out that psychology might usefully support the work of those teachers willing to study one's pupils, and consequently, "research in cognitive development has been heavily influenced by Piaget's pioneering work, and as a result, interview methods have continued to figure prominently" (Claparede 1930, p.86, cited in Bond and Tryphon 1988). In his first book, *The Language and Thought of the Child* (Piaget 1926), the originality of the Piagetian clinical method in exploration of a child's thoughts resides in the methodological principle, where the flexibility and subtlety of the 'in-depth' interview needs to be modulated by the systematic search for the logico-mathematical processes underlying the reason of learning put forward" and the testing of its processes (Munari 2000).

This research adopted Piaget's Methodology as the interviews used with young children is similar to a conversation between children and adults, where the aim is for children to disclose as much as possible about their ways of thinking and the contents of what they know. Here, content refers to elements or materials of knowing, or the experience of events, activities, notions or ideas (Doverborg and Pramling 2000). This is a two-way exchange of dialogue which allows for the researcher to obtain information of the child's current level of knowledge and the gaps in which understanding can be provided.

Piaget's Methodology consists of two types of questioning approaches: Clinical and Non-Clinical approach (also known as the critical interview and semi-structured interview methods). The Clinical Interview includes interviewing children with the aim to encourage the child to talk *freely* about particular topics, without a standard set of questions involved. Clinical Interview questioning is based on the individual child's responses to previous questions. On the other hand, Piaget's Non-Clinical Interviews are more *structured* than the Clinical Interview in that the researcher follows a standard protocol and provides for rigid and controlled measures (Duveen 2000). One of the biggest criticisms of Piaget's Methodological Non-Clinical Interviews approach is that by adopting a structured interview, 'less opportunity to pursue lines of questioning that an individual child's answers suggest might be interesting' drawing upon constructionist assumptions.

> "This becomes even more difficult if the interview script is very rigid and it can be difficult to resolve the confusions that may arise if a child misunderstands a particular question and it can be difficult to make the sequence of questions flow naturally if a child gives an unexpected answer" (What-When-How.com, p.1)

This research adopted a semi-structured format of questions to interview and followed an inductive and qualitative approach. As this study is firmly embedded in the social constructivist position, it looked to extend Piaget's Interviews approach, where the researcher (turned facilitator) can provide for an 'extended' dialogue during the structured, questioning process. In the instance that the interview moves off course, the researcher (turned facilitator) can then steer the dialogue back to the interview questions, at an appropriate time, so as to continue with the research.

> "In practice, though, most interviewers aim to achieve an appropriate balance between consistency and flexibility, rather than adhering to an absolutely rigid script" (What-When-How.com, p.1)

By leaning more towards a social constructivist position, the interview is characterised by the following points as discussed by many researchers (Rubin and Rubin 2005, Bryman 2004; Gubrium and Holstein 2002):

- Using interviews with young children advocates the aim to understand the child's world from their own viewpoint.
- The researcher is not neutral and therefore not value free but actively involved in constructing meaning with the children.
- The nature of the interviews depends on the nature of the questions and the responses given.

In this way, knowledge is considered valid if it is authentic, that is, it is the true voice of the participants in the research. Taking this approach, this research focused on social constructivist knowledge which is more 'local' and 'specific' to the particular research project, conducted in particular circumstances and with particular participants (i.e., age dependant); thus, becoming valid within tight limits.

This study also adopted Piaget's Methodological Teaching Experiments approach, in the latter half of this research, to validate the application of the appropriate pedagogy (as developed throughout the research), when applied with the new technology. Piaget's Teaching Experiments are more experimental in nature and follow a controlled and 'contemporary experimental psychology' setting. They are more readily compatible with the research paradigms, methods of statistical analysis, and scientific reporting styles that are dominant in the positivism epistemology. The emphasis therefore is often on producing quantifiable observations and making gross generalisations in order to facilitate replication (Gill and Johnson 2002) within a research. This type of positivist objective position is opposite to the interpretivist social constructive epistemological design highlighted in Piaget's Interviews.

As this study follows the pragmatist epistemology and can afford to combine both methodologies of qualitative and quantitative design, what is of more relevance is the pragmatic paradigm which places the research problem as central, and applies all approaches to understanding the problem (Creswell 2003, p.11). This research is not solely aimed at gathering a selection of studies from which generalisations can be made, but as Yin (1989) indicates, more as an attempt to replicate and validate an 'experimental' design. Therefore, by using Piaget's Teaching Experiments, and adopting a positivist approach, this research looked to validate *knowledge* by seeking to *replicate* it (Hughes 2005, p.33). This study is further extended and concluded by the use of Laever's Well-Being and Involvement Methodological Scales, which were used in determining whether the pedagogy applied with young children can provide for the quality of well-being, within a new constructued form of learning environment as well as provide for the involvement with young children, through the appropriateness of dialectical inquiry between the participants.

6.2.1. Piaget's Non-Clinical Interviews

> "The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly" (Ausubel 1968, p.18).

This research used Piaget's Non-Clinical Interviews (instead of Clinical Interviews), using a semi-structured format of questions, for the following two reasons:

- Often, Piaget's Clinical Interviews are conducted by teachers and/or practitioners who are currently in professional practice within childhood settings (Doverborg and Pramling 2000) and who have a good understanding of the child's thinking processes and of the child's current level of knowledge, upon which to understand the child's responses and provide for feedback in determining what constitutes as an appropriate or non-appropriate response. As this research during this stage was mainly researcher led, who functioned as the facilitator in using the Clinical Interview Approach, the researcher would require 'high levels of skills, sensitivity and experience in interpreting children's responses to the point that Piaget recommends at least a year of 'daily practice' before passing beyond the inevitable fumbling stage of the beginner (Donaldson 2005; Piaget 1926, p.8-9). Realistically, this was not a feasible option for the researcher and one too risky with high expectations.

- The heavy reliance on my skill and intuitions, as a researcher with limited experience, of which the variations of forms within the interview itself can raise major concerns about generalizability and replicability of findings (Duveen 2000). Piaget (1929) emphasises that in conducting Clinical Interviews, the researcher needs to steer a middle course to avoid dangers of "...systematisation due to preconceived ideas and incoherence due to the absence of any directing hypothesis" (p.9). In other words, the researcher has to try to avoid leading the child in a particular direction through suggestions, while at the same time making the most of the opportunities to formulate and test hypotheses about the nature of the child understands. Throughout the interview, one must be sensitive to the *suggestibility* which can easily develop in an interview situation (Doverborg and Pramling 2000). Children are used to accommodating their words to those of an adult and a less experienced researcher can easily fall into this trap if they are not familiar or have been trained in the 'sensitivity' of interviewing children.

  Reflecting on this, although I have my own children and have vast experiences in extracting information out from young children, there is still an element of risk involved with my role as the facilitator in designing the clinical interview with the children, particularly in instances where I may be biased towards the the questions and the answers to expect.

For these reasons, this study adopted Piaget's Non-Clinical Interviews, in another three preschool settings, where it took a semi-structured format of questions to interview and followed an inductive and qualitative approach of asking questions "based on current interpretations of the child's language and actions to create critical questions to ask and the types of learning to encourage" (Steffe 1991, p.177). In allowing for this research to adopt the social constructivist position, the Non-Clinical approach of questioning is 'extended' to allow for extension of free-flow dialogue to take place between the adult and child, where the researcher can bring the child back into the research and guide the conversation onto the next question and so on; althought still having a semi-structured format in place.

This type of free-flow and yet guided conversation is reflective of the Vygotskian early years philosophical perspective which encourages for learning to occur first and foremost on a social plane, before it is internatlised and made sense by the learner. It expands on the theory of constructivism put forward by Piaget (1973) where young children have the potential to construct meaning from prior understandings and meaning with the added emphasis of learning in a more social, cultural and history context, and which is the by product of interactions with the practitioners and peers (even though there are not deliberate attempts to provide for interactions).

This type of learning potentially can be reflective of the Communication and Collaboration approach (Siraj-Blatchford, I., 2007)(see Chapter 3) , which takes a view similar to Vygotsky's work (1978), and one which is more interested in using language for interactions as the driving force behind cognitive development. In attempting for learning to take place, the child must be found to be actively involved in the process, within a safe and healthy environment, and there is to be mutuality between learner and practitioner, where collaboration and *negotiation* is possible, despite the asymmetrical nature of the relationship (Bruner 1996). For developing effective Piaget Non-Clinical Interviews, the role of collaboration is potentially very influential so as to provide for opportunities for the co-construction and joint interactions of possible solutions in the learning process; in which the more experienced peer or practitioner and the child can learn together and construct new knowledge (Doise and Mugny 1984).

The Non-Clinical Interviews involve the interviewer (researcher turned facilitator), an observer (the practitioner), and the children selected for the research. The purpose of the early childhood practitioner in these interviews is to provide familiarity for the child, help the interviewer (researcher turned facilitator) to understand the student's responses, and provides for feedback in determining what constitutes a good response and/or a spontaneous, non-informative response. The Non- Clinical Interview worked as an instrument for stimulating the thinking ability and learning development of children. Donaldson (2005) states that children who have often dealt with interview questions of the type which compel the child to describe or elucidate something, questions like "what does this mean?" can see their own role in the communication situation. Therefore, in order to develop a method of learning as to how and what children think, one must place them in situations where they need to think (Doverborg and Pramling 2000). While the children, in this study, are old enough to use and understand language reasonably proficiently, the Non-Clinical Interview included both verbal and non-verbal activities.

> "Clinical Interviews provide details of how students currently understand a particular concept. They reveal areas where students are confused, but cannot reveal how best to create a change in student's thinking, as this would violate the rule that one should not teach during the interview" (Engelhardt et al., 2003-2004, p.4).

This is the core essence of Piaget's Non-Clinical Interviews so that when adults include children in a thinking process, "the children begin to think about things which they had not reflected on before" (Doverborg and Pramling 2000, p.10). While it soon became apparent that the Communication and Collaboration early years pedagogy was the most appropriate type of instructional approach to use with young children, there was still the growing concern that a well constructed, semi-structured interview is still not sufficient. The Communication and Collaboration approach was found to be highly effective in providing for interaction and connection between the participants, but along with the more appropriate pedagogical strategies of Open Questioning, Modelling, Prompting, Probing and Showing Genuine Interest, areas of phonetic learning, particularly of *Letters and Sounds*, was found to extend learing and become more effective.

This type of reflective practice perhaps would have gone unnoticied if I, as the facilitator, did not conduct the interiews, for it is more common practice and almost second nature to effective practitioner practice, and would not have been made explicit during the observations. As Houle (1980) suggests it is new knowledge "…that occurs as a direct participation in the event of life" (p. 221). It is through learning and reflection that new knowledge is achieved in everyday experiences and it is through this way that most of us do our learning in forms of senses and primary experiences (Jarvis 1995).

These findings from the interviews between the researcher (turned facilitator) and the young children provided for further development of an appropriate pedagogical strategies, when used in phonetic enriched technology. Piaget's Non-Clinical Interviews were then followed by Piaget's Teaching Experiments to "unite what is most expedient in the methods of test and or direct observation" (Piaget, 1926 p.7). The last stage of this study looked to validate the appropriateness of the pedagogy and took the form of a more deductive and quantitative approach.

6.2.2. Piaget's Teaching Experiments

> "Piaget's Teaching Experiments mimic more closely the actual classroom environment "and one can discover whether a possible technique will produce a change and follow that change" (Engelhardt et al., 2003 – 2004, p.4).

A distinguishing characteristic of the Teaching Experiment is that the researcher can act as the teacher (i.e. facilitator) (Steffe 1991, p.177) in providing for guidance to his/her peers and/or children. The Teaching Experiments are conducted in more controlled measures, where the researcher takes the role as an observer, having transferred knowledge over to the practitioner, and takes more of a back seat to provide for an objective view of the interactions that occur during the teaching episode [i.e. between the early childhood practitioner and children].

In this research design, with a further three preschools, the researcher initially takes the role as the facilitator to demonstrate the appropriate pedagogical strategies applied with technology, and transfers this knowledge over to the early years practitioner, so that the he/she can take the form of a more 'knowledgeable' partner in scaffolding learning with the young children. Based on current interpretation of the child's language and actions, the practitioner can make decisions concerning situations to create, critical questions to ask, and the type of learning to encourage (Steffe 1991, p.177). These on-the-spot decisions represent a major modus operandi in Teaching Experiments and early years practitioner(s) have the responsibility for making them.

> "Children's thoughts can be distinguished not only by the interests which guide it and by its means of expression, but also by its logical structure and method of functioning" (Piaget, 1924/1972, p.199).

The Teaching Experiment is purely an exploratory tool (Steffe 1991), derived from Piaget's Interviews, and is aimed at investigating what might be going on in the children's minds during the communication process. These processes, applied within the research, typically involved formulating and testing hypotheses about aspects of the child's learning capacity in order to learn what the child already knows and how much further knowledge can be produced. By applying the appropriate pedagogy and strategies, the formulation and tests of hypothesis can be used by the practitioner to stretch the child to the limits of his or her conceptual adaptability and endurance (Cobb and Steffe 1983)

> "It is my belief that the researcher (and teacher) can best formulate and test hypothesis and interpret the results of the tests in intense interactive communication with the child (so that a close personal and trusting relationship can be formed)" (Steffe 1991, p.178).

Piaget's Teaching Experiments were helpful in determining the gaps of knowledge in the practitioner's instructive style. While it would seem that the transference of the theoretical knowledge in delivering the appropriate pedagogy and pedagogical qualities may have been sufficient and self-explanatory in some cases, further areas of becoming familiar with technology, a general lack of technical skills and confidence in using technology quickly became apparent with the practitioners. Although not originally intended, the researcher took an active role in demonstrating some instructive sessions prior to the practitioner leading the sessions with the young children. Kolb (1984) identifies experiences translated through reflections in concepts and highlights conditions under which learners can learn better; one such as learners as divergers, who learn better when allowed to observe and collect a wide range of information. This helped in shaping some of the outcomes that came out of the research.

Piaget's Teaching Experiments were used to validate the appropriate pedagogy and pedagogical strategies that can be applied, when using technology with young children in their classrooms. In determining whether this appropriate pedagogy can provide for the quality of well-being and involvement, with children in their early years, a further evaluation of Laever's Well-Being and Involvement scales of Methodology were conducted.

6.3. Method 3: Laever's Scales of Well-Being and Involvement

Arising from the educational model of Experiential Education (EXE), Laever's instrumental scales of Well-Being and Involvement were used to focus attention on the immediate context of education where:

> "It points to the missing link: the concept that helps us to sense if what we are doing (context) is leading to somewhere (the outcome) through 'quality of care' and 'involvement' measures" (Laever's May 1992, p.1).

In determining what constitutes as quality in care and involvement in education, there are two approaches. One approach is to focus on the educational context and the teacher's actions, taking into consideration the infrastructure, setting, equipment within the content of the activities and teaching methods. Another is to search for the indicator of quality of teaching and/or instructional practices. Central to both these processes is to be able to make assessments of the outcomes and to check if the desirable goals are met. Laever's indicators of well-being and involvement of the child point to the processes of quality (OECD 2004, p.5):

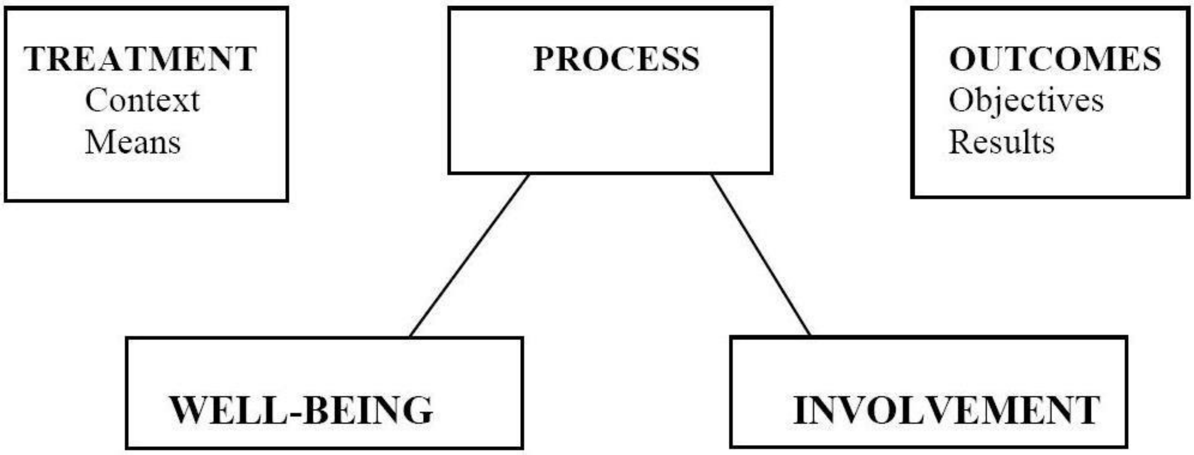


Figure 7 - Laever's Indicators of Well-Being and Involvement

The Laever's tool focuses on two central indicators of quality in early years provision: children's 'Well-Being' and 'Involvement' where (Plymouth City Council 2011, p.2):

1) Well-being refers to feeling at ease, being spontaneous and free of emotional tensions and is crucial to good 'mental health'. Well-being is linked to self-confidence, a good degree of self-esteem and resilience;

2) Involvement refers to being intensely engaged in activities and is considered to be a necessary condition for deep level learning and development"

The paradigm associated with Laever's scales are 'holistic' in nature in the sense that assessments are based in real life circumstances, by using observations of naturalistic inquiry. By using observations in more controlled inquiry, (Stein 2006; Griffeth, Hom and Gaertner 2000; Parker, Chimel, Wall 1997), 'it can (also) aid in assessing the quality of an educational setting' (Laever's 1997).

> "The intention is to make a close, moment by moment description of what it means to a young child to live and take part in an educational setting" (OECD, March 2004, p.5).

This stage used Laever's five point scale to measure both well-being and involvement. If there is a consistent low level of well-being and/or involvement, it is suggested that the child's development is actually being threatened. The higher the levels of well-being and involvement, the more that can be achieved for the child, and therefore, the more we can add to the child's learning and development environment. In assessing the children, the procedure included 'scanning' a child every two minutes to provide a score for both their well-being and involvement using the five point scale, where 5 is extremely high and 1 is extremely low (see Appendix 23 for details of scale measurement). All three preschools in the final stage of this research, were not only voiced recorded, but also videotaped, so that the researcher can re-play the episode if any of the two minute intervals have been missed, and for re-verification purposes.

The purpose of the analysis of the scales is to form the basis for the *pedagogic interventions* toward individual children and toward the general context of the practitioner's instructive approaches. As the researcher was heavily involved in developing the appropriate pedagogy and pedagogical strategies in the second half of this research, the concept of using Leaver's scales is highly important to the research design. In transferring new knowledge of the appropriate pedagogy to the practitioners, within the stage of Piaget's Teaching Experiments, Leaver's methodological scales of measurement are significant and necessary, in determining the quality of the learning setting and the appropriateness of the proposed pedagogic instructional style (Leaver 1997). John Dewey (1933, p.3) states that "we do not learn from experience … rather we learn from reflecting on experience" and as the practitioners gained more experience from their interviews, they were able to reflect on the knowledge transfer and co-construction of knowledge between themselves and the children about what works and what does not, as well as how to extend and support learning development from the child's zone of proximal development (ZPD) (Vygotsky 1978).

In the EXE theoretical model (Leavers 1994), more attention is paid to the effects for outcomes of education where the concept of deep, rich learning is highly valued and expresses the concern for a critical approach to educational evaluation. Central to this is the questioning of superficial learning, learning that does not affect the basic competencies of the child, and which has little transfer to real life situations (OECD 2004, p.7). Laever's methodological scales were used primarily in aid of planning for a meaningful and relevant form of learning within curriculum, particularly from the perspective of the learner, by taking into consideration two key factors of well-being and involvement, within a planned learning setting and in improving the outcomes for all children (Laever 2011).

6.4. To Summarise

This study embraced the pragmatic paradigm and is firmly embedded in the social constructivist position. This research followed an inductive-inductive-inductive-deductive approach and included both qualitative and quantitative methodologies. It is conducted in a four stage process where the first and second stage of pre-pilots and pilots employed Action Research, while the third and fourth stage embraced Piaget's Methodology.

Action Research was first used to conduct a pre-pilot study, via a telephone interview in thirty preschools, to serve as an investigating tool in determining the current practices of pedagogy, when applied with technology, in early years settings. The findings from the pre-pilots confirmed the gap in the literature, which showed that there is an apparent lack of knowledge in this area for early childhood practitioners. As a result, the next stage of pilots, conducted in three pre-school settings, continued with Action Research in order to understand current pedagogic practices and to provide an understanding of how to improve and/or make changes whilst using technology with young children. The findings from the pilot showed that practitioners felt that they lack both confidence and knowledge in determining what constitutes an appropriate pedagogy and were still unclear how to improve the children's learning processes. The practitioners requested for a role reversal; where the researcher turned into an active facilitator and the early childhood practitioner into an observer.

As the nature of the study and processes of role reversal between that of the researcher and early childhood practitioner aligned itself closer to the practicalities of Piaget's Methodology, this research continued to develop with Piaget's Non-Clinical Interviews and Teaching Experiments. Piaget's Non-Clinical Interviews, using a semi-structured format of questions, was conducted in a further three preschool settings. The application of the Communication and Collaboration dialetical pedagogy and pedagogical strategies (Sustained Shared Thinking), whilst using technology with young children, developed from the findings from the interviews. This new knowledge was transferred to the early childhood practitioners, and tested in three further preschool settings, through the means of Piaget's Teaching Experiments. Piaget's Teaching Experiments were used to validate the appropriate pedagogy and pedagogical strategies that can be applied, when using technology with young children in their classrooms.

In determining whether this appropriate pedagogic approach can provide for the quality of well-being and involvement, within a planned learning setting and interaction between the participants, a further evaluation of Laever's scales of Well-Being and Involvement were used. This was demonstrated in the last three preschool settings. In total, thirty telephone interviews and nine preschools studies were conducted in this research.

7. Research Design

> "Methods are like the kaleidoscope – depending on how they are approached, held, and acted toward, different observations will be revealed. This is not to imply that reality has the shifting qualities of the coloured prism, but that it too is an object that moves and that will not permit one interpretation to be stamped upon it" (Denzin 1970, p.298–9).

The two previous chapters show that this study has adopted the research philosophy of pragmatism. Being able to combine the world views of interpretivism and positivism, the pragmatic philosophy is found to suit the research questions for this study and allows for a combination of both qualitative and quantitative approaches. Action Research and Piaget Methodology have been used and include both inductive and deductive strategies.

This chapter focuses on the final details of the research design; including that of data collection and data techniques. It demonstrates the various uses of Methodological Triangulation, taking the form of Telephone Interviews, Face to Face Interviews, Piaget's Interviews and both Participant and Structured Observations, as the leading data collection techniques, for the various stages in this research. It extends into making valid the credibility of research findings through methods of Data Triangulation using audio recording, video, and note taking. It discusses both qualitative and quantitative truth values, in terms of reliability and validity, along with forms of bias and generalisability.

This chapter also takes into consideration the sampling population of participants, the physical arrangements and settings of the research process, and ethical considerations with interviewing participants in research. As this research is mainly centered on young children, it pays close attention to the ethical issues while working with them, and discusses the various areas of concerns and the ways to overcome them. The chapter concludes in discussing the selection of the learning software for this research, and outlines the following reasons for doing so.

7.1. Data Collection and Techniques

Triangulation is a component of research emphasized by Stake (2005) as being imperative to maintaining validity and reliability in research. He states that "as researchers we do not want to be inaccurate and caught without confirmation" (p.453). Therefore, the uses of multiple perceptions are sometimes required to clarify meaning and demonstrate the multiple realities as they are. Triangulation is a powerful way of demonstrating concurrent validity, particularly in qualitative research (Cambell and Fiske 1959) and a researcher needs to be confident that the data which is generated is not simply just artefacts of one specific method of collection (Lin 1976). There are two main types of triangulation of which Data Triangulation (the use of a variety of data sources in this study i.e. video, recorders, notes etc.) and Methodological Triangulation (the use of multiple methods to study a single problem i.e. interviews, observations) are relevant for this study (Denzin 1978).

Although it would seem that triangulation can help to reduce researcher bias or provide clarity of the particular problem being investigated, triangulation is not without its critics. Silver (1985 in Cohen et al., 2007) suggests that the notion of triangulation is positivistic, and that this is exposed most whilst using data triangulation, as it is presumed that a multiple data source is superior to that of a single data source (i.e., use of video and tape recorders instead of one or the other). Patton

(1980) suggests that even having multiple data sources of qualitative data does not ensure consistency or replication, and Fielding and Fielding (1986) holds that methodological triangulation does not necessarily increase validity, reduce bias, or bring objectivity to research. Nevertheless, it would seem that no two theories will ever yield a sufficiently complete explanation of the phenomena being investigated (Denzin 1997). The use of triangular techniques can *only help* to overcome the problem of 'method boundedness'. Gorard and Taylor (2004) demonstrates the value of combining qualitative and quantitative methods where it can utilise either normative or interpretive measures and/or it can call on both of these methods and use them in combination (Cohen, Manion and Morrison 2007, p.142). This research, therefore, adopts methodological and data triangulation techniques, using both interviews and observations, as well as use of video cameras and tape recorders, for providing evidence of validity and reliability in data collection.

7.2. Semi-Structured Interviews

Defined by Kahn and Cannell (1957), an interview is a purposeful discussion between two or more people which can help gather valid and reliable data that is relevant to the research questions in a study.

> " … the interview is not simply concerned with collecting data about life: it is part of life itself, its human embeddedness is inescapable" (Cohen, Manion and Morrison 2000, p.267).

This study adopted the use of a non-standardardised, semi-structured, open-ended qualitative interview questions in the research design. In the first stage of pre-pilots in this research, the use of telephone interviews were used as an 'investigating tool' to help scope the research project. Following the outcomes from the telephone interviews, the second stage continued with face to face interviews with early childhood practitioners, in order to further explore and investigate the underlying issues for determining an appropriate pedagogy, whilst using technology in classrooms. The third and fourth stage of this research adopted Piaget's Interviews and Teaching Experiments which were used with young children as a type of communication and/or dialogue between the researcher and the child.

This research found that conducting interviews is a good way to collect data as well as to gain knowledge from the individuals, where both the interviewer and the participants were able to talk about their views, while discussing and interpreting their perceptions of the questions. These types of interviews do not necessarily follow a specific set format and the order of questioning in this study is often varied and depended on the flow of the conversation between the interviewer and interviewee. As a result, the nature of the responses often included additional questioning (or probing) to help explore information around the research question (King 2004).

7.2.1. Telephone Interviews

> "A main benefit of telephone interviewing is that it enables for data to be collected from geographically scattered samples more cheaply and quickly than field interviewing" (Thomas and Purdon 1994).

The pre-pilots in this study embraced the use of telephone interviews and worked as a suitable method of contact for busy practitioners and/or nursery managers. By adopting the telephone interview method, it enabled the researcher to contact hard to reach individuals/groups; taking into consideration financial implications for the researcher, location, time and availability of the participants involved (James 2007).

However, the telephone interview approach was not always successful. If in the first few minutes of the telephone call, the participant is not motivated to take part in the interview, it is very easy for the participants to simply hang up on the caller. In this research, there was a number occasions that this took place for the simple reason that ‘there was simple not enough time to have a chat’. In the context of this response, and after much trial and error, the following introductory approach was found to be most effective (Burke and Miller 2001, p.3): introducing oneself, identifying the sponsor of this study, providing information on the general topic of this study, offering no more than 10 minutes of their time, explaining how the information will be used, establishing informed consent prior to the start of the semi-structured interview and relaying the confidentiality of their responses.

As the telephone interviews in this study adopted an interpretivist stance of “an interchange of views between participants” (Kvale 1996, p.14) and was confirming the validity of the research protocol, it was necessary to avoid misleading the interviewees, when looking out for recurrent themes and/or relevant data. In collecting the data for determining the gap of research in this study, it was paramount for the interviewer “to read out the (relevant) question exactly as written and in the same tone of voice so that no bias is included” (Saunders, Lewis and Thornhill 2007, p.320).

Within this context, the same question was posed in every telephone interview:

> “What do you think is the most effective pedagogic way (teaching method) for encouraging the use of new technology in learning and development with young children?” (Appendix 10)

Obtaining an answer to this question was not always straight forward. Through trial and error, this research found that more probing and prompting, and in some cases further clarification was required, in order for the participants to provide a response. This was particularly helpful due to the nature of telephone interviews, where social cues such as, body language and facial expressions are missing. In order to avoid the scenario where the “respondent dries up” (Cohen, Manion and Morrision 2004, p.440) on the telephone, the researcher employed techniques of prompting and probing, light hearted humour and provided for clarity, to help the participant answer the question.

The nature of the relevance of the question and the interviewee’s response meant that the telephone interviews data included a combination of note taking and audio-recording. Although note-taking was useful in jotting down further probing questions and possible new information, the audio recorded version was what was used to retrieve the exact answer for the question stated above. The response data achieved through the telephone interviews was recorded and locked into storage, with only the relevant people (i.e. the Bournemouth University and supervisors) having access to the data. The findings from the pre-pilots highlighted a significant lack of knowledge in determining an appropriate pedagogy whilst using technology with young children in this area, and the outcome from the pre-pilots was used to develop the required protocol for the research.

7.2.2. Face to Face Interviews

Face to face interviews have long been the dominant interview technique in the field of qualitative research. They allow for personal communication between participants of which it makes possible to gather more in-depth information in research (Opdenakker 2006). Having determined the gap of knowledge from the telephone interviews used in stage 1 of this study, stage 2 of this research adopted face to face, semi-structured interviews, with the early years practitioners in the pilot study. While the findings from stage 1 were helpful in "exploring what is happening and why" (Robson 2005, pg. 59), the face to face interviews conducted in stage 2 were looking to "seek new insights" and to "understand the relationship between the variables" (Saunders, Lewis and Thronhill 2007). Following the qualitative, interpretivist epistemology adopted by this study, the face to face interviews were found to be potentially valuable and useful in undertaking a strategy to be employed for the continuum of the research project.

The face to face interviews in the pilot stage, between the researcher and the early childhood practitioners, were conducted prior to and shortly after the research; the latter intentionally planned so that the information was still fresh for the practitioner and to avoid for loss of information in time delay. Whereas the semi-structured interviews prior to the research helped in establishing the scene and obtaining valuable data of the early years settings, the post research face to face interviews highlighted the research gap and brought into focus other shortcomings for progressive research work (leading onto stage 3 and 4). These interviews were conducted in the early years classrooms so as to provide for a less formal interview environment and so that the practitioner may feel less self-conscious and/or put "on the spot". The interviews lasted no longer than thirty minutes in which "expectations have (had) been clearly established about the length of time required" (Cohen, Manion and Morrision 2011, p.325).

One of the biggest advantages for face to face interviews is the benefit of social cues which "can give the interviewer a lot of extra information that can be added to the verbal answer on a question" (Opdenakker 2006, p.2). In this research, the use of social cues, mainly of voice consistency, facial expression, intonation and body language from the participants, was particularly helpful in clarifying the interview responses and for finding opportunity in probing deeper to follow up on new ideas. With the help of a less formal interview environment and social visibility, there was also less significant time delay between the question and the answers from the participants. This allowed for the interview to flow smoothly from one question to the next.

Although semi-structured interviews are fairly flexible, there is no such thing as a "totally un-structured interview, for even the informal interviews are structured by the researcher's desire to clarify some aspect of a setting" (Fox 2009, p. 17). The key in semi-structured interviews is to permit sufficient flexibility in structure, so that it is possible to respond quickly to what is *important* in the interview, asking questions in relation to what is heard and not only from what is written in the interviewer's sheet. The following suggestions were adopted in conducting the interview:

(Mathers, Fox and Hun 2002, p.11)

- Don't interrupt; let informants finish their train of thought;
- Follow up leads, i.e. respond to answers given where some answers will lead onto the next question;

- Work with open-questions rather than more closed yes/no type of questions;
- Use reflective comments which give the respondent permission to continue to discuss and consider a particular topic.

In preparing the introductory interview, general questions relating to the early years setting, technology and practitioner experience were explored (see Appendix 11a and 12a). In preparing the follow up interviews with the early childhood practitioners, the following three qualitative themes were adopted: description of the experience, details of the experience, and reflection of the experience (see Appendix 11c, 12c and 16). With prior permission from the practitioners and similar to the telephone interviews, the face to face interviews in the pilot stage (stage 2) were both recorded in note form and tape recorded. Upon completion of the interview, contact details were exchanged which added some credibility to the study and enabled the participant to make contact and/or check the status of the study.

7.2.3. Piaget's Interviews

> "The use of Interviews in early childhood research allows for researcher to explore the meanings that lie behind observed behaviour" (Edwards 2001, p.131).

The approach of interviewing children is to provide a means for the child to provide for responses within which they can speak freely, and to provide autonomy to the researcher to ask questions as appropriate, in which the analysis of data will look to formulate a theory of what works and what does not. One of the reasons why interviewing children at such an early age has recently become acceptable as a research tool is that the very concept of childhood has changed in the western world (Brooker 2000, p.162). Following are the characteristics of childhood (James and Prout 1997):

- Childhood is seen as a distinct and intrinsically interesting and important phase in human experience, valued for its own unique qualities rather than for its resemblance to adulthood;
- Children are viewed, therefore as fully formed and complete individuals with a perspective of their own, rather than as partially-developed, incomplete formed adults.

Two complimentary principles underlie this recent change in attitude: a belief in children's *rights* (including the right to be heard, to participate, to have control of their lives) and a belief in children's *competence* to understand, to reflect, and to give accurate and appropriate responses (Edwards 2001). Whilst both these principles are suited for interviewing and communicating with young children in research, this study is mainly concerned with the latter belief in providing for suitable responses to develop an appropriate pedagogy when using new technology.

The views that children make inadequate and unreliable respondents have proved to be a methodological obstacle until recently. As David Gauntlett reports "in the past, interviewing children, especially young children, has been seen as a very flawed research method" (1992, p.208). According to Breakwell et al., (1995, p.236-7) using standard methods of texts in interview techniques have highlighted children's limitations as respondents as they are prone to an 'acquiescence response bias' and are more inclined to answer 'don't know', are 'easily distressed', 'over-literal' in interpreting the wording or questions, are 'ego-centric' and/or are ignorant of the ground rules underpinning the interview situation".

Nevertheless, recent research using interviews as methods are found to be reliable and informative when using children as participants. Spencer and Flin (1990) suggest that there is every reason to believe that even the youngest children can recall and describe situations and/or events as older witnesses (in the case of evidence in criminal cases). What is of more concern is that although it is plausible that a child's frame of reference can be egocentric and that their interpretation of cause and effect is primarily self-centred, the main problem lies with the adult where, "the real danger of egocentrism may be the egocentricity of the adult who is unable to appreciate fully the child's perspective of an interview" (1990, p.252).

Piaget (1926), in use with his interviews, observed that the trick was to let the child talk freely, without ever checking or side-tracking his utterance. Piaget stresses that the answers offered by the children are far less important than the 'verbal justifications' given for those answers and these answer reflect the child's current stage of knowledge. Studies indicate that the common sense observation of anyone working with young children will show that children's utterances are better in every way (longer, clearer, more complex, and more thoughtful) when the children are in a familiar environment and with familiar adults (Wood and Wood 1983).

> "Verbal communication is the most common instructional method in use with young children and therefore, all knowledge through this method should be collected and recorded" (Doverborg and Pramling 2000, p.12).

Although some researchers report children's pleasure in being invited to take part in interviews (Brooker 2001), The British Psychological Society (BRIS 2010) warns that children may perceive interviews as some kind of reprimand, and need to have their role, and their right to withdraw made explicit. This research therefore adopts the method of 'freedom of choice' (Evans and Fuller 1996) where children can enter voluntarily, as part of their play in their classroom setting. The use of the semi-structured interviews will look to operate in as much of the child's natural settings, within the early years classroom settings so as to provide for as much familiarity and consistency for the young child, and less of an intrusion (Hayes 1980 cited in Cohen, Mansion and Morrison 2011).

For this research, a semi-structured interview was decided upon with the young children. Extended by the rational of valuing open-questions taken by the social cultural stance in this study, the interviews also provide for flexibility, in allowing for extended dialogue and communication with the participants involved. Kvale (1996, p. 147) suggests that the interviewer will need to establish an appropriate atmosphere such that the participant can feel secure to talk freely, Yet, Tuckman (1972) advises that the interviewer may have to steer respondents if they are rambling off the point, without being impolite, but by repeating the question or re-iterating the theme.

> "Non-clinical interviews lay somewhat closer to psychometric (experimental) tests than clinical interviews do because they use a more structured and predetermined schedule of questions" (What-When-How.com, p.1).

7.3. Participant and Structured Observations

> "Perhaps the most famous research (and the most important for educationalists) was Jean Piaget's observations of his own children, which was to lay the foundations of our understanding of children's development" (Newby 2010, p.61)

Observation has long been used as a conventional way to describe the learning processes in children of their early years (Doverborg and Pramling 2000) and Piaget's Methodology concentrates on the qualitative use of the naturalistic observations of children which can be seen as a striking demonstration of the power of systematic use of qualitative data (Duveen 2000).

The notion of Piaget's 'naturalistic' observation is in contrast to the more contemporary uses of natural observation used in research today. Presently, used as a research tool, the participant is observed in their original surroundings without any manipulation by the observer. Therefore, in the context of natural observation, the environment is in no way being manipulated by the observer nor is it created by the observer and set within the child's natural environments. Piaget's observation methods, however, do not necessarily fall within this paradigm. He develops a combination of 'naturalistic observation' tainted with 'interviewing' in his book of *Judgement and Reasoning in the Child (*Piaget 1929), where a child's intellect and curiosity is tested with questions and close monitoring, after which a hypothesis is developed to validate. (Mayer 2005). Although his intentions are to keep the child's surrounding as natural as possible, there still lies the dichotomy in using the defined naturalistic observation techniques and Piaget's interview techniques which are still largely clinical, because his observations include a type of intervention to bring out behaviours, in where the participants know they are being observed.

It can therefore be argued that Piaget's interview methods follow a form of observation with interventions approach where although this research is set in the child's natural classroom settings, in providing for a holistic picture and where researchers can make on the spot questions in relation to the evaluations of behaviours as it occurs, it take a more interventionist observation throughout the processes. Therefore, following the observation with interventions approach, this research includes the following:

- Participant Observation: In that the researcher becomes an active participant in the natural setting that he or she observes where the researcher can make observations in an *undisguised* manner: people in the setting know they are being observed (Cohen et al., 2007)(used in stages 2 and 3);
- Structured Observation: In that the researcher sets up (structures) a specific situation in order to observe people's behaviour. This type of structured observation is useful when behaviour is difficult to observe as it naturally occurs (Cohen et al., 2007)(used in stage 4).

By using these types of observations, a situation can be set where the researcher can put participants in a specific environment and observe the various behaviours that are taking place. This does not mean that the researcher must try to observe everything, but will observe that which adds meaning to the research and/or that which is decided in advance to observe. When using this method, the researcher tries not to influence the environment in which they observe. This is particularly relevant in stage 4 of the research design whilst using Laever's Scales of Well-Being and Involvement scales, where structured observation provides a middle ground between passive observations - like in naturalistic observation - and actively manipulating the conditions and then seeing what happens - like in a field experiment. The conditions are as controlled as in a field experiment (Radford University Research Committee).

Piaget states, that although interviews are the dominant feature within his approach, the use of observations can act as an important measurement of counter-balance, and take into consideration the behaviours, feelings, and gestures of the young people. He argues that although, "observation must be at once the starting point of all research dealing with child thought and also the final control on the experiments it has inspired" (Piaget 1926/1960, p.4), he points out that, "the child neither spontaneously seeks nor is able to communicate the whole of this thought" (p.6). Furthermore, even when young children do speak spontaneously, one cannot always tell whether they are actually pretending or are acting on their beliefs about the world. Therefore, any clues or hints that can be received through children's behaviour, feelings, or gestures of what they are actually trying to say are valued as evidence of observations.

Robson (2002, p.310) advocates using observations as a great strength:

> "What people do may differ from what they say they do, and observation provides a reality check; observation also enables a researcher to look afresh at everyday behaviour that otherwise might be taken for granted, expected or go unnoticed".

So, whilst the use of participant observations, in the early stages of the research, provides for a rich description of a situation, which can lead to the subsequent generation of a hypothesis, the use of structured observations, at the later stage, is useful in testing the hypothesis (Newby 2010, p.399).

7.4. Qualitative Truthfulness and Validity

Validity, Reliability and Generalisabilty are some of the problematic issues associated with qualitative research (Cohen et al., 2007; Seale et al., 2004, Silverman 2005). A major concern with qualitative study is that of convincing the audience that the research findings have any truth-value attached to them and Seale et al., (2004) and Silverman (2005) state that some qualitative researchers dismiss these issues to be of positivist concerns which are related to quantitative studies. Validity, reliability and generalisability are important in all forms of research but they mean different things and have different implications in the forms of qualitative research (John Siraj Blatchford 2001, p. 203). The use of interviews and observations has many strengths but it also has its limitations.

A major value in using interviews is that can be used to obtain a rich and detailed account of the information exchange between participants in the research process. Supported by the use of observations in this research, the in-depth interviews with children can also obtain a profound understanding of the child's thoughts, feelings and gestural actions (Robson 2002, Bryman 2004, Johnson 2006). However, whilst the form of semi-structured interviews can be considered "interpretively active' and 'reality-constructing, meaning making occasions", in which both the participants interact and construct meaning (Holstein and Gubrium 1995, p.4), there are limitations about the truth value of the data obtained which is highly dependent on the conduct of the semi-structured interviews and, in Piagets Interviews, along with use of participant observations. Where this research uses an approach that includes both qualitative and quantitative truth valueness to their findings, a number of data quality issues can be identified in the qualitative approach, using semi-structured interviews, related to *reliability, forms of bias and validity and generalisability* (Saunders et al., 2007).

7.4.1. Forms of Bias

The concern about reliability and validity with the use of both interviews and observations is also related to issues of researcher bias. When a researcher designs their research, they must rely on the range of resources that are available to them (Grieshaber 2001, 144), and one limitation of this is that the "researcher him/herself is a necessary part of the world they study" (Foster, Gomm and Hammersley 1996, p.2). Inevitably, researchers themselves embody particular beliefs, values and interests of their own, which can often be reflected in the way they design the research processes and in analysing that data. This can result in research bias. Sometimes, cultural or gender bias can influence the research at all stages of the process, including initial decisions about the research design, selection of participants, formulation of hypothesis, and analysis and interpretation of data (Gieshaber 2001, p.144) to the point that there may be a misinterpretation of responses because of cultural differences (Marshall and Rossman 1999).

Unfortunately, observer bias is the biggest threat to qualitative study, and where all researchers have their own perceptions to colour their interpretations of what they believe to be 'true' (Saunders et al., 2007, p.297), there is no way to avoid observer bias. All that can be done within the research process is become acutely *aware* of the threat to the reliability it poses, and seek to control it through methods of triangulation, inclusive of both methodological and data sources (Saunders, Lewis and Thornhill 2007). Easterby-Smith et al., (2008) point out that the use of open-questions used in interviews, can help overcome forms of researcher bias which can be followed up with appropriately worded probing questions (Saunders et al., 2007, p.332):

- Check with participants that they have understood the question. If not, repeat the question;
- Ask questions in a neutral voice without leading the respondent to one choice or another;
- Avoid asking leading questions to get answers (where perceived interview bias can lead to response bias);
- Long questions or those that are really made up of two or more questions should be avoided (Robson 2002).

What is of crucial importance is that the researcher is able to provide for carefully designed questions and to be "self-aware about the balance they want to achieve between engaged commitment to the field, and the capacity to offer an informed and research-based interpretation of it" (Edwards 2001, p.124).

7.4.2. Reliability and Validity

Taking a qualitative stance, reliability is concerned with whether alternative researchers can reveal the same information (Easterby-Smith et al., 2008; Silverman 2007) by another researcher, or at another time, thereby questioning the validity of truthfulness of the data in which the interview questions measure what they are intended to measure throughout the research process. However, the value of using non-standardised interviews is derived from the flexibility of its design and the complexity of the research area. The findings and responses from the interviews "are not necessarily repeatable since they reflect reality at the time they were collected" (Saunders, Lewis and Thornhill 2007, p. 327) and are in a situation which is subject to change over time. In this sense, any attempt to ensure that the qualitative, non-standardised research be replicated by other researchers would not be realistic or feasible.

There are also some researchers (Sykes and Collins 1988, MQueen 1989) who suggest that the use of telephone interviews is less reliable as face to face interviews in eliciting information. The absence of visual clues is said to have a number of effects including the loss of communication and textual information, the inability to develop rapport or to probe, and the mis-interpretisation of responses (Opdenakker 2006).

> "In particular, open questions tend to be much shorter and the whole interview procedure tends to proceed more brisk" (Thomas and Purdon 1994, p.5).

Although there is research to show that lack of verbal cues does not necessarily indicate an unreliable data collection method (Hopper 1992, Creswell 1998, Tausis and Freeman 1998) and that participants can feel more relaxed and are able to disclose information when not in the interviewer's presence (Opdenakker 2006), it is worth mentioning that telephone interviews were only conducted in the pre-pilot stage to set the baseline of the research project. Following these interviews, face to face interviews were further adopted to strengthen, clarify and lead the investigation for the underlying issues in the research.

However, where face to face interviews enable the interviewer to establish rapport with the respondent and allow for both the interviewer to observe as well as listen, the reliability and validity of data offered during the interview can also be found to become questionable. Taking part in an interview is an intrusive process and an interviewee may participate but may also be nevertheless sensitive to the type of questioning and responses required. In looking to overcome these phenomena, and prior to the start of the face to face interview, the researcher provided the participants with the relevant information and/or themes that will be explored during the interview, and discussed any uncertainties the interviewees faced (i.e. consent and participant rights). Healey and Rawlinson (1994) ensure that any assurance a researcher can provide should look to increase credibility of responses and make interviews more relaxed and open about the information they are willing to discuss.

> "Providing participants with a list of themes before the event...should also promote validity and reliability by enabling the interviewee to consider the information being requested" (Saunders, Lewis and Thornhill 2007, p.328).

In interviewing children, a similar approach is adopted by Liz Brooker (2001) who suggests that while reliability and validity of the data evidence needs careful scrutiny in all projects, they should be considered *equally* but *not necessarily more* thoroughly, when the evidence of young children are involved (p. 168).

> "The issue of reliability may be difficult to assess when children's development is so rapid that repeating an investigation is not feasible and an exact replication that is problematic" (Liz Brooker 2001, p.170).

The assumption whilst using interviews is that circumstances are more complex and dynamic when interviewing young children, therefore, an attempt to ensure that qualitative, non-standardised research could be replicated by other researchers is not realistic or feasible without undermining the strength of this type of research (Marshall and Rossman 1999). Where all children are different in nature, what would seem one way to interview with one child, may take a different direction and stance with another child. However, it is worth re-iterating, that whilst the interviews progress throughout the stages in this study, a more solid form of semi-structured interview method is developed through iterative cycles to provide for greater forms of reliability and validity.

Like all interview data, the children's evidence benefitted from a combination of triangulation methods (Denzin 1978), to observe findings and make truth-statements from a number of vantage points. To demonstrate the authenticity of the children's responses, this research uses methodological triangulation, which adopts the use of participant observations, against the concerns over children's 'acquiescence response' (or their wish to please) and their egocentrism (interpreting all issues as if they were about themselves), that children are likely to mislead or conceal information.

> "It is probably safe to assume, in fact, that preschool children, to their best of their ability, give 'honest' answers to any questions appropriate to their age and understanding, and that if they do not, the 'fault' is with the researcher than with the child" (Liz Brooker 2001, p.168).

However, where the use of observations can be a powerful tool, it is not without its difficulties (Cohen, Manson and Morrison 2007). The accounts that emerge of participant observation are described as being subjective, biased, and are lacking the precise quantifiable measures that are commonly associated with experimental research. Yet, as Strauss and Corbin (1988, p.43) suggest, a state of complete objectivity is impossible in any research study, whether it be qualitative and/or quantitative, as no researcher can completely divorce him/herself from his/her beliefs, values, feelings and experiences". Using the participant observation techniques in the early stages of the research includes a great deal of subjectivity from the researcher, and the research design requires the researcher to be 'sensitive' to observations in the research process.

Strass and Corbin (1998) suggests that there is to be a 'balance between objectivity and subjectivity'. Where objectivity is essential to hear the participant's responses accurately and to recognise one's own biases and control of interpretation of data, subjectivity is also necessary to perceive the profound meanings and nuances in recognising the connections in the data. To provide the balance of objectivity and subjectivity in observations within this research, this research adopts Kirk and Miller (1986) advice to introduce systematisation into observations in order to increase their reliability (as cited in Cohen, Manion and Morrison 2007, p.407):

- Notes made *in situ;*
- Expanded notes that are made as soon as possible after the initial observations;
- Journal notes to record issues, ideas, difficulties, etc. that arise during the fieldwork;
- A developing, tentative running record of ongoing analysis and interpretation.

In determining 'how many observations to do' or when observations may be enough in providing for validity and reliability, Alder and Alder (1994, p.380) respond:

> "Of course, there is no hard and fast rule here, although it may be appropriate to stop when 'theoretical saturation' has been reached i.e., when the situations that are being observed appear to repeating data that have already been collected".

Therefore, in providing for reliability and validity for observational data, this research adopts the use of data triangulation, including that of video recorders and tape recorders to validate and/or 'back up' the evidence obtained during the research process (Siraj and Siraj Blatchford 2001, p.204).

7.4.3. Generalisability

There is likely to be concern surrounding the generalisability of findings from qualitative research using semi-structured interviews, which are based on a number of studies within the research process. Generalisability in more naturalistic research tends to be interpreted as comparability and transferability (Lincoln and Guba 1985, Eisenhart and Howe 1992, p.647) where it is possible to assess the typicality of the situation – the participants and settings, to identify possible comparison groups, and to indicate how data translates into different settings and cultures. However, Schofield (1990, p.200) states that in doing so, it is important in qualitative research to provide for a clear and detailed semi-structured interview so that others involved, or another researcher, can replicate the interview process and/or decide the extent to which findings from one piece of the research are generalisable to another situation.

Although it is generally argued that this is injecting a degree of positivism into non-positivist views, taking quite a pragmatic view, indeed, "qualitative research can be generalisable" (Schofield 1990, p.2090, Lincoln and Guba (1985, as cited in Cohen et al., 2007), suggest that qualitative studies have generalisability but it is different from that of quantitative studies as it is not based on statistical logic, but on theoretical and analytical power. Lincoln and Guba refer to this kind of generalisability as 'transferability'. However, Lincoln and Guba (1985, p.316) caution that where research is not concerned to derive universal statements of general social processes, as it is with traditional positivism, it is not up to the researcher to provide an index of transferability. Rather, the researcher should provide sufficiently rich data for the readers and users of research to determine for transferability of findings (Cohen, Manion and Morrison 2007).

It is worth nothing that the purpose of this research study is not to create *gross generalisations*, although some of it may be possible, but more to create appropriate *analytical generalisations* to advance theoretical propositions in developing appropriate pedagogy within context. The purpose of the study, therefore, is to understand, describe, and develop appropriate pedagogy within early years setting when applied with new learning technology in a phonetic related environment. Strauss and Corbin (1988, p.267) suggests "taking more the language of exploratory power rather than that of generalisability".

7.5. Quantitative Truth-Value and Validity

Qualitative-Quantitative divide and integration have been, and are still subject to a long-lasting debate. Some researchers (i.e. Sale et al., 2002) argue against the combination of qualitative and quantitative approaches for triangulation or cross-validation purposes because of the ontological and epistemological differences between them. Sale et al., (2002, p.50) stress that "because quantitative and qualitative methods represent two different paradigms, they are incommensurate", and can only be combined for complimentary purposes when each method studies different phenomena.

In considering Sale et al., statement, it is worth mentioning that where this study uses pragmatism as the basis for its epistemological stance and is mainly concerned in determining the research question, it holds no reservation in combining the methods when it serves the research question. However, in taking into consideration Sale et al., (2002) suggestion that each method studies a different 'phenomena', this study is purposefully separated into four distinct stages where stages 1 – 3 uses an individual qualitative frame of reference while stage 4 uses quantitative structured observations, in measuring the quality of care and involvement of young children with Laever's Scales.

Bryman (1988, 2004) and Silverman (2005) suggest that it is highly possible and useful to combine qualitative and quantitative method. They point out that researchers should think carefully before doing such combinations and should not adopt it naively. Silverman (1993) suggests that using simple tabulations such as 'counting' can be useful to support qualitative designs and can validate findings. According to Silverman (1993), it should only be done where it is appropriate, and where there is a theoretical reason behind the counted categories. In using Laever's Scales of Well-Being and Involvement, this study adopts a simple tabulation of 'ticking' in the appropriate category of description through the use of observations, by finding frequency within data, and by quantifying the children's behaviour in categories.

This research uses video images from both stage 2 and 3, as well as additional testing in practice environment with young children prior to the real testing of Laever' Scales of Well-Being and Involvement in stage 4. Where structured observations are very systematic in nature and enables the researcher to generate numerical data from the observations itself (Cohen, Manion and Morrison 2007), it is a very complex process, and 'the researcher will need to practice making these observations until he or she becomes proficient and consistent in entering data', in producing validity of findings. The need to pilot a structured observation schedule cannot be overemphasized and categories must be mutually exclusive and comprehensible to other researchers. This produces criterion 'fit for purpose' (Cohen, Mason and Morrison 2007).

The main threats in using structured observations are that of reliability in subject error, time error and observer effects:

- Subject error in this study, refers to the selection of participants. By selecting participants or groups of participants for the study, data can become unreliable (Sauders et al., 2007).

In order to overcome these limitations, this research uses thirty studies, in groups of two children, irrespective of gender differences, but where children are between the ages of 3-5 years. These children are chosen by the early years educators to counter-balance any subject error and/or biases that may arise.

- Time error in this study in which observations need to happen at the exact time in all thirty cases where the frequency of observations will take place every two minutes.

In order to reduce researcher error in missing the time-interval slots, video cameras are used in triangulation to capture and ensure consistency of observations, thereby providing for further reliability and validity of findings.

- Observer effects in considering what counts as evidence. One of the most powerful threats to the validity and reliability of data collection using structured observations is that of observer effect. This is simply the "process of the observer's observations of behaviour

> changes the nature of that behaviour owing to the fact that the subject is conscious of being observed" (Saunders et al., 2007, p.309).

This research takes into consideration what Robson (2002) suggests for *minimal interaction* where the observer tries as much as possible to 'melt into the background' and has little interaction as possible with the subjects of the observation. Laever's scales of Well-Being and Involvement are intended for use when the researcher is to take more of a passive role, and where the practitioner and child accepts a more dominant active-participant role. This is to achieve a balance between maintaining a detached objective stance in providing for the validity of the appropriateness of the pedagogy.

7.6. Sampling of Participants

> "The quality of a piece of research stands or falls not only by the appropriateness of the methodology and instrumentation but also by the suitability of the sampling strategy that has been adopted" (Cohen, Manson and Morrison 2007, p.100).

Questions of sampling arise directly out of the issue of defining the population on which the research will focus. Judgements have to be made about two key factors in sampling for this study: representativeness and parameters of the sample, and the sample size itself. In order to be able to obtain data from a smaller group or subset of the total population, in such a way that knowledge gained is representative of the total population, and the aim to gather as much 'rich data' as necessary, this study adopted the notion of theoretical sampling. Theoretical sampling relies on the fact that the sample size selected is immaterial, as one "works with the data that he/she has" (Cohen, Manson, Morrison 2011, p. 116) and gathers as much data as required until a theory or a concept can provide for the hypothesis to be tested. In such a case, theoretical sampling requires the research to have sufficient data to be able to generate a theoretical idea within the research context.

> "Theoretical saturation (Glaser and Strauss 1967, p.61, cited in Cohen, Manson and Morrison 2011) occurs when no additional data are found that advance, modify, qualify, extend or adds to the theory developed".

The nature of the research tends to indicate how large the sample size should be. There is not a right or wrong answer but generally speaking "an anticipated minimum of thirty cases per variable should be used as a 'rule of thumb i.e. one must be assured of having a minimum of thirty cases for each variable'" (Cohen, Manson and Morrison 2007, p101). This research is divided into four stages of study where stage 1 included a total of 30 telephone interviews with early years practitioners. In selecting the sample of participants that took part in the telephone interview, a random selection of early years settings, which had adopted the Early Years Statutory Framework was chosen.

Stage 2 was mainly concerned with the context in which the events were taking place. It included an inductive research design of subject analysis between the young children and the practitioners. Marginally short of a minimum of 30 cases for each variable (due to unforeseen circumstances of sickness, holiday, and/or transfer to another school/group), stage 2 studied 24 children, whilst using technology in the classrooms. It investigated how to improve and make changes to the recommended practises. Stage 3 further adopted a qualitative, inductive approach and included another 28 children.

The last and final stage 4, taking a more deductive approach, included another 30 children to validate the transference of new pedagogical knowledge over to the early years practitioners. The last stage also looked to measure for the quality of care and involvement of the children in a planned learning setting, whilst using Laever's Scales. In total, 30 preschool practitioners and 82 children took part in this study. In this research, the size of the data set is fixed by those early years settings who took part in the study, the number of participants within the settings, and those who were available for the study.

In planning the sample strategy for children as participants, 'it is important to identify the population, its size, and its key features (the sampling frame) (Cohen, Manson and Morrison 2007). Key variables such as, social status, ethnicity, family background, home language, medical condition, and influence of siblings or peer relationships are not considered for this study. As this is a relatively new area of research, in determining an appropriate pedagogy while using technology, it was decided to keep the research relatively simple and with as few variables. However, the above variables can become considerations for further research. For this research, two specific variables were considered mandatory for the children as participants to take part in the process. First, the child must be of preschool age, irrespective of gender, and second the child must presently be involved in early childhood education in their preschool years, following the Early Years Foundation Stage Framework (EYFS).

As with all other aspects of this research, these three elements of participant sampling must be well planned and deliberate such that the criterion of planning must be *fit for purpose.*

7.7. Physical Arrangements and Setting

In an interview situation, it is not only the questions of the interview and their phrasing which influence that which can be obtained. Just as it is important to provide for an adequate criterion of sampling of participants, it is also important to consider the external circumstances, such as the settings of the early years classroom, which can affect the interview situation.

In research with young children, their behaviour may be altered by the laboratory or experimental environment, and they may act in ways that they normally would not in their own surroundings (Hayes 1980, p.88). In providing for as much as a natural surrounding for the child, this research takes place in the child's early years classroom, providing for a setting of which the children are accustomed to and where there is a dedicated key worker to each child. Above all, the interview process must promote a playful attitude that the early years children are used to, where the researcher must take an informal approach and progress through the interview in a thoughtful manner.

Each research setting differs according to the type of preschool layout and technology that is available in the classroom. What was, therefore necessary for this research was the use of the online educational website, via the Internet, through a form of technical device, whether it be computer, laptop or tablet, including a "robust network connection or bandwidth which does not slow down the loading of the learning software" (Cohen, Manson and Morrison 2007, p.232). Practical arrangements including that of a tape recorder and video recorder, and all the necessary materials required were also in place prior to the commencement of the interview process. According to Pramling and Doverborg (2000, p.27) it is necessary that the interviewer is to become familiar with the equipment as well as the materials that are required for the interview so that interferences are kept to a minimum. In order to maintain the child's interest throughout the interview, deliberate and conscious eye contact was made through most of the interview. This is made most feasible when interviewers know the questions that will be asked ahead of time so that he/she will not have to shuffle through the papers. Staring at the child and waiting for lengths of time for a response is not recommended (Pramling and Doverborg 2000, p.27) as it can put the children on the spot and it is likely that the children will give any response to avoid the uncomfortable situation.

A practical step in the arrangement of the interview is to secure as much of a quiet setting or a suitable room which can be used separately in which a group-setting or an individual interview can be conducted. Taking into consideration the above physical arrangements and settings, this research combined the benefits of a group, and an individual interview setting. It included a small group of two/three children (of similar age) so as to encourage interaction to flow within the group, and for it to be less intimidating for the children (Simon, Eder and Evans 1992). The process tried not single out one child in particular and looked to "minimise the power differential between the reseracher and the those being studied" (Gubrium and Holstein 2002, p.83). In order for the children to be at ease and talk freely (Briggs 1986), this research adopted a small individual setting so as to "understand how each child thinks about or understands a certain phenonema... in which case a one-to-one interview is appropriate" (Pramling and Doverborg 2000, p. 31). In order to avoid stranger anxiety, the researcher acquainted herself with the children and looked to get to know them better.

7.8. Ethical Considerations

Despite the dual use of strategic methods in this study, there lays the consistent issue of ethical consideration. In conducting interviews ethical issues are one of the main concerns. Of utmost importance is that confidentiality must be given. Participants "should not be harmed or damaged in any way by the research" (Gray 2004, p.235). There are no international regulations of ethical criteria in research (Ryen, 2004), yet professional organisations such as the British Educational Research Association (BERA 2011) and the Economical and Social Research Council (ESRC 2012) have ethical guidelines and standards that this research has adhered to.

Within the qualitative approach to research, the issue of ethical behaviour is a critical point of understanding. Stake (2005) summed up the expectations by succinctly asserting that qualitative researchers are guests in the private spaces of the world. Therefore, their manners should be good and their code of ethics strict" (p.447). In some research studies, ethical issues are more prominent than in others based on the sensitivity of the research topic and the age of the participants (Silverman 2005). Truth, knowledge and appropriate methods are not the only characteristics of 'good' and 'honest' research. In which House (1990) states that the researcher must also ensure the rightness and wrongness of actions that are conducted. He suggests three basic principles:

- Mutual Respect – understanding other's aims and interests, not damaging self-esteem and not condescending;
- Non-coercion and non-manipulation – not using force or threats or leading others to co-operate when it is against their interests;
- Support for democratic values and institutions – commitment to equality and liberty, working against oppressions and subjugation.

In overcoming some of the ethical issues when interviewing adults in this research, the following was taking into account (Gray 2004, p.235):

- Prior to the start of the interview, the purpose of the research and its underlying theme was explained. It was stated what was expected out of the participants and any risk assessments, on behalf of the educational institution, was discussed. It was highlighted that the researcher must be CRB certificated and/or never be left alone with the children in the classroom by him/herself. For this research, the researcher was CRB qualified and was accompanied by an early practioner at all times;

- Confidentiality issues and anonymity were discussed and permission was sought to obtain data and share if necessary, although prior acknowledgement would be required. Unless absolutely necessary, this research will look to adopt anonymised data. The key concern is to ensure that the researcher causes no harm (Easterby-Smith et al, 2008). Informed Consent through verbal agreement was offered and tape recorded (in telephone and face to face interviews). Preference of naming school generically i.e., preschool 1, preschool 2 was also requested and agreed;

- An honest and open approach was adopted and the rules of conduct in interview design were discussed; where if the participants become uneasy or wish to terminate the interview, it can be cancelled or postponed, without any further questioning by the researcher. There will also be no sensitive or embarrassing questions for the researcher upon which, in the unlikely event, one arises, the interview can be terminated immediately;

- All data collected will be maintained and stored securely in a lockable storage. Only those with security clearance or the relevant people, in this research, are able to access the data. Data will be objectively analysed during reporting of the research and findings will be reported back to the preschools that were involved.

In early childhood education with young children, this research adopted Liz Brooker's common sense ethical guidelines for treating children respectfully in interview situations (2001, p.165):

- To plan questions appropriately and acceptably for her respondents, bearing in mind their emotional and social maturity, and their family and cultural background;

- To terminate any session which causes distress of any kind to the children;

- To conclude the session with debriefing, reassurance, thanks, praise or whatever is appropriate to sustain the self-esteem of the individual child.

Taking Brooker's (2001) ethical consideration, this research paid close attention ethical considerations as outlined by Bournemouth University Research Ethics Code of Practice (2009) and used supporting documents for the relevant childhood educations in this research (Appendix 9a, 9b, 9c). These documents covered areas of necessary information for the participants, outlining informed consent, techniques of data capture along with analysis, and confidentiality of data collection. Cohen and Manion (1994, p.353) stress that consent involves giving children not only a "credible and meaningful explanation" of your research intentions, but also a "real and legitimate opportunity to say that they do not want to take part". As part of the self-determination, the subject has the right to refuse to take part, or to withdraw once the research has begun (Frankfort-Nachmias and Nachmias 1992).

Where this research used various techniques of observations and interviews with young children between the ages of three to five years, the study takes an open and honest approach to participant consent and adopted the following advice by Rubin and Rubin (2005):

- **Obtain participant's consent**: Where the participants in this research are of very young children, consent is required by the parents and/or guardians of the children. As a general rule, 'informed consent is an important principle with young children' (Cohen, Manion and Morrison 2007), especially when using methods of observations, and therefore, an official letter or document should make explicit the nature of the research, its grant of funding or institution, what is expected out of the children during the research process, any possible risks that may be associated with the research and the flexibility for children to withdraw from the research at any stage during the study.

  > "In situations where children refuse, they should not be questioned, their actions should not be recorded and they should not be included in any book or article (even under a pseudonym)" (Fine and Sandstorm 1988, cited in Cohen, Manion and Morrison 2007, p.79).

  In this research, permission was granted by both the parent and/or guardian along with permission from the Head or Manager of the early childhood setting. According to legal definitions, "children cannot give consent, but the child's legal guardian can give consent on behalf of the child" (Coady 2001, p.6). The signature sealed the justification of the research process for all parties involved; the parent/child, early years setting and the researcher (Spriggs et al., 2010).

- **Confidentiality:** The researcher should keep his/her promise of confidentiality to protect the interviewees from any possible harm where the researcher should reveal the child's identity or location, even if this requires him/her to change or leave out some data (Rubin and Rubin 1995).

  > "The essence of the matter is the extent to which investigators keep faith with those who have helped them" (Cohen, Manion and Morrision 2007, p. 65).

  For this research, permission was granted for the use of video cameras within the research. Out of respect for the privacy of the subjects, issues of confidentiality were stated in a letter or official document which was again sealed with a signature. This is to ensure full confidentiality of the child/children involved which can identify the individual beyond the preschool practitioner and research. Cooper and Schindler (2001, p.117) suggests that:

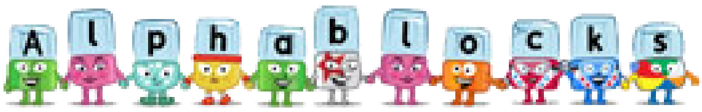
  > "Confidentiality can be protected by obtaining signed statements indicating non-disclosure of the research, restricting access to data which identify respondents, seeking the approval of the respondents before any disclosure about respondents take place, non-disclosure of data (e.g. subsets that may be able to be combined to identify any individual)".

The necessary procedure to keep data confidential included coding of data and keeping the code separate from the data, keeping data in secure, locked storage, ensuring that only the relevant people, authorised by the ethics committee, have access to the data and finally, ensuring that all reports, articles and conference papers do not contain, or have signed permission, to contain identifying material (Coady 2001, p.67).

- **Ethical Relationships with Parents**: Cullen, Hedges and Bone (2005) strongly advises in forming ethical relationships with parents where it is the responsibility of the researcher to always tell the truth, regardless of his/her viewpoint. This tied in with what Ryen (2004) refers to as trust between the researcher and the participants where the participants are truthful in what they say and the researcher is truthful in what/he she reports. This research included one to one meetings, informal chats and/or open evenings to inform parents and/or guardians of the nature of the research, its purpose, and the intended possible outcomes of the research.

> "Achieving goodwill and cooperation is especially important where the proposed research extends over time: hours, days and in some cases, months" (Cohen, Manion and Morrison 2007, p.54).

7.9. Selection of the Learning Software



"Alphablocks invites a dialogue of shared language in increasing awareness of phonetics for the child. There is huge value in dialogue which happens around the screen between the teacher and child when 'something' (some kind of learning) is happening" (Joe Elliot, Appendix 8, p.193).

This research used CBeebies (BBC) *Alphablocks* new learning software via the Internet. Created by Joe Elliot and developed by Magic Lantern (maginlantern.fm), *Alphablocks* is a series of 26 episodes that invites the teacher and/or parents and child to have fun with words. Each episode focuses on a single letter and sound bringing adventure and magic into word play. The new learning software, *Alphablocks,* was selected for this research for the following reasons.

The *Alphablocks* software is widely distributed by a public service broadcaster (BBC) and is available online through the CBeebies network. It is free to both schools and the community and is helpful for those parents who wished to become aware and involved in the research design and processes of this study (http://www.bbc.co.uk/cbeebies/grownups/shows/*Alphablocks*). In this way, Alphablocks can be shared across to a home and school environment without any additional costs for the parents/guardians.

Alphablocks is found to be a valuable 'multi-learning platform' for children that demonstrate good early years education practice and can help engage children in the idea that words are fun. It has been designed to encourage collaboration between an adult/teacher and children, which is especially important in the early years (see chapter 3). According to Light and Butterworth (1992) ‘joint attention’ and ‘children learning to share’ and/or engaged jointly’ provides a better cognitive challenge in young children. It is in line with the learning and development requirements that all early years providers must by law deliver and has been developed to reflect the needs of the children in care which is appropriate to their early years setting.

It has been designed for playful learning which is the basis for early years education. The software was selected to provide for ‘playfulness’ where children can interact and engage wth technology. It has the potential for integration into the early years curriculum and is relevant to the the children’s developmental needs, which has the potential to be used in meaningful context and for real purpose. *Alphablocks* is not only just a fun and playful learning software but can also be found to be an “educational learning software which makes clear the learning aim of using the application” (Joe Elliot, 2011).

The creators of *Alphablocks* have also worked in conjunction with The National Strategies, Department of Education, to meet the requirements for Letters and Sounds; Articulation of phonemes (Vowels and Consonants). *Alphablocks* offers a synthetic approach to phonetic teaching and follows a similar approach in delivering the early years framework. This is particularly relevant to this study as it is inline with the relevant phonetic approach of study within the *Letters and Sounds* curriculum of the UK EYFS curriculum. Although it is not designed to follow a designated phonetic programme, teachers (in primary schools) have found to use it relevant in introducing a letter at a time and for encouraging children who know that particular letter to move onwards to the other episodes made available (Joe Elliot 2011, Appendix 8). The design of the software encourages the form of synthetic blending and sounding out of individual phonemes and can provide an opportunity to preschoolers who can learn to associate the letters to their sounds. With this in place, early year educators and parents of the children can be ensured that the new learning software, used in this study, is of good quality and meets the required early years learning standards for progression.

> “*Alphablocks* was designed to complement phonics as it is taught in schools. It is not there to replace alternative methods but rather to offer and complement a new learning style” (Joe Elliot 2011).

8. Findings and Analysis

> "Research which does not test its own methodology can hardly be called reflective" (Murray and Lawrence 2000, p.142)

The previous chapters outline the adoption of the Pragmatic paradigm for this research, using both qualitative and quantitative designs in this study. Action Research and Piaget Methodology have been used in this research and are included in a four stage process of an inductive-inductive-inductive-deductive approach. This chapter will outline the findings and analysis that took place in this study.

This research is conducted in four stages, in which both stage 1 and 2 adopted the Action Research Methodology. Action Research was first used to conduct the pre-pilots trials via the use of telephone interviews to scope out the research protocols for this study. The use of Action Research continued into the pilot trials through means of face to face interviews and observations of both the practitioners and children, in order to provide an understanding of what was occurring, and how to improve and/or make changes to the current practices, whilst using technology in the early years classrooms. In this stage, the researcher is called upon to become the facilitator and is integrated within the research process to help it drive forward. The third stage embraced Piaget's Methodology, adopting the findings from the previous stages and constructed Piaget's dialectical, Non-Clinical/semi-structured interview process with the children, so as to develop and determine an appropriate pedagogy. Within this stage, the researcher is established as the facilitator within the interview process and adopts the first person position. The last and final stage 4 concluded with transferring and validating the pedagogy through the use of Piaget's Teaching Experiments. This stage also included Laever's Scales of Well-Being and Involvement, through the use of structured observations with the young children, in verifying the pedagogy and establishing the planned learning setting. A total of thirty telephone interviews and 82 interviews with young children within nine preschool settings were conducted in this research.

The findings and analysis show that in attempting to deliver a pedagogical driven, technological adapted learning opportunity for young children, with respect to phonetic learning, factors of technology, structural settings and organisation of active learning experiences, need to be established. In determining appropriate pedagogic instructions which are found to drive the learning forward, the findings show that through the means of the Communication and Collaboration early years approach, both the practitioner and child are given the opportunity to work as partners in co-constructing knowledge, so as to extend dialogue or narrative within the child's frame of reference and interests. By adopting the pedagogical strategies of Sustained Shared Thinking, the findings show that practitioners are equipped with appropriate knowledge that can be used to extend the child's learning and development; particularly in encouraging phonetic awareness and recognition. The findings demonstrate that it is also just as equally important in considering factors of well being and involvement in a planned learning environment, which ensures that learning is taking place safely through challenging yet achievable learning experiences, in which children can be found to be cared for and engaged within the learning setting.

8.1. Stage 1: Telephone Interviews

The first stage of this research consisted of a pre-pilot study using the Action Research Methodology. The pre-pilot study was based on the four steps of Action Research: planning (planning the interview questions in the phone calls), acting (conducting the phone interviews), observing (noting the common theme or occurrences) and reflecting (using the data to identify the research gap and informing the design of the next cycle(s)). The pre-pilots served as a pre-testing tool in determining the research protocol for this study. The following Action Research process, using telephone interviews, is highlighted below.

8.1.1. Planning

For the pre-pilot study a total of thirty telephone interviews were conducted and analysed. This included a random selection of preschools based in the Southwest UK, each following the Early Years Foundation Stage (EYFS) framework. These preschools were not intended to be regionally defined, but rather served as a basis for the beginnings of this study.

In planning the telephone interview, a list of questions was drawn up in advance, and shared with the research supervisors, as well as circulated with a group of people who were demographically similar to the sample profile (i.e. early year's students/trainee practitioners). A pre-test was performed, prior to the real testing of the pre-pilots, in order to determine the flow of the conversation and the time taken to conduct the interview. This took an iterative cycle of refining the questions and themes to ask the participants. As the telephone interviews took the form of a semi-structured interview, the interviews did not necessarily follow a specific order of questioning. These conversations were tape recorded, and hand written notes were taken in situ, to lead the questioning appropriately. The interviewees were informed that the information obtained will be used only in aggregating the direction of the research, when compiling and documenting the research findings for this study.

The final lists of questions/themes are highlighted below:
*Probing questions were used in the instances where the interviewees provided very short, non-specific answers so that they could elaborate and provide detail to their answers.

General Information of ICT	- Do you use technology in your classroom with the children? - What types of technologies do you use?
Newer forms of Technology	- Do you use online educational websites with the children? (Probing: If they require clarity, offer some examples such as Cbeebies, NickJnr suggestions) - If yes: is this delivered through the computer or other forms of delivery such as, laptops touch screens and/or tablet applications?
Pedagogy	- -How do the children use these websites - Do they use it by themselves, with their friends, or with you? (Probing: Perhaps all of them?) - In terms of pedagogic implications, what do you think is the most appropriate pedagogical approach (instructive approach) when using the technology

	with the children"? (Probing: If the practitioner is confused or requires more clarity, offer explanations of exploratory play, guided interaction, adult involvement, communication and collaboration, direct teaching etc.).

8.1.2. Action

The second stage in Action Research undertook the action of conducting the telephone interviews with the early years practitioners. As the telephone interview was used as a pre-testing tool in determining the research gap of technology applied pedagogy, the telephone interview was constructed in such a way that it led to the following investigative question (Appendix 10):

> Q) Pedagogy: "What do you think is the most appropriate pedagogical approach (instructive approach) when using the technology with the children?"

Several cyles of enquiry were conducted before reaching successful contact. Advice was sought from Miller (1995) in preparation for good quality and data driven telephone interviews:

- To coduct the telephone interview at an appropriate time in the day – in the spiral of three telephone interviews, it soon became obvious to conduct the telephone interview around midday when most preschools were less busy;
- To carefully prepare the questions in advance and arrange the interviewer's physical setting – in the spiral of three interviews, probing questions were introduced to help clarify practitioner questions and/or ambiguities as well as making sure that both the telephone and recorder were completely charged and in good working order.
- To ensure that the interview does not exceed a length of time that is inconvenient for the interview – in the spiral of three interviews, it was found that the interview should not exceed ten to fifteen minutes at a time, as the early years practitioners were busy and were often taking their interview on their break time. In this spiral, a daily log/result was recorded of the conversation (i.e. please call back, left a message, plan a telephone appointment, etc.).

It was intended that the responses gained from this question would, in one way or another, help scope the research direction for this study.

8.1.3. Observation

In this pre-pilot stage, the telephone interview responses from the practitioners suggested that the majority of practitioners believed that they had an educational responsibility to encourage the balanced uses of technologies for the best interests of the young children. Within this context, they have also tried to embrace the individual experiences and opportunities that some of the newer forms of technologies can bring to the young children (ie digital cameras).

However, in response to the lead question:

> Q) Pedagogy: "What do you think is the most appropriate pedagogical approach (instructive approach) when using the technology with the children?" (Appendix 10, p.216).

The findings showed that twenty-four of the respondents did not have a clear insight as to what would constitute an appropriate pedagogic approach. Some of their responses included:

> "**Can't know for sure.** The children use the Internet and watch Cbeebies. Sometimes they play games that help them learn their alphabets. Playing the computer is often during free-flow play time" (Appendix 10, preschool 5, p.216).

> "**I don't know but we are hoping you would know**. At the moment, the children don't really use the computer. They used it a lot initially but found it difficult at times when we were not around to always help them" (Appendix 10, preschool 4, p.216).

> **"(laughs – not really sure).** We have a computer. The children access the Internet. Often Cbeebies and Nick Junior. Generally they access the computer on their own, but often children play with each other and we are always there, somewhere in the room, to help them if they get stuck" (Appendix 10, preschool 6, p.216).

However, where it would seem that the majority of preschools were unsure, the findings also indicated that some preschools included a form of pedagogic approach for when children use the technology in their classrooms, ranging from adult involvement to self-exploration, to guided interaction, and to peer to peer learning:

> "**Well, whatever we do, we are always with them.** We tend to sit with the child [ren] and show them the CD/game (each child has 20 minutes at a time) and play alongside with them. Help them interact with the technology and repeat the alphabet sounds" (Appendix 10, preschool 1, p.216).

> "…in terms of a teaching method**, I would think we will let the children have go and explore on** their own – of course, we must put in the necessary Internet restrictions" (Appendix 10, preschool 16, p.217).

> "They share really well with the egg timer and if they need help then we are there to help them. I think the children are learning off each other – **peer learning** taking place" (Appendix 10, preschool 21, p.218).

> "We try to follow a concept called **Guided Interaction** where the teacher can help encourage the child to move along and progress, in their own level. We find that it works very well" (Appendix 10, preschool 30, p.219).

8.1.4. Reflections/Analysis

The findings from the telephone interviews highlighted that there is a general lack of understanding of what constitutes as appropriate pedagogy when using new forms of technology with the young children. The outcomes indicated a number of different pedagogic approaches ranging from Exploratory Play, to some Adult Involvement, Guided Interaction, and Peer to Peer learning. However, the literature evidence shows that these approaches do not necessarily lead to a form of purposeful and constructive learning, and in each there are limitations (see chapter 3.3). Although the dataset of the survey is relatively small and not necessarily conclusive, it did, however, increase the likelihood that there may be a gap of knowledge in this area, and that more attention needs to be focused in providing for an understanding of what constitutes as appropriate pedagogy while using a new form of technology with young children. The findings from the pre-pilots helped outline the required protocols for this study, and the outcomes informed the next stages of the whole-scale research. Stage 2 follows on with in-depth Action Research Methodology in three more preschools.

8.2. Stage 2: Participant Observations/Face to Face Interviews

The second stage of this research continued with the Action Research Methodology. While the findings from the pre-pilot telephone interviews suggested that there was an apparent gap in knowledge of what is as an appropriate pedagogy when using technology with young children, this stage was dedicated to working closely with the children and practitioners, observing the interactions between the participants, and in determining what really was happening. In this stage, the researcher worked closely with the practitioners in collecting data of their current situation, making sense of the information provided, and even modifying the line of inquiry in response to developing understandings. This stage focused on developing awareness and recognition of the alphabets, as found in the *Letters and Sounds* EYFS curriculum.

For the pilot studies three early years settings were chosen. Unfortunately, one of the early years settings was unable to access a robust internet connection for an extended period of time, and therefore was not able to continue with the test pilot. This became an area of concern for this setting as they were unable to access new forms of technology that require an internet connection. As a result, only two early childhood settings actively participated in the test pilots. Prior to the start of the test pilots, an interview with the preschool managers was recorded in order to gather more general information about the children's use of technology in the classroom; their current use of the computer, the different types of educational websites children use, how and when the children use the computer, and some of the challenges they face, whilst in the process of instructing phoneme recognition with the children.

Based on the responses by the preschool manager(s), it was determined that both preschools have to date, not used any educational websites within their settings. It was however, noted that the preschools were keen to introduce the use of the Internet as an emerging form of new technology, and progressively the CBeebies online application software, *Alphablocks*, into their classroom learning environment.

> "I like *Alphablocks* and would definitely choose it, particularly for this age group. It also follows the phonic study for the EYFS which is good for us" (Appendix 11a, p.223)

"....We are keen to introduce the Internet because most of the time the children come in asking to do something specific that they have done at home with their parents, like number charts or a math program which can be very beneficial but we are not able to carry this on with them" (Appendix 12a, p.242).

The findings from the face to face interviews suggested that children use the computer everyday; where the younger children are provided with an induction early on and as they become more confident, are left to explore at their own will. In considering the various ways the children use technology in the classrooms and how often it was used, it would seem that technology is an integral part of the EYFS curriculum and is encouraged to flourish in the early years setting.

"The children used it every day: sometimes on their own, sometimes on their own and sometimes with their friends" (Appendix 11a, p.222).

"We use the computers with preschool every day. Again, the children themselves in the upper school use the computer every day. If we go over now, we will find that someone is on it. My thinking is that we are a computer literate world and its part of their learning" (Appendix 12a, p.241).

The responses from the interviews additionally suggested that there are various ways to encourage phonetic awareness and recognition with the young children. It would seem that the more alternatives there are to explore, the better for the children where "they it pick it up through various activities...and the children don't know they are learning" (Appendix 11a, p.225).

"There is no specific way. We do it in role play. We do it in literacy table. ICT games on software – V-TECH. Magic Bus and The caterpillar. We use magnetic letters, books, reading, and singing....the basic sort of things (Appendix 11a, p.225).

"We have songs. We have it displayed in different ways. We have posters. We do the letters and sounds program now. We do storytelling as well. There are lots of different activities we do with the young children" (Appendix 12a, p.246).

In questioning the current pedagogical strategies for encouraging children to learn the sounds of the alphabets, it would seem that active learning experiences are encouraged (following the High/Scope early years model, see chapter 3.3.2). The practitioners highlight that children get restless very quickly and they "find it difficult to keep them engaged for more than 5 minutes at a time, so we are always trying new things out" (Appendix 11a, p.225).

"There is a lot of adult interaction with the children. Just try to find out what their interests are (and then) look to engage them with it. We engage them with a lot of characters that they can associate themselves with – ones that they are familiar with" (Appendix 11a, p.225).

The background information collected in these interviews prior to this research indicated that although the preschools did not use online educational websites at present, they were very keen to implement its purpose within their early years classroom. While the findings indicate that children are using technology every day, either on their own, with an adult, or with their peers, it was also recognised that practitioners use various forms of hands-on activities to encourage phonetic acquisition with the young children, mainly so that they can keep them engaged for periods of time. Based on the responses of these interviews, stage 2 of Action Research commenced with its four part design strategy of planning, acting, observing, and reflection/analysis.

8.2.1. Planning

In determining what constitutes an appropriate pedagogy whilst using technology with young children, the following distinct pedagogical qualities were highlighted and discussed with the preschool managers/early years practitioners (see chapter 3.4):

1. *A balanced mix of adult-initiated and chosen child-initiated activities, where although freely chosen, are yet potentially instructive (Regio Emillia);*

This includes two scenarios of practitioner-led sessions with a large group of children and child-led session including a small group of the practitioner and two children.

2. *Active learning where children learn through active experiences with people, material, events and ideas (High/Scope).*

This included a balanced distribution of practitioner-led instructions for the first ten minutes of the session, and child-driven independent exploration for the last ten minutes (with assistance offered if required).

3. *Providing for the quality of meaningful and shared dialogue interactions, between the practitioners and children (Regio Emillia-High/Scope).*

This included the practitioner's dialectical instructional process and the social interactions with the children.

4. *The quality of well-being and involvement of the young children, in a planned, supportive learning environment, within challenging and yet achievable experiences for the young children (EXE).*

This consisted of a twenty minute planned learning session, within the child's natural classroom setting.

The following is outlined:

Stage 2:

(Preschool 1): total of 12 children resulting in 6 studies

(Preschool 2): total of 12 children resulting in 6 studies.

(Preschool 3): None (no internet connection).

Total number: 24 children yielding 12 studies.

Process:

- Cycle 1 consisted of a practitioner-led session with a big group of children (5-7) for approximately twenty minutes in a separate room of the early years setting.

The first ten minutes was dedicated to introducing the software, and the last ten minutes dedicated to children and practitioner interaction (in a large group).

- Cycle 2 consisted of a blend of both practitioner and child-led session (between 2/3 children) starting off with approximately ten minutes of practitioner-led instruction with the teacher. In the last ten minutes, where the child on his/her own provided for means of active, exploratory play had the option to call upon the practitioner if any difficult arose. The last ten minutes included less interaction by the practitioner.

Duration:
Each session lasted no longer than approximately 20 minutes to ensure that health and safety standards were adhered to, for the young children as they use the technology

Time:
Morning and afternoon free-play sessions over two day period.

Setting:
Early years classroom to ensure as close as to a natural environment for the children.

8.2.2. Action

The second stage in Action Research undertook the action planned for the changes and evaluating its effects. Within this step, focus was paid to the practitioner and child interactions, in driving forward the attention and interests of the child, within a learning capacity (Iram-Siraj Blatchford 2005).

Action/Intervention: To apply the appropriate pedagogical qualities, whilst using *Alphablocks*, so as to encourage the phonemic awareness of the letters and sounds, with young children in their early years.

In this stage, there were iterations of many cycles. The first cycle consisted of practitioner-led sessions consisting of one practitioner, the researcher and a large group of seven to eight children. Spiralling off this cycle, the large groups were modified to group children closer to their age range i.e, 3-4 year old and 4-5 years olds. This immediately reduced the groups to four to five children in session.

The second cycle consisted of a smaller group of child-led sessions, which included one practitioner, the researcher and two children (regardless of gender). Again, spiralling off this cycle, the small group was then modified to group children closer to their age range (again, regardless of gender). An additional third spiral consisted of a blended approach of practition-led and child-led session. This group included the practitioner, researcher and two children who were similar in age range, and where the learning session was conducted in the early years classroom setting. There were two further mini-spirals of enquiry which were conducted in a seperate, quiet room vs. a corner in the early years classroom, which was less accessable to activities in the playroom.

8.2.3. Observations

The third stage in Action Research observed the actions planned between that of the practitioner and child interactions, in both the practitioner-led and child-led sessions (with some iterations of a blended approach in researcher-led and child-led sessions). The following was noted:

<table>
<tr><td>Observations:</td><td>Preschool 1 and 2</td></tr>
<tr><td colspan="2">
Group Sessions – Comprising of 5-7 children at a time.
<u>Practitioner-led sessions:</u>

Practitioners were inundated by the technical infrastructure difficulties, and as a result, the twenty minute learning session ended early. The practitioners were unsuccessful in resolving the technical issues (Appendix 11b).
Practitioners did not feel confident in conducting the learning session and requested the researcher to facilitate the instructional process (resulting in the practitioners adopting the role as an observer).
Practitioners were mainly occupied with keeping the children calm and collected throughout the session. The practitioners were observed taking a more passive role and making observations/notes.

In the instances where the researcher was requested to facilitate the instructional process, the following was observed and videotaped:

<u>Researcher-led sessions:</u>

More attention was focused on me, instead of the children participating together in a collaborative learning experience. There was more focus on conversational dialogue (Appendix 12b).
There was less hands-on active experiences for the children in the group; where it was found that I was more hands-on the laptop/computer.
The group session was found to be of high pace, with only some dominating children providing responses. As a result, the frequent feedback was found to be less constructive and applicable for all the children involved.
The lesson plan included very specific learning targets, which was not always appropriate for each child’s progress.
The setting included mixed age groups of 3-4 and 4-5 years. However, some

</td></tr>
</table>

Observations:	Preschool 1 and 2

children have very basic skills of phonetic knowledge, and others were able to combines phonemes to construct words. As a result, it was difficult to pace the learning for particular groups of children (Appendix 12b).

Child-led sessions – Comprising of 2/3 children at a time

<u>Child-led sessions (practitioner)</u>:

- There was good rapport between the practitioner and child.
- There was good understanding by the practitioner of the child’s current competence and level of phonemic knowledge to build upon.
- Good use of dialogue and there were some good demonstrations of Open Questioning.

However,

- More attention was given to the technical difficulties of the infrastructure, setting, and child’s technical motor ability, in which twenty minutes was over just by troubleshooting.
- Some practitioners had not familiarised themselves with the software and so there was much confusion as to what to do next.
- At times the child was more in control of the technology and direction of the software, leaving the practitioner ‘lost in space’.
- At times, the practitioner would leave the child to continue using the software whilst attending to another child (due to lack of staff) or off on a ten minute break.
- Often, the practitioner would turn towards me to ask ‘if this is what is wanted?’ and ‘is this what I need to do?’ (Appendix 11b). There was limited observation of the child’s level of progress and monitoring of outcomes.

- When a child was left to explore in the last ten minutes of the session, they were found to be distracted when there was no guidance and/or conversation taking place between the practitioner and child. It was observed in some cases, that the technical difficulties could not be resolved and the children left the session to carry on with another activity in the classroom.

- In both preschools, I was asked to provide a demonstration of the learning session. In most cases, I was left with the child to facilitate the learning session in the early years classroom. This occurred on a number of occasions.

Observations:	Preschool 1 and 2

Child-led sessions (researcher):

- There were less technical hindrances, and the dialogue with the children was more context-driven. I was able to steer the learning session with technical difficulties i.e. re-starting the session.
- Children were found to be more involved with me and were found to be more confident whilst using the technology.
- I aimed to followe a roughly structured lesson plan – including that of introduction of software and free flow exploratory play. The 'instructive' processes were found to bring some awareness of the child's level of understanding and progress through the session. There were instances where some children were linking sounds to words, and were also splitting the words into individual phonemes (Appendix 12b).
- There was more control over the smaller group sessions which consisted of two children, within the particular age ranges of 3-4 years and 4-5 years. This helped streamline the phonetic learning session (Appendix 11b) where it was observed that some children remembered the *Alphablocks* images and the sounds that were linked to them. Others remember the *Alphablocks* movements, and through this, the sounds attached to them.
- The learning sessions were completed within twenty minutes of time.

8.2.4. Reflections

The last stage in Action Research reflected upon the effects and impact of the intervention in action. The pilot data was collected and evaluated with the preschool practitioners and early years managers. The following was discussed and analysed:

In the event where the practitioner-led session took place with large groups of children, the majority of children were found to be actively involved in watching and interacting with the software. However, they had limited opportunity in using the computer and in being 'hands-on'. Yet, in the majority of smaller child-led sessions, where the children were intentionally left to explore on their own and were observed to be more 'hands-on', it was found that the children become easily distracted and need to be re-guided to the activity.

> "I quite liked the practitioner-led and child-led learning sessions. They both fit very well into the EYFS model. But, I think they need to be blended more together. So, where the teacher leads the session for the first ten minutes, that is

a good thing, but when the child is leading their own session for the last ten minutes without any guidance, we can see that this can be quite a negative experience for the child. I think some children feel quite alone in the whole process" (Appendix 11c, p.236).

> "In the past, we have often showed the children what to do and let them get on with it. If they need help, they call out, but today I observed that children don't always call out and try to make do, or if they do call out that I am not always available to help them, and by the time I am ready to help they have moved on and beyond the problem..."(Appendix 12c, p.256)

The practitioners from the pilots confessed that they were not confident whilst using *Alphablocks* in a learning type of environment. They were unsure of the appropriate pedagogic instructions to be applied, and requested for me to take a more active role in facilitating the instruction so that they can make observations and take notes.

> "I think you made more of a conscious effort to include the children when using the software. Sometimes, I think it's easier to let the software do the teaching and we can often rely on it is as form of teaching method but this is not necessarily the right thing to do..." (Appendix 11c, p.237)

> "I think I paid more attention to their (the children's) technical motor abilities and how they used the mouse and what they could do and not do, which used up most (of) our time at the computer...I also think you were more natural in your delivery. You seemed to know the software more, and (were) in a way, more confident about the technology" (Appendix 12c, p.257).

In discussions with the preschool practitioners, it was noted that not only does the *Alphablocks* software have the potential to encourage phoneme recognition through approaches of systematic methods, but they found that the children were engaged for sustained periods of time.

> "The (new media) websites were very conducive in the learning environment. Some children, who have often struggled with (engagement), were able to sit down for the full twenty minutes, watching the episode. ...we noticed that they were also taking part in repeating the sounds of the alphabets and especially during game play when they had to know the sounds of the alphabet to make the word. In contrary to what we see in our classroom. Often, these children are so difficult to engage..." (Appendix 11c, p.235)

It was also observed that some children were able to remember the phonetic sound by associating it with the *Alphablock* image. Some other children were able to become aware of the sound through features of movement, for instance the *Alphablock* 'X' which represents the action of a hero, in which case it was observed that the boys remember the sound of the letter. Some children remembered the storyline of the individual games and the letters involved in the narrative (much of this is to do with the repetition of the sounds attached to the letters in the narrative).

> "*Alphablocks* has so many different things happening at the same time. Some children picked up on the bright images. Some other children were really into the music. And the others were just happy that they could do something with

their hands rather than just sitting idle. So, I think it worked for most of our children. It was really quite fascinating to watch......I know the children have understood it because they come away and during activity time, one girl was able to say this is an ‘A’ and was able to make the sounds attached to it, like in the *Alphablocks*” (Appendix 12c, p.256).

The following was also observed and discussed (in both practitioner-led and child-led sessions):

Technological:

- The use of mobile technology, such as Fizz Books (which were recently bought by preschool 2) was not able to cope with media richness of the flash technology and, therefore the researcher’s laptop was used instead.

- Using an adult size computer mouse was not appropriate. Children require a larger user friendly mouse. The use of touch-pads in a laptop is not always appropriate for young children as they struggle with synchronising the click on one finger and the movement of another.

- The use of laptop or PC is not enough for large group practitioner-led sessions. It was necessary to use a projector and a large screen to maximise the impact for these sessions. However, these resources are not easily available and were borrowed by the Bournemouth University Media Resource Centre.

- In order to maximise the impact of the use of projector and screen in the large group sessions, it was advisable to find a room that included curtains and/or blinds. This is not always possible and financially not affordable. It was also required that room lighting needs to be dim in order to view the projection clearly. When this was achievable, children were found to turn around often and become disturbed by the project bulb. Computer cables and projector wires were also exposed and could become a health and safety issue; especially for a large group of children in a small room.

Structural:

- In large group sessions, there was more practitioner-initiated and less child-initiated activity. This was mainly due to the large number of children within a group session. It was observed that the practitioner was heavily involved in controlling the many personalities in the classroom while I was busy leading the activity.

- In large group sessions, there was also more focus on conversational dialogue between the practitioner and children, and less emphasis on steering the session towards the children’s interest, within the educational outcomes. This was found to be less constructive and applicable to all the children involved.

- In small group sessions between the practitioner and children, the learning session was more contained and there was the potential for the practitioner to focus and develop the individual children’s interests.

Organisational:

- In large group sessions, children were not given an opportunity to become hands on with the technology. As there were too many of them it was not feasible to offer each child a turn on the computer or laptop. This was found to take a more passive sort of learning approach, and a practitioner-centric driven outcome.
- In the smaller group sessions, the two children were offered equal opportunities to have a play on the computer or laptop. This active hands-on approach was found to be more suitable in engaging and motivating the individual child to take part in the learning.
- However, in the last ten minutes of the session, the children were left to explore at their own will so as to drive their own learning experience. As observed, this was not always appropriate as the children would often become distracted when not provided with guidance.

8.2.5. Analysis

The findings from the pilot stage illustrate that determining an appropriate pedagogy, whilst using new technology with young children to encourage phonetic recognition and awareness, has the potential to be developed. However, it is a complex scenario and the following needs to be rectified for the next stage:

Technology. Challenges of new technology can inhibit successful learning if not modelled correctly. Therefore, the next stage must ensure that appropriate technology and its counterparts are established prior to commencing research. For this research, this includes a robust internet connection, child-friendly mouse, and child friendly keyboard. For safety and well-being of the children in the preschools, large group settings which require the use of a projector, screen, dim lighting, and dedicated room, will no longer continue. This is due to the realisation that these resources are expensive, not easy to lease, and are also not feasible for preschools to purchase in the future.

Structure. The findings show that an extended and more appropriate dialogue between participants can be extended with a small group of children, which consists of the practitioner and two children. In this way, the practitioner can provide for a balanced learning environment (reflecting the first pedagogical Regio Emillia quality of *a balanced mix of adult-initiated and chosen child-initiated activity*). This is particularly helpful with grouping children, irrespective of gender, within similar age ranges of 3-4 year olds and 4-5 year olds, and who share similar motor competences. The next stage is to ensure a balanced mix of practitioner-led and child-initiated learning experience, so the practitioner can appropriately drive the learning experience forward for the children, through more purposeful interactions.

Organisation. It was found that the active learning approach of the practitioner-led session (10 minutes) worked well in providing for instructive and explanatory play, so as to provide for basic underlying knowledge and introduction to the software. This was reflective of the High/Scope early years pedagogical quality, *in which children learn through active experiences with people, materials and ideas*. However, when leaving the child alone (in the last 10 minutes) to drive independent learning forward, it was found that the child can often get lost throughout the process if not guided appropriately. The next stage must ensure for a continuance of an active and holistic learning experience, in which the child can take the lead and the practitioner can respond purposefully from the cues given by the child.

The findings showed that once these three areas of technology, structure and organisation are appropriately established, only then is it possible to consider the more appropriate pedagogical interactions between the practitioner and the children.

Practitioner Involvement. Informal discussions with the practitioners suggested that there needs to be more practitioner involvement in supporting and scaffolding the child through the learning process. In this stage, there was less evidence to show the there *was high quality of meaningful and shared dialogue interactions between the participants* (High/Scope and Regio Emillia early years models). What is particularly important is in understanding the child's current level of phonetic knowledge and in using the correct pedagogical instructional practices, to accelerate their learning. The next stage should look to highlight the appropriate pedagogical instructional practices, whilst using the technology. These pedagogical instructions have yet to be determined.

These findings are illustrated in the following diagram:

New Learning Pedagogy

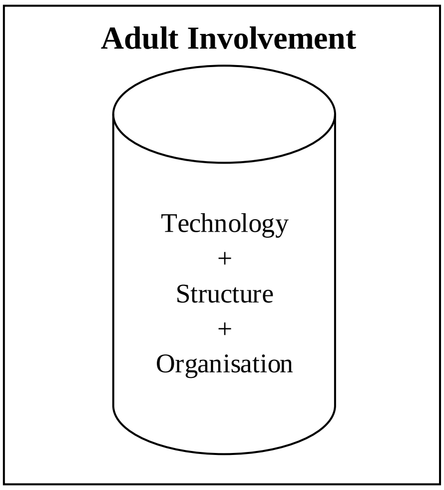


Figure 8 – Stage 2 Diagram

8.3. Stage 3: Piaget's Non-Clinical Interviews

> "Piaget's techniques preserves one of the key advantages of observational methods in which before conducting the interview, the researcher should engage in pure observation of children's spontaneous answers to questions, and use this as a basis for deciding on the types of questions to ask at interview" (what-when-how.com).

The findings from stage 2 show that in determining an appropriate pedagogy, whilst using technology with young children is a complex issue. However, the following has been demonstrated and established:

- Appropriate technical infrastructure and connectivity, prior to the start of the learning session, is crucial in progressing and developing a pedagogically adapted technological learning session with the young children.

- A small group setting of two children and the practitioner is most feasible in providing for a balanced *mix of adult-initiated and child-initiated activity* (Regio Emillia), in order for it to become appropriately instructive.

- *Active hands on playful learning* (High/Scope), through forms of guided instructions, are holistically more appropriate, in setting for an engaging learning session with the young children.

Yet, more attention has yet to be dedicated to:

- Providing for the *quality of meaningful and shared dialogue interactions* between the practitioners and children (Regio Emillia/High Scope) and

- The *quality of well-being and involvement* of the young children in a planned, supportive learning environment (EXE), within challenging and yet achievable experiences for the young children.

This stage focused on developing the fourth point, in that of providing for the quality of meaningful and shared dialogue between the participants. It adopted the early years Communication and Collaboration approach (Siraj-Blatchford, I., 2007) (see chapter 3), which shows that it has the potential in providing for a purposeful dialogue between participants (The EPPE 2003 – 2007; REPEY 2002) through the use of Sustained Shared Thinking interactions. By applying Sustained Shared Thinking (see chapter 3), where two or more individuals can work together in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. (Siraj Blatchford et al., 2002), the Communication and Collaborative approach (Siraj-Blatchford, I., 2007) shows that a dialogue has the potential to become extended, where both parties can contribute to the thinking process with the intention to develop and extend it.

> "Sustained Shared Thinking is strongly associated with high-quality teaching and learning for young children" (Iram Siraj-Blatchford 2005, p. 1, EYFS 2012).

Stage 3 utilised Piaget's Non-Clinical Interviews methods in developing an appropriate dialogue, based on the interpretations of the child's language and actions. Piaget (1976/1969, p.1-2), described his interview method based on three stages. The first stage takes a purely verbal phase, which asks the child to consider the questions. The second stage adopts a half-verbal, half-practical phase, which involves characterising certain natural movements and asking the child to explain. This stage is still tainted with verbalism. Finally, in the third stage, children are simply asked to explain or demonstrate that which is enacted before them, or in other cases, to predict what will happen next (Mayer 2005, p.373).

> "Piaget suggests that neither the 'purely verbal' nor the 'half-verbal, half practical' types of examinations can be considered to be as valuable without the inclusion of the third stage, 'which is, as far as possible direct' and which

> produces ‘first-hand’ information about the mental orientation of children’ acquiring some kind of knowledge” (Piaget 1926/1969, p.1-2).

This stage adopted the role-reversal between that of the practitioner and researcher, where the researcher took an active role in facilitating and creating a two way dialogue using the Communication and Collaboration early years model with the young children (see Chapter 6.2). Using Piaget’s Methodology as the dialectical interview process, the researcher will use the subjective voice of ‘I’ in demonstrating the conversation between herself and the children, along with developing appropriate pedagogical strategies, in extending learning and development within the *Letters and Sounds* curriculum.

8.3.1. Planning

Similar to Action Research, Piaget’s methodology follows an iterative cycle of planning, observations and analysis. In the planning stage I took the form of a facilitator, in which I actively led the learning session, asked questions, and probed the participants to offer verbal answers. The early years practitioner, on the other hand, took more of a backseat, making notes and observing the process between the researcher and the children.

This stage adopted a similar research design to that of stage 2, and incorporated the technological, structural, and organisational elements to this research. It included the following:

Stage 3:

(Preschool 1): total of 10 children resulting in 5 studies

(Preschool 2): total of 10 children resulting in 5 studies.

(Preschool 3): total of 8 children resulting in 4 studies

Total number: 28 children yielding 14 studies.

Process:

- The session consists of both facilitator-led and child-led session (consisting of 2 children in a group).
- It starts with approximately ten minutes of facilitator-led interactions where the instructing includes that of introducing the software and taking the child through level 1, possibly level 2, episodes of *Alphablocks*.
- In the second half of the session, of the last ten minutes, the child can continue to progress with me through level 1/2 episodes, or can have the option to play a game using the new learning software (level 1/2 game play) with or without interactions my help. In this session, I am actively present to observe, troubleshoot, and steer the playful learning if necessary.

Duration:

Each session lasted no longer than approximately 20 minutes to ensure that health and

safety standards for young children use of technology. **Time:** Morning and afternoon free-play sessions over a two day period. **Setting:** Early years classroom to ensure as close as to natural environment for the children.

8.3.2. Observations

I conducted the dialogue through a form of a Non-Clinical Interview, which follows a semi-structured interview format. This included an iterative planning of the context, tasks, and questions. In order to develop appropriate pedagogical strategies, I experienced the process of many interviews with the children, before constructing the suitable Sustained Shared Thinking techniques, to extend the children's interest in leading to phonetic awareness. Sustained Shared Thinking is about engaging in extra talk, rather than just responding to explicit directions such as, "do this" or "do that" etc.. It is described as an episode in which "two or more individuals (children together, or adults and children) work together in an intellectual way to solve a problem, clarify a concept, evaluate activities or extend a narrative (Iram Siraj-Blatchford, 2005). In this scenario, both partners must look to contribute to the activity on hand, for thinking to develop and become extended. Within this research, five specific techniques of Open Questioning, Modelling, Reciprocating, Probing and Prompting were found to encourage meaningful and shared dialogue, for encouraging phonetic awareness, through language and play.

8.3.2.1. Open Questions

In stage 3 dialogues (between that of the early years practitioner and the children), it was observed that using 'closed questions' resulted in the child answering either 'Yes or No' in which the child did not volunteer any more information. These types of responses unfortunately did not provide information about how the child was interacting, and how much they were learning. In fact, the observations from stage 2 showed that the use of closed questions indicated an emotional separation between themselves and another, which eventually ended the dialogue.

The following instances of closed questions can be seen below:

(Stage 3: Appendix 13, p.261)

Child 2:	(Comes to sit down next to child 1. She takes hold of her friends hand in her lap).
Child 1:	(whispers) "pppp...ppp...ppp..."
Child 2:	"XXx....XXxx...." like a super hero.
Researcher:	So tell me, did you enjoy watching the *Alphablocks*? **(closed question)**

Child 1:	(looks down and holds her child minder's hand tighter)
Child 2:	(Nods) Yes.
Researcher:	Do you remember any of the sounds of the letters from the *Alphablocks*?
Child 1:	(Quiet)
Child 2:	No. Can we watch it again?
Researcher:	Would you like to watch it again? **(closed question)**
Child 1:	(Whispers) Yes.
Child 2:	Yes.
Researcher:	Ok then, this time I want you to watch and listen to the *Alphablocks* very carefully. See if you can remember any of the sounds attached to them. OK? (closed question)
Child 2:	Yes.

Taking into consideration the limitedness of closed questioning, I looked to include within the interview process more open ended questions (John Siraj-Blatchford 2007, 2009), which helped to put children 'not on the spot' to find the correct answer to a question that was being asked of them (Jenni Clark 2007). This was intended so as to open the dialogue and encourage more information to flow. New types of open questioning included:

> I wonder if….? What could we do….? Can you find a way to….? What would happen if….? What you think will happen….? What do you notice about….?

(Stage 3: Appendix 15, p.282)

Software:	"xxxx...."
Child 2:	My superhero.
Child 2:	That's my favourite one
Researcher:	Is it. And which one is your favourite one Child 1?
Child 1:	It's the one with milk.
Researcher:	Ok. What do you notice about the word milk? **(Open Question)**

Child 1:	"M"
Researcher:	Yes, and I wonder what the sound attached to it is....? **(Open Question)**
Child 2:	It's "mmmm..."
Researcher:	Well done. Is that right Child 1?
Child 1:	Yes, I like "mmmm..."

8.3.2.2. Modelling and Reciprocating

Another technique of Modelling and Reciprocating was found to become quite useful in sustaining conversation between the child and myself. The technique of Modelling, where I was able to suggest and demonstrate ways, was especially helpful in driving the dialogue forward between the researcher and child. According to Siraj-Blatchford et al., (2002), Modelling is especially effective in encouraging the leading as well as the thinking experience for the child. Therefore, by modelling the 'thinking in action', it was observed that the children were able to adopt it themselves. This was often followed by Reciprocating in agreement, where the child looked for positive affirmation from me. By Reciprocating to the child's utterances, the child showed a greater sense of confidence and affirmation in their choices. Instances of Modelling and Reciprocation were initially sighted in stage 2 dialectical interactions between the early years practitioners, myself and children.

(Stage 2: Appendix 12b, p.250)

Children:	Sing to the song...'hold my hand'...'aaah....''...ready for *Alphablocks*'...
Researcher:	"bbbb...bbb" **(Adult Modelling Technique)**
Children:	'bbbb...bbb'
Children:	'kkk....dddd....ggg....eeehhhh....'
Researcher	Well done...this is great. **(Reciprocating)**
Children:	'hhh...iiiii....'
Researcher:	How about this one?
Child:	I like this...that's in my name...what is it?

Children:	'oooohhhhh...oohhh...oh..oh...oh'
Child:	What's that over there?
Children:	'qqq...uuuu...rrrr....'
Researcher with the children:	'ssss....tttt....ooohhh.....' **(Adult Modelling Technique)**

These instances were then further developed, refined, and incorporated in stage 3.

(Stage 3: Appendix 14, p.300)

Researcher:	"Aaaah.....your turn" – **(Modelling Responses)**
Child 1:	"aaahhh.."
Child 2:	"aaah...very quietly (but she said it)
Researcher:	"Bbbb...Bbb..." – **(Modelling Responses)**
Child 1:	"Bbb..bbbb..."
Child 2:	(Quiet)
Child 1:	"gggg....look the grass is growing"
Researcher:	"ggg…..gggg….Yes, because he drank some water.. **(Modelling)**
Researcher:	That is right. **(Reciprocating his response)**
Researcher:	"llll….llll"
Child 2:	"Iii....Ii...." (Quietly)
Child 1:	"L" – For Lizzie…that is me!
Child 1:	"mmmm….mmmmm….MILK"
Researcher:	Yes, that is correct. Well done. **(Reciprocating)**
Researcher:	"ppp….ppp…" like popping a balloon **(Modelling)**

Child 1:	"Oh…pppp..ppp…ppp (started jumping up and down).
Child 2:	(Watches her friend in amazement and then looks at me and looks back away).
Researcher:	That's right. Like a pppp….pppp…balloon **(Reciprocating)**

8.3.2.3. Probing and Prompting

In stage 3, it was frequently observed that I, as the facilitator in leading the dialogue, had to move beyond just Modelling to sometimes Probing and Prompting the children, so as to produce responses to extend the learning and thinking experiences for the children (Doverborg and Pramling 2000, Piaget 1969). This was often found to occur in situations when I was able to tune in and listen carefully to what was being said by the child, including observing the child's body language, and what the child was doing or trying to say. By doing so, I was able to encourage the child to describe his/her efforts, their reasoning, and ideas. In some cases, it also helped lead up to the next question and consider the varying levels of easy and difficult questions. Probing and Prompting was especially constructive when showing genuine interest and giving one's whole attention to the child throughout the twenty minutes session. This included bodily language of maintaining eye contact, affirming, smiling, and nodding by me. These features were observed by the practitioner, who took more of a passive role in this stage.

Probing and Prompting/Showing Genuine Interest – (Stage 3: Appendix 14, p.271)

Researcher:	Ok, which letter would you like to drag? Don't forget I would like you to sound out letter too. **(Prompting)**
Child 2:	That one (and points to the screen).
Researcher:	Do you know the sound? **(Probing)**
Child 2:	No
Researcher:	Ok, can you describe it to me? What colour is it?**(Showing Genuine Interest)**
Child 2:	The orange one
Researcher:	Oh, you mean "oooo..oooo" Can you repeat that?
Child 2:	"ooohhhh....oohhhh"(puts hand on the mouse)
Researcher:	Ok, are you ready to drag the letter over there?

Child 2:	Yes. (She takes the mouse and drags the letter O over to "B" and "G"
Software:	B – O – G = BOG. You made BOG (and the picture changes to the *Alphablocks* standing in a BOG).
Child 2:	Oh...what happened?
Researcher:	You made the word BOG. You made a word. B – O – G makes BOG.
Child 1:	What does BOG mean?
Researcher:	It's a bit like swampy water **(Showing Genuine Interest)**
Child 2:	Oh OK. (Smiles)
Child 1:	My turn (and takes the mouse and drags the letter "A" over to "B" "G"
Software:	B – A – G = BAG. You made BAG
Child 1:	A bag is not going to help "T" (and laughs)
Researcher:	That is very good Child 1 but I didn't hear you say the sound of the letter (smiles). **(Probing)**
Child 1:	Oh yeah, I forgot. Is it "aaaaahhhh?"
Researcher:	Yes, that is good.

Prompting and Probing/Tuning in – (Stage 3: Appendix 14, p.277)

Researcher:	What do you think will happen when you bring B over to S and A? (Open Questioning and **Tuning In/Prompting**)
Child 1:	S - A – B = SAB
Researcher:	That is right. S – A – B
Software:	S – A – B = SAB (follows up what i just said at the right time to reinforce the word)

Child 1:	That is not a word. Is it?
Child 2:	Oh, yes, it's not a word. Its SAB (and smiles)
Researcher:	That's alright. SAB is not a word. What word do you think the *Alphablocks* need to make the party happen? **(Open questioning)** Let's try again. What would you like to do next Child 2?
Child 1:	(Thinking. Child really thinking about what letter could get the party started).
Child 2:	(Looking at the screen and eliminating the ones they have used)
Child 1:	It's my turn.
Researcher:	You already had your turn and won so let Child 2 have a turn and make a word and then you can have your turn. (**Tuning in** to the children trying to deduce what letter they can use to make the star word) (Child hands over the mouse). Thank you.
Child 2:	I want to use "A" so its S – A – G..(and sounds out all the letters)
Researcher:	So, I wonder which one that would be? **(Probing)**
Child 2:	(Quiet) – (Giving the child time to think – after long 20 seconds or so) – It's the green one.
Researcher:	Could that be gggg...for the alphablock that has grass on it and grows. (Tuning In/Prompting)
Child 2:	Yes, its "gggg...." (and drags the letter G over to S and A)
Software:	S – A – G = SAG. Well done. Now let's all sag.
Researcher:	Oh dear, the *Alphablocks* are sagging. Do you know what that means? (**Modelling** demonstration for the children)
Child 1:	(Repeats demonstration with his body).
Researcher:	That's right. But can you have a party if you Sag, can you? (**Probing** – leading up to the next question)

Child 2:	No. We need another word. It is my turn now.
Researcher:	Alright. What should we do next? **(Prompting)**
Child 1:	"A"
Software:	Have you found the star word yet? S – A – T = SAT Let's all sit down for a cup of tea.
Researcher:	Can we have a cup of tea and have a party? – (Recapping dialogue from software and providing prompts for children to think about what next)
Child 2:	No.
Researcher:	Should we try another one? **(Prompting**)
Child 1:	"R" .... rrrrr
Software:	S – A – R
Researcher:	Is that a word – SAR – can we have a party now? (Showing genuine interest in the nonsensical word)
Child 1:	No.
Child 2:	There is no word SAR but this is fun. We can make all kinds of words.
Child 1:	Do "D" and then you will get superhero X to come and rescue the party.

8.3.3. Analysis

In determining a meaningful and shared dialogue to take place between the participants, this stage adopted the Communication and Collaboration approach (Siraj-Blatchford and Sylva 2004) and specific Sustained Shared Thinking strategies (Siraj-Blatchford, I., 2007). The following was analysed:

Pedagogic Approach

- The Communication and Collaboration approach (Siraj-Blatchford and Sylva 2004) supported the provision of a dialogue between participants, whilst applying the use of technology in the early years classroom. It was found that through *joint* collaboration of dialogue between the practitioner and the children, a meaningful and rich dialogue can take place. This collaboration of dialogue, however, did not happen single handedly. The role of an adult, be it practitioner or researcher, was paramount in leading the dialogue forward. Children in their early years are still very young, and it would seem that they require guidance and/or steering whilst using the technology within a planned learning session. In the instance, where a child had become quiet and distant, I was able to use a form of Open Question, in which I applied the same question within a different context. This change of questioning helped shift the child's level of interest, and allowed for the research to continue. The practitioner, as the observer, confessed that she would have stopped the learning interview session, and would have encouraged the child to move onto another activity, in the classroom (Appendix 16, p.301).

- Where it would seem that possible learning opportunities were being missed, as children were often left to learn through exploratory play in the latter half of the session of stage 2, this was further refined in stage 3, to include the blended process of instruction between the child and myself, *throughout the entire twenty minute session*. This was particularly helpful in instances where children would lose motivation to continue, or if there was a shift in focus of attention; often due to the busy nature of the early classroom settings and/or increasing noise levels in open plan settings. By adopting a blended process of child and facilitator led interaction, it was also observed that the children were able to sustain the twenty minute session. The social interactions that were taking place between the child and myself can be considered 'natural' to that of the child's zone of proximal development (ZPD), and provided a comfortable environment for the child to speak freely.

- It was also observed that I would find myself working alongside the technology, in terms of narrative, audio, and visual images, in order to maximise the learning potential of the interview session with the children. More often than I thought, I would dive right into the heart of the interview, and speak louder than the online narrative, in order to get the child's immediate attention.

(Stage 3 – Appendix 13, p.301) – Introduction

Researcher:	Starting *Alphablocks*
Child 1:	(Watching intently but holding onto her childminder's lap).
Child 2:	(Watching and smiling at the same time).
Researcher:	Do you know what this letter is..."Jjjj...Jjj...Jjj..."?
Child 1 and 2:	(No response).
Researcher:	(Tries again) Do you know what this letter is..."mmmm....mmmm".

(Stage 3, Appendix 14, p. 269)

Researcher:	(Talks whilst the narrative is on). Alright children (talking louder than the narrative on the computer to get the children's attention). Let's try to repeat the sounds if we can. Join in with the *Alphablocks*. Who can repeat this one?
Child 1:	Quiet and watching intently
Child 2:	Quiet
Researcher:	Narrative continuing along the screen. The *Alphablocks* are on gggg...now. What about this one children? What about you child 2?
Child 2:	Gggg....(but not really interested. Really wants to watch what is happening on the screen).
Child 1:	Quiet and watching intently.
Researcher:	Hmmm... (.... stops – the children are focused on watching and taking in all this new information. Allows the children to watch for the rest of the introductory session).

Pedagogical strategies

- Pedagogical strategies which included Sustained Shared Techniques of Open Questioning, Modelling, Reciprocating, Probing and Prompting, were especially appropriate when extending the dialogue between participants, and in encouraging the awareness and recognition of the letters and sounds with the children.

- It was found that the character of the interview questions developed gradually throughout this stage. It was more appropriate to include a list of fewer, more general Open Questions earlier in the interview, along with a list of more focused questions, followed by Prompting and Probing techniques to provide for clarity of concept.

- The extended use of Modelling and Reciprocating was also found to be fundamental in solving a problem. In the process of pursuing with sustainable dialogue where it is up to the child to choose the direction of the interview, and where I was interacting with the child to reach a point of engagement, it was found that the children would most often forget to repeat the sounds and talk about things that do not have direct relevance to the interview session. This resulted in free flow conversation that led to no direct learning.

The use of Modelling and Reciprocating functioned as a means of affirmative agreement, which helped to steer the dialogue back into the learning process.

- In stage 3, it was observed that the technology worked as a catalyst in providing for the Modelling and Prompting. The *Alphablocks* narrative in the software design worked as a supportive mechanism, enhancing the two – way interview design rather than conflicting with it.

> "In a way, it (the *Alphablocks* software) was almost doing it (the teaching) for you, and I was supporting it. The dramaticness of going through the phonic sounds and the effort and the emphasis you put it on it for the children is not so different but by using *Alphablocks*, it was doing it for me. It was just so much easier. The panto came out of it for us and emphasis was on the screen. But, it's not to say that we were not reinforcing it. Because you saw that we were, but it was just less draining" (Appendix 11c, p.237).

These new findings have been developed and illustrated, in the following diagram:

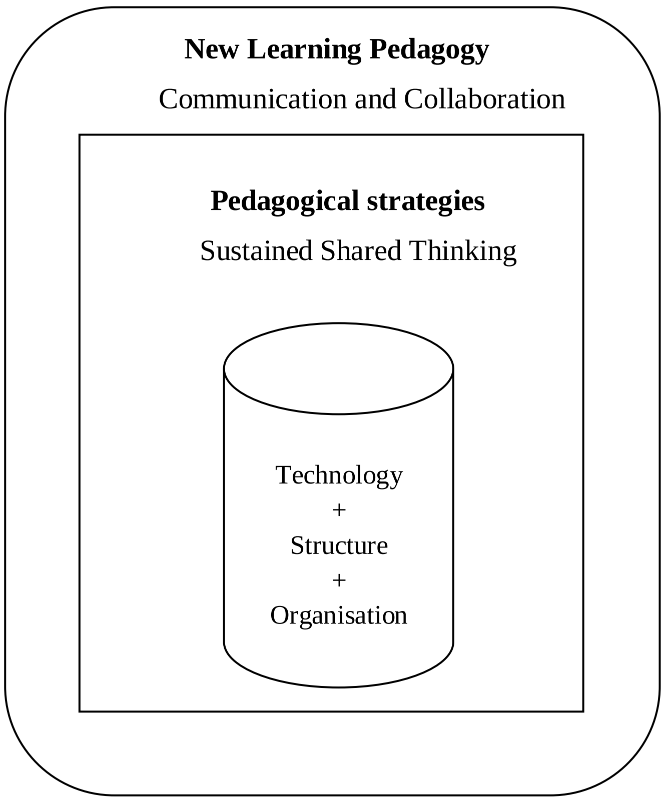


Figure 9 – Stage 3 Diagram

8.4. *Stage 4: Piaget's Teaching Experiments*

In stage 4 of Piaget's Teaching Experiments, all the knowledge and findings from stages 1 to 3 were transferred over to the early childhood practitioners, so that they were empowered with an understanding of what potentially can work, so as to lead an enhanced learning session with the young children. This was demonstrated in another three early years settings. It was intended that by understanding the theoretical pedagogy designed in this study, the practitioners can come to understand how to apply the use of the appropriate pedagogy and pedagogical strategies, so as to enrich a child's current knowledge base of phonetic awareness, whilst applying new technology.

8.4.1. Planning

This stage adopted a similar research design to that of stage 3, and incorporated the technological, structural, and organisational elements to this research. The Teaching Experiments, in stage 4, consisted of the following:

Stage 4:

(Preschool 1): total of 10 children resulting in 5 studies .

(Preschool 2): total of 10 children resulting in 5 studies.

(Preschool 3): total of 10 children resulting in 5 studies.

Total number: 30 children yielding 15 studies.

Process:

- The instruction session consists of a blend of both practitioner and child-led session (consisting of 2 children in a group).
- It starts off with approximately ten minutes of interactions with the practitioner, where the instruction includes that of introducing the software, and taking the child through level 1, possibly level 2, episodes of *Alphablocks*.
- In the second half of the session of the last ten minutes, the child can continue to progress with the practitioner through level 1/2 episodes, or can have the option to play a game using the new learning software (level 1/2 game play), with or without interactions of the practitioner. However, it is worth nothing the practitioner is always there to support and steer the session, if necessary.

Duration:

Each session lasted no longer than approximately 20 minutes to ensure that health and safety standards for young children use of technology.

Time:

Morning and afternoon free-play sessions over two day period.

Setting:

Early years classroom to ensure as close as to natural environment for the children.

Stage 4 was also extended by the use of Laever's Scales. Laever's scales were used in determining whether the appropriate pedagogy and pedagogical strategies applied by the practitioner can provide for the quality of well-being and involvement with young children, within a planned learning setting. Laever's EXE early years model and most distinct pedagogical quality advocates that if children are score high in areas of well-being and involvement, this indicates good quality of teaching (pedagogy) and instructional practices (pedagogical strategies), as well as in assessing the quality of the instructional setting (external factors influencing the learning session).

This stage uses Laever's 5 point scale to measure qualities of well-being and involvement, within the Teaching Experiments, conducted in the three preschools. The procedure included 'scanning' a child every two minutes to provide a score for both their well-being and involvement using the five point scale, where 5 is extremely high and 1 is extremely low (see Appendix 24, 25 and 26 for more details of scale measurement).

Laever's Scales (1994):

The Scale for Well Being

Level	Well-Being	Signals
1	Extremely Low	*The child clearly shows signals of discomfort*: is angry, cries, screams, or looks sad.
2	Low	*The posture, facial expression and actions indicate that the child does not feel at ease.*
3	Moderate	*The child has a neutral posture. Facial expression and posture show little or no emotion.*
4	High	*The child shows obvious signs of satisfaction.*
5	Extremely High	*During the observation episode, the child enjoys, in fact it feels great.*

The Scale for Involvement

Level	Involvement	Examples
1	Extremely Low	*The child hardly shows any activity.*
2	Low	*The child shows some degree of activity but which is often interrupted.*
3	Moderate	*The child is busy the whole time, but without real concentration.*
4	High	*There are clear signs of involvement, but these are not always present to their full extent.*
5	Extremely High	*During the episode of observation the child is continuously engaged in the activity and completely absorbed in it.*

8.4.2. Observations

The findings from stage 3 show that the Communication and Collaboration approach (Siraj-Blatchford and Sylva 2004) is likely to offer opportunities to create appropriate pedagogic instructions. In this stage, I shared this information with the practitioner and demonstrated how the use of Sustained Shared Thinking (Siraj-Blatchford 2007) extended by specific questioning strategies, can look to scaffold the children's current state of knowledge. I then took a back seat and allowed the early childhood practitioners to take the lead. In the Teaching Experiments that took place in the preschools, the following observations were recorded and analysed:

8.4.2.1. Transference of Knowledge

It was noted that the various uses of the Sustained Shared Thinking strategies (Siraj-Blatchford 2007) helped guide the phonetic learning session for the practitioners. By becoming more knowledgeable and informed of the appropriate practices that can be applied, the preschool practitioners found they had a stronger foundation, from which they could build and develop. With a better understanding of what works, the practitioners developed confidence of how to adopt technology, in a learning based environment, and apply the appropriate instructions to enhance learning.

> "You know I really appreciate it. Our children already use *Alphablocks* and I told you that in the past I have used it with them but what you showed me today is so valuable. And you are right, it really is so self-explanatory but it just never came to light that maybe we need to focus on particular strategies to get some results rather than just to aim to have 'free flow conversation'. I am totally grateful for this" (Appendix 20, p 317).

(Stage 4: Practitioner and Children, Appendix 18, p.304).

Practitioner – Alright, do you know what to do?

Child 1 – Not sure

Practitioner – Ok, let me show you what to do first.

Practitioner – I am going to drag a letter up to the red circle and see what word we make. What have I made **(Prompting)?**

Child 1 – dunno

Child 2 – dunno.

Practitioner – What sound does this letter make **(Probing)?**

Child 2 – (shrugs shoulders)

Practitioner - "Aaa...Aa…" **(Modelling)**

Child 1 and 2 – repeats "Aaa…Aaa.."

Software - B A G = BAG

Practitioner – I wonder whether a bag can help them? (working alongside software/**open questioning**)

(Child 1 and 2 nod but soon realise through the actions of the Alphablocks that "a bag" cannot rescue "T" off the mountain).

Child 2 – No way!

Child 1 – A bag cannot help them!

Practitioner – Ok, Liam, what letter would you like to put up there **(Showing Genuine Interest)?**

Child 1 – FIRE UP!

Practitioner – Right then, what letter would you like to drag up there **(Repeating and Reciprocating)**?

Child 1 – "the orange one"

Practitioner – Do you know what sound the orange Alphablock can make **(Probing)?**

Child 1 – dunno

Practitioner – Could it be "uuuu" **(prompting)**

Child 2 - Yes

Computer – "B" "U" "G" – BUG. Brilliant.

Practitioner – So, do you think a BUG can save T from the top of the mountain **(Open Questioning)?**

(Child 1 – Nods YES)

(Child 2 – Thinking about it.)

Practitioner – Oh dear, the BUG flew away**….(Showing Genuine Interest and working alongside Software)**

Child 1 – Oh dear..

By incorporating this new knowledge, the preschool staff also highlighted that the children were consistently found to be engaged and motivated for longer periods of time during the phonetic learning session (sometimes nearly for the full twenty minutes).

> "Well, the children were occupied for the whole time. I was a bit worried as 20 minutes is a long time and first with you as a stranger. But it worked all the same. And I actually liked doing it with them" (Appendix 20, p.317).

8.4.2.2. Familiarisation of Technology

In the first few learning sessions where the practitioner adopted the active role of instructing the children with the use of technology, it was apparent that the practitioner was not always familiar with the technology prior to the start of the session. This was especially evident with practitioners who took it for granted that the use of technology in the classroom was just an additional piece of software, introduced into the setting.

The following was observed:

(Appendix 17, p. 295)

Introduction : 1-2 minutes

Hello Boys. Today we will be looking at *Alphablocks* on the screen. Have either of you seen *Alphablocks* before – I know not here at preschool – but at home with your parents?

Child 1 – Yes, I know...ummm...

Child 2 – (Quiet with finger in his mouth)

Practitioner – Ok. Have a look at the screen. What do you think it could be about?

Child 1 – The letters of Alphabets

Practitioner – That's right. Well done

(Child 2 – Still quiet but starting to look interested.)

Practitioner – Ok, so today, we will be looking at *Alphablocks*. Let's have a look at what it **is....**

(Practitioner looks at notes and looks at researcher for re-assurance. Researcher nods. Practitioner reads from notes...).

Practitioner – Well, *Alphablocks* is a program on Cbeebies and it works with our letters and the sounds of our alphabets. *Alphablocks* are about some blocks that fall from the sky onto a big, white world. They don't know where they are but they do know that they each make a special sound and when they join hands, they can actually make words. They are here to share their sounds.

Do you want to hear what they have to say and join them?

Child 1 – Yes

Child 2 – (Still quiet)

Practitioner – OK. Let's begin. Let's see where we click...hmmm...**(looks at the researcher – researcher points to the screen).** Ah, OK. (Clicks on the *Alphablocks* Introductory episode)

Software – Narrative Begins

In this particular instance, although I took the form of an observer, I supported the practitioner in providing the relevant information. The practitioner was found to read from her notes and looked for re-assurance from myself. She also relied on me to help her find the relevant link on the website, and to start the introductory episode. However, as more learning sessions took place, it would seem that the same practitioner began to become familiar with the technology, and was gaining confidence in her approach. She no longer relied so much on my guidance, and was able to steer the dialogue, whilst using some of the Sustained Shared Thinking techniques.

> "Of course, in the beginning I was not really sure what I was doing. I know we discussed this and you showed me how *Alphablocks* worked but I don't think I spend enough time playing around with it and see what it can do. In the end, I picked it up but to be honest, I think I could have put more time into studying it initially. I definitely see the relevance of doing this" (Appendix 20, p.317).

This type of scenario was also evident in the second preschool where the inexperience of using the technology within the lesson, can be found to interrupt instructional time, and discourage the practitioners from using it appropriately (Appendix 20, p.317).

8.4.2.3. Practitioner Subject Knowledge

The observations from stage 4 showed that the role of the practitioner is not just the mere *physical presence* of the individual itself and/or providing for dialectical interactions. It goes beyond to include the practitioner's knowledge of the subject-content matter, and the ways in which the practitioner can work alongside the technology to support and scaffold the child's learning process.

(Appendix 19, p. 311).

Child 2 – aaaa....aaaa

Practitioner – aaa... **(Reciprocating** the sound for the child)

Child 1 – bbbb....bbbb...

Practitioner – That is correct. The letter B makes bbbbb....bbbbb

Child 2 – kkkkk....kkkkk...

Child 1 – kkkk...kkkkk....

Software – “kkkk...(for C)...Kkkkk...”

Practitioner – (nods in agreement) (important – working alongside narrative again – not interrupting the narrative).

Practitioner – What is that a picture of? (Practitioner using the image of Alphablock)

Child 1 – Kick a ball.........

Practitioner – Nods in agreement

Practitioner – How about the next one? (**Probing and tuning in** to child’s initiative in producing sounds)

Child 1 – looks at screen...(thinking)

Software – dddd.....dddd

Child 1 and 2 – dddd....dddd...

Child 1 - Just like a drum...dddd...drum.

Practitioner – That is right. Well done. Just like the sound of a drum..ddd...ddd. (Note: Practitioner uses the sound of dddd to represent the image of a drum)

Software – “eee....eeee”

Software – “ffff...fff”

Child 2 – Like Fraser.

Practitioner – Wow! Fraser. That’s F like in Fraser. We must tell Fraser when we are done here (Practitioner showing genuine interest)

Sofware – kkkkk...kkkk

Child 1 – copies the action of Alphablock K – (like kicking a ball)

Practitioner – You have seen this before.

Child 1 – Yes, I am Alphablock K. I can kick a ball too.

Practitioner – (smiling) now, don’t forget that. Try to remember the Alphablock kicking the ball (Note: Practitioner used the representation of the image of the alphablock to encourage child to remember the letter)

In the setting, where the practitioner has a good knowledge base of the subject matter and an understanding of the child's knowledge in the subject, it was observed that the practitioner was able to extend the child's current knowledge base of phonetic development, and extend their learning and awareness of the subject matter. It was also noted that this was further supported by the application of the technology in terms of the online narrative, audio, and visual aids of the software, and in providing for general and specific information for the practitioner to encourage conversation and questioning.

> "This is obviously playful learning which is key. It is also so visual and auditory and this is so important when we are trying to teach the alphabets to the children. We find visual images very helpful in making the children remember the sounds" (Appendix 20, p.321).

8.4.2.4. Laever's Scales

The analysis of the scales formed the basis for interventions toward individual children, and toward the general context and/or the practitioners' approaches, and within this context, instructional style. In contrast to effect variable, the Laever's scales gave immediate feedback on the quality of 'planned interventions' (Laever's 1992). These teaching experiments were both voice recorded and videotaped, so that the researcher could re-play the episode, in the likely event that any of the two minute intervals had been missed out, and also for re-verification purposes.

The data of all 30 children from stage 4, three preschools, are illustrated below (Appendix 23):

Diagram Well-Being (Stage 4 = 30 children)

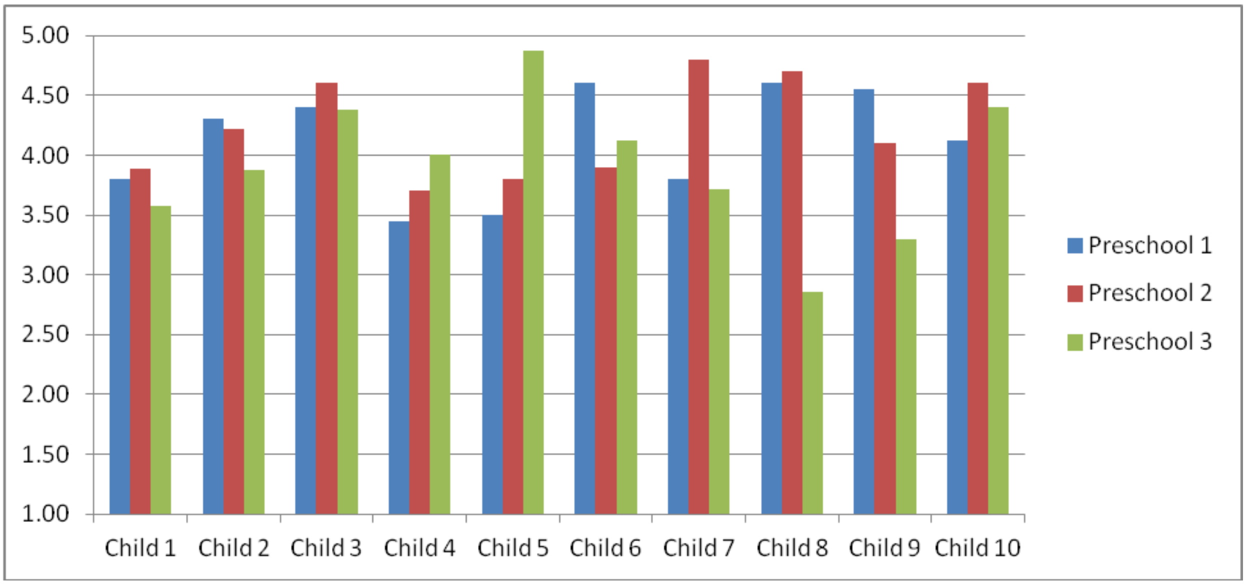


Figure 10 - Well-Being (Stage 4 = 30 children)

The data suggests that 17 out of 30 children (56%) averaged a score of 4.0 and above where the children were showing obvious signs of satisfaction, extending to higher levels of happiness, smiling more, and were expressive throughout the learning activity (4.5). In a more detailed, intermittent breakdown of the 20 minute scan, some children were easily scoring 5.0 where the child was operating at the peak of his/her well-being (Appendix 23).

Additionally, the data suggested that only one child was operating a fraction less than 3.0, in which case the child expressions and actions indicated that the child was not at ease. The rest of the children, 12 out of 30 (40%), were found to be floating between 3.0 and 4.0, where the child included a neutral posture, and where the facial expression showed little or no attention.

Overall, the data highlighted that just over half the children were operating at a high level, and where learning was not compromised at the expense of the child's well-being. It was also worth noting that it was unrealistic for children to be operating at 4 or 5 all the time, as levels will fluctuate throughout the day (Laever's 1997) in any given learning session (as noted in the Appendix 25, 25 and 26).

Diagram Involvement (Stage 4 = 30 children)

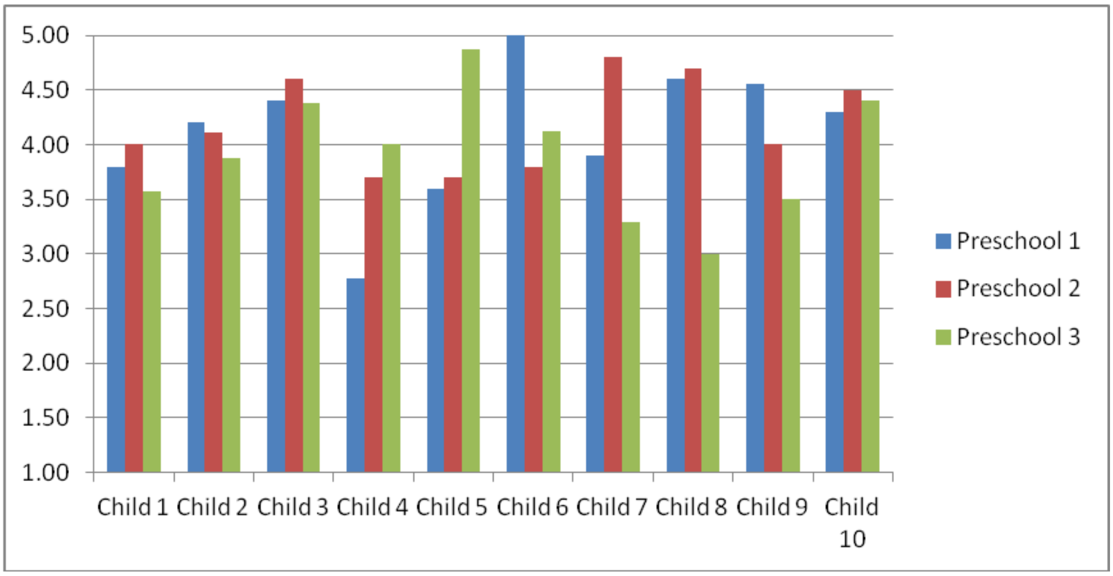


Figure 11 - Involvement (Stage 4 = 30 children)

Similarly, in terms of involvement, the data suggested that 18 out of 30 children (60%) were operating above 4.0 on Laever's Scales of Involvement, which indicated that there were clear signs of involvement in scenarios where the child displayed real concentration, and was engaged in activities (4.0). In some scenarios, children were completely absorbed in activity and displaying continuous engagement throughout the learning session, scoring 5.0 on the highest level. However, at the same time, the data also showed that three children were operating between 2.5 – 3.0, which indicated that although the children were demonstrating some degree of involvement, they were often easily interrupted by the various activities in the classroom.

Overall though, twenty seven out of thirty children were found operating above 3.5, and this indicated clear signs of involvement with consistent engagement in activity. As assessed by Laever's Scales, it would therefore seem that the majority of children were operating on high levels of well-being and involvement, whilst using the technology supported by appropriate pedagogy practices in a learning environment.

8.4.3. Analysis

This research looked to determine an appropriate pedagogy whilst using technology with young children, with respect to phonetic learning. Stage 4 included all the findings from stages 1 – 3 which were exchanged and discussed with the early childhood practitioners. It was intended that with a clear map of guidelines, in creating an appropriate learning setting and adopting an appropriate pedagogic approach and pedagogical strategies, the interactions between the practitioner and child, can look to become of high quality and can have the potential to extend the learning interests of the children.

In stage 4, the practitioners included some trial and error Teaching Experiments before an appropriate dialogue was established between the participants. As the practitioners became more confident and knowledgeable in providing for a two way dialogue, they found that they could extend their technology practices in the classrooms, in more meaningful ways.

> "The children were really responding to us. The children also really do seem to be interested in the computers again now....I see that they need to be supported more through the various means you have shown us and I think we are very lucky to have been involved at this stage in your research.....Their motivation has come back again" (Appendix 21, p. 318).

The outcomes in stage 4 showed that by applying the appropriate pedagogic approach, and in creating the right conditions, the children were found to be engaged for a sustained period of time and in most cases for almost the full twenty minutes. This was a challenge in itself for the process of pursuing phonetic learning in the early classroom settings is a difficult task.

> "I was very happy to see that most of the children's interest was sustained for the full 20 minutes of the session. They were completely engaged for this period of time. It was very interesting to see" (Appendix 22, p.321).

The preschool practitioners claimed that a lack of time, a lack of skills, and a general discomfort with the new learning technology, impeded their general use of it in classrooms. They realised that it was not enough for a practitioner to just be "at the other end of the room and let the children get on with it. We think we are taking it all in but actually the children are struggling and can do with adult interaction" (Appendix 21, p.319).

> "I found the first few sessions of observation very interesting...the way the children were interacting with you when you were using some of your more effective pedagogic strategies.... Actually, its common sense but we don't have the time, like you have, to make these connections" (Appendix 20, p.321).

In the instances, where the practitioners had invested time in understanding the software, it would seem that becoming familiar with technology can provide the practitioners with a knowledge base, to work alongside its tools and resources (Appendix 20, p.322). They found that by working through the software with the children, it helped remind them of the instances of when to use the Sustained Shared Thinking strategies of Open Questioning, Prompting, Probing, Modelling and Reciprocating. In this case, it was not so much about a practitioner just becoming physically present next to the child. The practitioners found that they can develop an understanding of the manner in which both technology and content of subject can influence and constrain one another.

The practitioners suggested that as they integrate technology within classroom lessons, they would need to master more than just the subject matter they intend to instruct. In which case, they would need to work alongside the technology, and look to build a deeper understanding of the manner in which the subject matter can be enhanced and/or changed by the application of new technology.

> "The children really liked the *Alphablocks* and the singing and movement. The *Alphablocks* itself were so imaginative for the children. I like how the *Alphablocks* make the sound and movement together. I think this really helps in remembering a sound. This type of learning applies to all types of children" (Appendix 21, p.319).

In validating the Communication and Collaboration pedagogic approach, with the more appropriate pedagogical strategies of Sustained Shared Thinking, this stage used Laever's Scales of Well-Being and Involvement from the Experiential Education Model (EXE). Laever's scales suggests that for good quality learning to take place within a planned setting with a young learner, children should feel at ease and act natural within their surrounding environment. All this indicates the basic needs for the child are met and they are in a secure place. This is co-joined with the involvement where children should be engaged, in which there a symbotic co-constructive relationship is developing between the participants. According to Laever (1994), much of this process in evaluating quality of care and involvement of the child is directly linked to the interactions and instructions that take place between the instructor and child. The results showed that in both areas, children were operating at high levels of care and engagement. This is a good indicator that the pedagogic instructions that were taking place between the practitioner and children were of high quality, and that which included an inclusion of the child's interest and motivation for their learning.

The final findings have been developed and illustrated, in the following diagram:

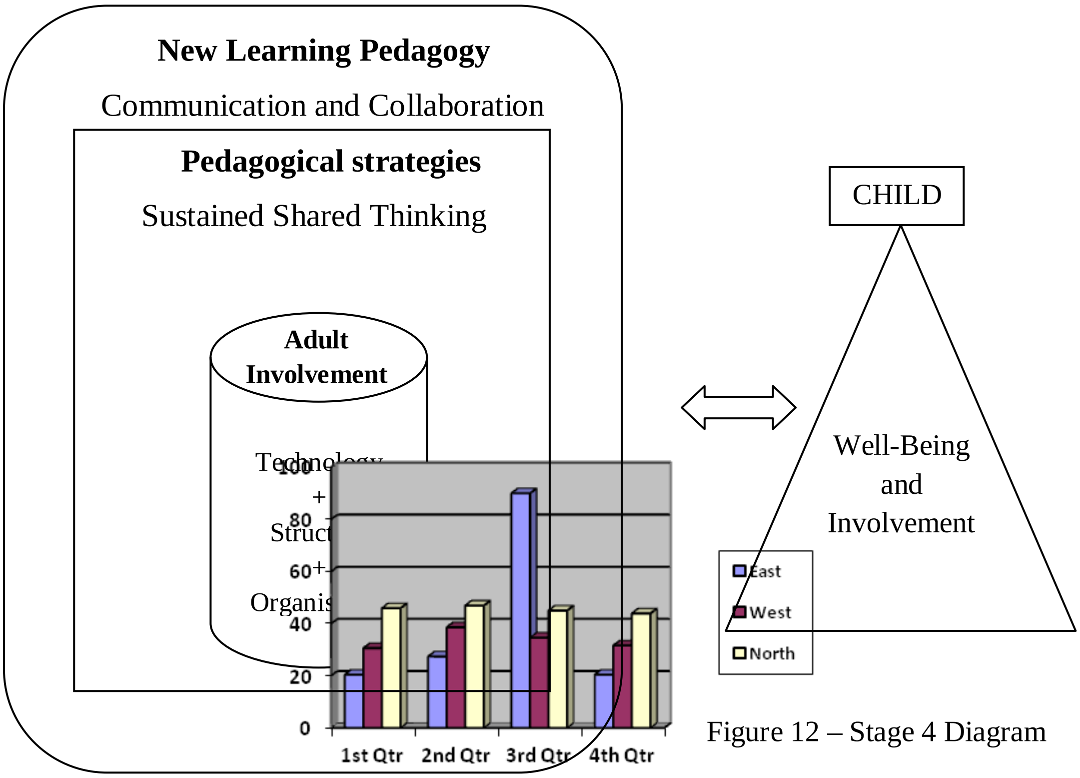


Figure 12 – Stage 4 Diagram

8.5. To Summarise

Overall, the summary from the findings and analysis illustrate the following:

Stage 1 of the pre-pilots demonstrated that there is a lack of understanding of appropriate pedagogy knowledge when practitioners use technology with the young children in their classrooms. The outcomes suggested that there was a wide range of pedagogic approaches applied ranging from Exploratory Play, to some Adult Involvement, to Guided Interaction, and to forms of Peer to Peer learning. The pre-pilots served as a pre-testing tool in determining the research protocol for the next stages of the full-scale study.

Stage 2 of the pilot stage in this research, demonstrated an understanding of what is required when constructing an appropriate pedagogy when applied with technology. The findings suggested that planning a technology based setting with young children is complex, and it is important to take into consideration factors of technology, structure, and organisational setting of the classroom environment. When these factors are well-established, only then is it possible to consider the more appropriate instructional practices in driving learning forward. The findings highlight that the active and involved role of the practitioner is an important element for supporting and scaffolding the child in delivering good quality pedagogic instructions.

Stage 3 of this research demonstrated that the Communication and Collaboration approach, which is found to create a shared and meaningful dialogue between participants working together, can help engage the children for a sustained period of time, and lead learning forward. By adopting the specific Sustained Shared Thinking techniques, including that of Open Questioning, Modelling, Reciprocating, Probing and Prompting, the outcomes displayed that early childhood practitioners were equipped with appropriate pedagogical strategies, which when used correctly, was able to extend the child's learning and development. This was particularly helpful in enhancing phonetic awareness and recognition, of the *Letters and Sounds*, within the Early Years curriculum.

The last and final stage 4 demonstrated the transference of the appropriate pedagogical knowledge to the early years practitioners. The practitioners indicated that by familiarising themselves with the technology, prior to the session, they were able to manage and plan the phonetic lesson and extend it accordingly to the child's current level of knowledge. Together, both participants were found to co-construct new knowledge in a joint fashion.

The positive and high scores from Laever's Scales of Well-Being and Involvement of the children showed high levels of care and involvement were taking place during the planned learning setting, whilst practitioners were conducting the phonetic learning activity. The overall analysis and scores from this research showed that the children were comfortable in their learning environment and showed high levels of engagement and motivation for wanting to learn. Laever's scales validated the framework of the proposed pedagogy, and showed that a technology adapted, planned learning setting, adopting the Communication and Collaboration approach, with appropriate pedagogical qualities can be found to be appropriate, within challenging and yet achievable phonetic learning experiences.

9. Conclusion

> "It is practitioners who, in the end, will change the world of the school by understanding it" (Stenhouse 1981).

The literature history has shown exponential growth of ICT and new forms of technology filtering into the early years classrooms. Unfortunately, it would seem that some of the newer forms of technology are not used to their maximum potential by early childhood educators, and therefore some possible learning opportunities are going missed. Although it would seem that the practitioners in this study are developing their confidence and competence to use new technology, the rate at which technology is advancing and introduced into the classrooms is moving at a pace much too fast for them to keep up.

Although there are number of early childhood preschools now recognising the need to adopt appropriate pedagogy, whilst working with young children and technology, this area of study is still very much in its infancy. It is widely acknowledged that there is a place for new technologies in the early years curriculum but more, as it stands, there is an active debate on the ways in which technology can work with the existing classroom pedagogy with young children. This study, therefore, demonstrated how using appropriate pedagogy and pedagogical strategies, with new technology of educational software via the Internet, can enhance and enrich the early years *Letters and Sounds* curriculum, so as to encourage phonetic awareness and recognition with young children. The findings show that with new found knowledge, there is now more enthusiasm, interest and commitment among the early years staff for using online educational websites, to promote learning and development with young children. In this way, the technology is no longer just an 'added' artefact to the preschool environment, but now can become an integral part of learning in the early years.

This chapter begins by providing a summary of the research literature and highlights the gap of this study. It outlines each of the research questions and reflects the research philosophy, methodology and field work design. This chapter reflects the progress of the fieldwork in meeting the research aims and objectives and gives a summary of the main key findings. It continues to discuss the limitations the present study but shows, how overall, this research provides for original contribution to the early childhood sector. This chapter concludes by offering a number of recommendations, potential options for future research and ends with personal reflection and gain.

9.1. Summary of Literature Review

9.1.1. New Learning Technology in ECE

The interest of studying the use of new technologies comes at a time where there is widespread support for the value of technology to be integrated within learning and development environments with young children. As the literature suggests, there is an ample amount of new technology to be found within the early years settings (Audrey and Dhal 2008); ranging from computers, printers, scanners, beebots to more advanced types of technology including, digital cameras, laptops, touch screens and tablet applications (i.e. iPads). Despite the exhaustive compendium of negative research associated with technology, as proposed by Dr. Sigman's (2008, 2009, 2011; House 2011), it was argued that there is still no conclusive evidence to support the negative effects of using technology with preschool children. Whilst strong debates continue over the validity of the claims for and against the use of newer forms of technologies in early childhood education, taking into consideration wireless and screen dependant technology, a strong rationale has emerged that more care and awareness needs to be recognised, when integrating technology into classroom settings; particularly with the length of time, setting, organisation and selection of software.

The UK Department of Education (DfE) has knowledgably put ICT and newer forms of technology into the Early Years Foundation Stage targets (EYFS 2012). The learning goals in the new EYFS legislation make it mandatory for preschool settings to assess each child's achievements in the use of Information and Computer Technology, where children should be able to use a mouse and keyboard, and practitioners "should provide a range of programmable toys, as well as equipment … such as computers and other forms of technologies" (EYFS legislation 2012) to encourage children in *learning and development,* within the curriculum framework.

However, there is also general consensus among the early childhood practioners in the UK that they tend to take a more pragmatic approach in preparing children to operate technology, so that they can become familiar with the basic technical tasks and can continue to progress using technology in primary schools (Plowman and Stephen 2003, 2003a, 2005). Whilst technology is growing at such a phenomenal rate, with the added emphasis for the need to introduce them into the early years settings, practitioners feel that they are not able to keep up with the technological advancements and as a result, less attention has actually been dedicated to the pedagogical aspects in extending learning and development within curriculum focus, whilst using some of the newer forms of technology.

There is mounting evidence to demonstrate that technology used both appropriately and within education has the potential to improve the quality and standards of children's learning and development within curriculum learning objectives. To the extent that using technologies in developmentally appropriate ways can contribute towards better teaching and learning experiences for both the practitioner and child (Downes & Fatouros 1995; Siraj-Blatchford 2005; Plowman 2007). However, this does not necessarily happen just because the technology is present in the early childhood setting. The literature demonstrated that practitioners must become conscious of the kinds of learning interactions they would like to occur in the context of technology use and adopt appropriate pedagogical strategies to support it.

In 1999, Stephen Heppell wrote:

> "Clearly the most relevant question is not 'how do I make it work? But what can I do with it? This points to a real issue at heart of all our learning futures within education" (p.1)

9.1.2. Technological Pedagogy in ECE

Integrating technology in the early years curriculum and settings is not difficult in the 21st century, but making good use of the technology, within appropriate pedagogic conditions, so as to enrich and develop children's learning, is still an important issue. As Clements, Nastasi and Swaminathan have (1993) stressed, technology can be used as an integral part of learning and teaching, when used naturally inside the classroom environment, and when applied appropriately by instructors.

The literature demonstrates that in early years education, there is more emphasis on understanding how development is defined by children's sociocultural experiences (Lubeck et al., 2001; Fleer and

Robbins 2003a; 2003b). Vygotsky's social cultural theory (1978) advocates that children no longer have to construct knowledge individually, but rather, can now be viewed as social learners, where the social interactions between the child and their peer, can enrich and extend learning. This was demonstrated in project REPEY (Siraj-Blatchford 2002-2003) where the findings showed that children can learn a great deal from observations of those more competent than themselves, and that the children's early learning is the product of interactions from their peers. However, in the context of Vygotsky's theory, where the more knowledgeable other (MKO) has a crucial role in engaging and motivating the children, this becomes particularly problematic, when using some of the newer forms of technology, within an early years classroom. There is evidence from the literature to suggests, that practitioners do not consider themselves as the more knowledgeable other (MKO), and this can be reflected in their minimal pedagogic approach, with the children.

Therefore, in determining an appropriate technological pedagogy, the broader concept of pedagogy and its implications within the early years curriculum have been defined. The literature argues that the nature of pedagogy, in the early years, is wider than the concept of top down traditional teaching practices. It is significantly influenced by the pedagogical instructions that take place between the practitioner and children. These instructions, however, do not take place independently. They are largely influenced by the two main conceptions that dominate early childhood education. These include, a planned and high quality playful experience, as well as, the balanced role of the practitioner, in leading a practitioner-initiated but child-centered focused learning activity.

The literature showed that many early childhood education models are based on the foundations of Vygotsky's (1978) social cultural theory of learning and the nature of the early years pedagogic processes. Through these education models and their effective pedagogical qualities, technological approaches have been developed which have been tried and evaluated. These range from Drill and Practice, to Exploration, Adult Interaction and The Guided Interaction approach. Although these approaches have been developed from well-established and reputable early years pedagogical qualities, the literature shows that within each approach, there are its limitations when applied with technology and young children.

The literature demonstrates that the UK Early Years Foundation Stage (EYFS) is greatly influenced by three highly valued effective early years education models. These include the Regio Emillia, High/Scope and The Experiential Education (EXE) models. Shared and distinct pedagogical qualities have emerged from these models, which are found to drive forward the totality and holistic approach of the learning experience for the children.

These effective pedagogical qualities include:

1. A balanced mix of adult-initiated and chosen child-initiated activities, where although freely chosen, are yet potentially instructive (Regio Emillia);

2. Active learning where children learn through active experiences with people, material, events and ideas (High/Scope);

3. The quality of meaningful and shared dialogue and interactions between adults and children (Regio Emillia-High/Scope);

4. The quality of well-being and involvement of the young children, in a safe and supportive learning environment, within challenging yet achievable experiences with young children (EXE).

The literature argued that there is evidence to suggests that the Communication and Collaboration early years approach is able to combine the social constructive theory, within the provision of active learning through play, in more focused group work, and involves both hands on and active practitioner instruction, within a naturalistic environment. The Communication and Collaboration approach points to the more effective interactions between practitioner and child, through the co-construction of possible solutions in the learning process that can potentially offer a safe and supportive environment. This approach, driven by the use of Sustained Shared Thinking techniques, has the potential to support appropriate pedagogical strategies and can help move forward the attention and interest of the child (Iram-Siraj Blatchford 2005). However, the Communication and Collaboration approach is limited in measuring the quality of care and well-being of the children and this research extended the approach to consider Ferre Laever's Scales of Well-Being and Involvement as the most effective way of assessing the quality of a planned educational setting.

9.1.3. Phonetics and Technology in ECE

> "Practitioners need to be up to speed on what the technology can do and how to apply it in the curriculum - that's a big task" (Berry in Cole 2010, p.1)

The findings from the The Supporting Playful Learning with Information and Communications Technology (SPLICT) project, (Siraj-Blatchford, 2011) showed that the Communication and Collaboration approach can have a significant effect on children's performance in learning their phonetic concepts. This research also came a political time where more attention was paid for children to read better and faster in their early years, so that they can progress onto more formal study of phonic work when they enter primary school.

> "Education secretary, Michael Gove, argued that there were too many young primary school children failing to reach the expected standard of literacy tests and that new measures were required to 'drive up basic reading skills from a young age'" (DfE 2010, p.1).

While there was evidence to imply that the Communication and Collaboration pedagogic approach has the potential to play an important role in encouraging phonetic acquisition with young children, which can have the added benefit to influence the UK early years *Letters and Sounds* curriculum (EYFS 2012), this research conducted its study within the literary practices for young children in their early years. The literature evidence showed that the use of technology can help make a curriculum based phonetic program more effective, in encouraging children to learn the letters and sounds of the alphabets. However, in doing so, its value will depend upon two areas: the quality of the phonetic approach and the implementation of appropriate phonetic pedagogical practices.

The evidence demonstrated that despite the active role of the 1998 National Literacy Strategy programme (NLS) in introducing a more mixed analytic approach of the Search Lights Model, for learning to read in both primary and the early years foundations, there was evidence to suggest there were urgent concerns about the comparatively weak performance of children who were not able to read by age of seven. The analytic approach fell into disfavour because of the various methods of instructions and techniques that were delivered to encourage phonetic acquisition, and which was found confusing to the young child. However, in the time that this research was developed, there was active debate in adopting the systematic and synthetic method of phonetic teaching, where the phonemes associated with particular graphemes are pronounced in isolation and blended together to construct words. The literature evidence showed that given a well-structured systematic and synthetic programme, the majority of children, including young five year olds can progress rapidly in phonetic awareness and accelerate their learning to read. There was more weight of evidence to suggest that systematic, synthetic phonetic work, taught in the first years of a child's life, will give children a good start to the key building blocks they need to understand words.

This research adopted the systematic phonetic approach of study based on the literature evidence from The Rose Reports (2005, 2006). As it turned out, the evidence from the Rose trials (2009) made an impact on the National Educational Policy in the United Kingdom and began to influence the changes of the literacy programmes to replace the existing analytic approach. A new *Letters and Sounds* early years phonetic curriculum was introduced in the early years (EYFS 2010 – 2012) and now follows the more effective, systematic and synthetic model of phonetic acquisition.

During this time, the UK government was determined to raise the awareness of phonetic recognition, in the early years of young children, so that children can build up these skills to spend the rest of their primary school years learning to read and reading to learn. However, despite the increased recognition that new technologies should effectively be integrated within early childhood curriculum, the early years guidelines (EYFS 2011, 2012) relating to the development of literacy practices and technology can be seen as inconsistent. The UK government (DCFS 2009a) has actively published case studies for exemplifying the use of new technologies in early years settings. Yet, in the early learning goals for 'Communication, Language and Literacy' in the Early Years Handbook, there is still no reference of children's engagement and/or learning acquisition with some of the new types of learning technology (DfE 2010, 2011), within curriculum design and development.

While there is evidence to show that technology related programs can accelerate phonetic learning with young children, the findings show that technology itself is the not a main catalyst of change. The literature demonstrated that instructing phonetic learning with young children is very much an informal activity for young children, where early years practitioners should look to provide a wide range of engaging and playful learning opportunities (i.e. magnets, sand play, physical movements etc.). There is evidence to show that engagement is crucial to effective learning, in which engaging children through varied and worthwhile activities can make a good start in phonetic awareness (Rose 2006), and the help of the practitioner can play a significant role in assisting and guiding the children. Through appropriate phonetic pedagogical practices of informal and engaging learning activities, supported by the active role of the practitioner, phonetic recognition and awareness can be positively heightened with young children.

The Department of Education (2011) advocated, that children in their early years, should be encouraged to participate in more informal and engaging phonetic activities, so as to enable them to relate to phoneme recognition of letters and sounds in their alphabets and progress onto the blending of sounds in constructing simple words. As Rose (2006) suggested, with newer forms of technology filtering into the early childhood settings, newer approaches of phonetic work can look to become multi-sensory and engaging so as to support and capture the child's interest, sustain their motivation and reinforce learning. However, although there is an influx of technologies entering into the early years classrooms, there is very little evidence to show how some of the newer forms of technology have been used in engaging experiences; especially through more appropriate phonetic pedagogical practices, and that which follow a systematic and synthetic phonetic approach of study with young children. This research, therefore, looked to determine an appropriate pedagogy, whilst using a new form of technology to support phonetic recognition and awareness, with young children in their early years.

9.2. The Research Question

Taking into perspective, the Early Years Foundation Stage (EYFS) current situation of technology in the classrooms, knowledge of shared and common pedagogical qualities from the early years models, and the focus of the systematic and synthetic phonetic approach of *Letters and Sounds* curriculum, this research investigated how a new form of technology, can be pedagogically grounded into a learning environment, and yet provide for a stimulating curriculum focus with young children. At the time this research was conducted, the Internet was found to be one of the popular and most accessible new forms of technology in the early years settings. Therefore, for this study, the online educational application, *Alphablocks*, sponsored and produced by BBC online, was selected for the application of technology and encouragement of phonetic development, within the Early Years Foundation Stage (EYFS 2012) framework.

This research was guided by the main question and subdivided into the following:

Research Question: To what extent can new technology be used appropriately in extending learning and development with young children?

1. In what ways can early years technology based classroom settings provide for an appropriate learning environment with young children?

2. In what ways can existing early childhood technological practices provide for appropriate use of new learning technology, within early years settings?

3. What is the relationship between effective pedagogical qualities, in early childhood education, and in determining an appropriate pedagogy, whilst using new learning technology?

4. To what extent can the appropriate pedagogy applied with new learning technology, support phonetic awareness and learning in early childhood education?

5. To what extent can the appropriate pedagogy applied with new learning technology, support the quality of well-being and involvement with young children, in a planned learning setting?

The following aims and objectives outlined this research:

1. To develop an appropriate early years playroom setting with the use of new technology.

2. To research and determine an appropriate pedagogy to be applied with new technology.

3. To trial the use of the appropriate pedagogy, applied with new technology, across a range of early years learning environments.

4. To determine whether the appropriate pedagogy, applied with new technology, can scaffold and enhance phonetic learning practices with young children.

5. To ensure that the appropriate pedagogy, when applied with new technology, can support good quality of care and levels of engagement of the children.

9.3. The Research Approach

This research adopted pragmatism. Combining the world views of interpretivism and positivism, sequentially within the research process, the pragmatic philosophy was found to suit the research questions of this study, and provided an opportunity to investigate that which was important to this study. This research, although pragmatically influenced, adopted the ontological social constructivist position. It focused on the social cultural interactions, between the individuals, and considered the participant's behaviours, feelings and attitudes, in determining an appropriate pedagogy, when applied with technology.

This research followed a four stage process of the inductive-inductive-inductive-deductive approach and included both qualitative and quantitative methodologies. It is conducted in a four stage process where the first and second stage of pre-pilots and pilots employed the Action Research Methodology while the third and fourth stage embraced Piaget's Methodology. The fourth stage also included Laever's Scales of Well-Being and Involvement Methodology, in determining the appropriateness of a planned learning setting, whilst using the technology with the young children.

Action Research was selected as an appropriate research methodology for the first two stages of this research. In stage 1 of this research, Action Research was utilised, in an iterative cycle, to scope out the research area of this study. This was conducted by gathering information through thirty telephone interviews with practitioners. The findings from the telephone interviews suggested that there was a lack of understanding of appropriate pedagogic approach, when using new forms of technology with the young children. Stage 1 of the pre-pilots, although not conclusive, indicated that there was a likelihood of a gap of knowledge in this area and more investigation was required. The findings from the pre-pilots outlined the research protocols for this study and the outcomes informed the next stages of the broad-scale research.

The Action Research Methodology continued into stage 2 of this research. Taking an iterative design, stage 2 of the pilots, was demonstrated in three more preschools. The pilots were conducted to investigate the current pedagogic practices in the early years setting, and to work alongside the early years practitioners, in an in-depth and collaborative experience. The findings from this stage highlighted that factors of technology, structure, and organisation setting must first appropriately be set in place, when applying technology, within a planned learning environment. Determining an appropriate pedagogy is complex but the findings highlight that the role of the early years practitioner is an important factor in scaffolding learning with the children.

Stage 3 of this research progressed onwards with Piaget's Methodology using his Non-Clinical Interviews. Piaget's Non-Clinical Interviews adopted a form of purposeful and shared dialogue between the researcher and the children. This was conducted in three further preschools and included an inductive, qualitative approach of asking questions, based on the child's language, interests and the types of learning to encourage. The adoption of the Communication and Collaboration approach, along with appropriate pedagogical strategies of Sustained Shared Thinking techniques to enhance phonetic awareness, emerged from the findings from the interviews.

Stage 4 of this research, applied the findings from the previous stages to validate the proposed pedagogy. This stage looked to validate the pedagogy, by transferring over the new pedagogical knowledge over to the early childhood practitioners. This was tested in three more preschool settings, through the means of Piaget's Teaching Experiments. These Teaching Experiments were conducted in more controlled measures, where the researcher adopted the role as an observer, taking an objective view of the interactions between the early years practitioner and the children.

Stage 4 also included Laever's Scales of Well-Being and Involvement, which included scanning the child every two minutes in observations, so as to measure their quality of care and involvement, in a planned learning setting. Laever's methodological scales were used in aid of planning a meaningful and relevant form of learning within curriculum, particularly from the perspective of the learner, by taking into consideration two key factors of well-being and involvement in improving the outcomes for all children (Laever 2011). This stage adopted a deductive and quantitative method of enquiry.

A total of thirty telephone interviews and nine preschools studies were conducted in this research. The research design consisted of methodological and data triangulation, for providing evidence of validity and reliability of data collection. This study adopted the use of non-standardised, semi-structured interviews in the design of the telephone interviews, face to face interviews and Piaget's interviews. This research also adopted Participant and Structured Observations where the former was used to provide for a rich description of the situation, taking a qualitative view, and the latter for verifying the pedagogy, and in using more quantitative measures of control. The nature of the relevance of the questions and the responses from the interviews included both forms audio and video recording. Hand written notes were also recorded, in situ. The data achieved through the interviews was locked into storage and only the relevant people had access to data.

Following theoretical sampling of participants, this research was not selective and looked to include sufficient data to generate a theoretical concept, within the research context. It placed great value in giving credibility to the children and to the research findings. This research included the *Alphablocks* learning software for the young children as it included a free online access via the BBC broadcasting service and offered playful learning as a vehicle for interaction with the children. The use of the *Alphablocks* software invited a shared dialogue in increasing awareness of phonetic development for the child and was integrated, within the learning environment, to reflect the needs of the children. This research was conducted in the child's early years classroom, and adopted as much as a natural surrounding for the children. The research design paid very close attention to ethical considerations of informed consent, confidentiality and permission of data capture, whilst working with both the early practitioners and young children. It looked to ensure and build trust from both the children and childhood educators, in being truthful of what is said, heard and interpreted.

9.4. Main Key Findings: An Appropriate Pedagogy

The use of technology in preschools are not supposed to distort or replace other activities in the classroom but rather should be integrated into the classroom with real purpose. The priority for this research was to make the most of the pedagogy potential, when applied with technology, in order to enhance children's learning outcomes; particularly the use of phonetic awareness and recognition with young children. In determining an appropriate pedagogy for this research, this study built upon the effective pedagogical qualities that were found to be shared and common, in early childhood models. These include:

1. A balanced mix of adult-initiated and chosen child-initiated activities, where although freely chosen, are yet potentially instructive;
2. Active learning where children learn through active experiences with people, material, events and ideas;
3. The quality of meaningful and shared dialogue and interactions, between the practitioners and children;
4. The quality of well being and involvement of the young children, in a safe and supportive learning environment, within challenging yet achievable experiences with young children.

Based upon this foundation for creating a holistic and yet appropriate learning environment, this research identified an appropriate pedagogy whilst using technology, with young children. This research shows that the successful application of the appropriate pedagogy, with respect to phonetic learning, is dependent upon a range of contextual variables:

- A technological adapted learning setting, in which issues of technology infrastructure and connectivity, small group structural settings, which include a balanced mix of adult and chosen child-initiated activities, along with the organisation of an active, constructive learning experience, are to be appropriately established.
- The active role of the early childhood practitioner and their ability to invite a dialogue between themselves and the child; as an interactive way of discovering new knowledge and understanding the process of asking questing and finding answers together.
- The early years Communication and Collaboration as an appropriate technological approach, where both the practitioner and the child work can work as partners in the co-construction of knowledge, and where learning can be pursued, through the means of a meaningful dialogue.
- The pedagogical strategies of the Sustained Shared Thinking, to accelerate the recognition and awareness of phoneme development with the young children.
- Factors of well being and involvement, which ensures that children are both safely and actively taking part in the process of learning, in a well-planned learning setting.

The following is outlined below:

9.4.1. Technology Adapted Setting

Taking a form of pre-scaffolding, the key findings illustrate that practitioners need to make decisions about the use of technology infrastructure and connectivity before the children are even involved. The findings from this study indicate that unless technical hindrances have been resolved, learning cannot begin to progress appropriately and effectively for the learner. This is particularly relevant with some of the new forms of technology that are dependent on reliable network connectivity.

Highlighting the pedagogical qualities of a balanced mix of adult-initiated and chosen child-initiated activity, which are still potentially instructive, this research suggests that a structural setting consisting of a practitioner and two children is most suitable, when using technology in the classroom. The findings showed that more balanced and focused learning is able to occur in a small group setting, as the pedagogic instructions can be tailored to meet each individual's child interests.

This type of focused learning was found to support active learning, where children can learn through direct hands-on experiences with people, materials and ideas. The findings highlight that as children are led through a playful and instructional process with the practitioner, learning can be found to become enriched and sustainable. This is found to be supported by the practitioner who takes a balanced role in guiding the activity. In this way, the use of technology can become an integral part of learning.

The findings highlight that when these initial aspects are established within the early years classroom, it is only then that appropriate pedagogic instructions and interactions between the participants can be created. In determining an appropriate pedagogic approach, so as to enhance and drive forward the learning and development for the children, greater importance lies with the role of the early childhood practitioner and the dialectical instructions that takes place, between the practitioner and children.

9.4.2. Communication and Collaboration Approach

The findings show that the role of the early childhood practitioner, whilst using the technology with young children, is beneficial in guiding learning and development opportunities. The evidence demonstrates that it is not just enough for the practitioners to give children access to technology, where it is thought that children can lead their own development. The outcomes showed that regardless of the advantages of a particular type of software, it is when the practitioner assists and guides the child's learning appropriately, that these benefits are fully realised. The use of technology, on its own, is not a replacement of the practitioner and in itself cannot provide for learning. The findings from this study show that too little involvement from the practitioner can often lead to missed learning opportunities.

> "One thing is pretty apparent though. Children at this age range are natural learners with technology. They seem to pick it up so quickly and once you show them what to do, they can do it. But, as they are so young as yet, they still need an adult nearby to help lead the way and bring them back on track if they get misled" (Appendix 12c, p.257).

The study demonstrated that the Communication and Collaboration early years pedagogic approach was found to support and extend the dialectical interactions that can take place between the practitioner and children. This approach was found to be well-suited whilst using technology with young children in delivering appropriate instructions and interactions, as neither of the involved participants is considered the More Knowledgeable Other (MKO), but rather as co-constructive learners, in which they participate in the activity together. This approach stressed the importance of the affective bond that was built between the practitioner and child, through the joint interactions of interests and activity, where they could learn alongside one another and where they were *jointly* constructing new knowledge.

The findings highlighted that the children were encouraged to take part in a two way dialogue, follow their own interest and come to their own conclusions. Collaboratively, the practitioners were able to guide the narrative, and extend the child's interest forward, keeping them both engaged and motivated for a sustainable time. The Communication and Collaborative approach is found to combine Vygotsky's theory of extending children competence (1978), within their Zone of Proximal Development (ZPD) and Bruner's scaffolding (1996), which demonstrate that children's learning and development requires an adult collaboration with more capable peers for challenge and support. In this process, the role of the practitioner was not only just to transmit the knowledge, but to invite the young children to formulate questions and come to the answers themselves. The findings from this study highlight that by challenging the child within his/her zone of Proximal Development (ZPD) appropriately, it is possible to increase the level of difficulty through means of more effective Communication and Collaboration early years instructions (Siraj and Siraj Blatchford 2005). Here a child can mature and improve, through means of the practitioner scaffolding. So, as the practitioner scaffolds, the child is continually supported in achieving developmental and learning skills.

This research expanded the theory of constructivism put forward by Piaget (1973), and extended into the ontological position of social constructivism, where the young children had the potential to construct meaning from prior understandings and meaning, with the added emphasis of learning in a more social and cultural context, through the by product of interactions with the practitioners. The outcomes of this study highlighted that through collaborative, co-construction of knowledge, learning can be pursued, through the means of a meaningful and shared dialogue, between the practitioner and child. Together they can explore, ask questions, imagine what might be, and make new connections of knowledge. The practitioners can become a critical friend, who show an interest in the children and has knowledge and competence, which can be shared with the children. These interactions were most noticeable in settings, when a childhood practitioner was more informed, felt more confident with technology and who seemed to have a more co-ordinated approach to the level of guidance required by the children. Although the practitioners initially required some explicit coaching, they were overall more aware of the ways in which children could benefit from the technology and had some understanding of the uses of more appropriate pedagogic strategies, in which the role of the practitioner can facilitate learning.

> "I think it would be a very good idea to push this forward in learning environments with the early years or even primary years. I think the schools would benefit from this and the children would also benefit from this too. As long as it is implemented in the right way, taking into consideration the time, the teaching, the children's best interest, I can only see good things coming out of this" (Appendix 16, preschool 2, p.294).

9.4.3. Pedagogical Strategies

Co-constructing children's learning experiences through the Communication and Collaboration approach, to support a meaningful dialogue of the child's interest, was found to be an appropriate pedagogic approach for this study. However, in extending the dialogue to enhance phonetic recognition and awareness with the young children, pedagogical strategies of various Sustained Shared Thinking techniques (Siraj-Blatchford 2007) were found to be especially appropriate. Sustained Shared Thinking (SST) is defined as an experience in which two or more individuals engage in activities together in an intellectual way to explore a new idea, to solve a problem, clarify a concept, evaluate an activity or extend a narrative.

The research showed that children, in their early years, are still very young and look for guidance when working with technology, within a phonetic instructed activity. In assisting children's performance through means of scaffolding, the study demonstrated that practitioners needed to have a clear view of the child's learning goals and recognised that their role is that of supporting learners in such a way as to allow them gradually to do more for themselves. The amount of assistance offered, and the balanced manner in which support was given by the practitioner, was found to vary from child to child across time and in relation to the difficulty of the task. This also additionally depended on the practitioners' knowledge of the children's interest and the capabilities to be able to extend them further. The key findings showed that when the early years practitioners made a conscious effort to focus on the child's particular interests, then they were able to enhance learning through social interaction, dialogue and specific pedagogical strategies.
The findings highlighted the most appropriate phonetic pedagogical strategies, using sustained shared techniques. These include the following:

- **Open Questions**: Here the practitioner helps the learner think through ideas and concepts, so as to encourage the child to become more responsive and initiate open dialogue, which is more significant than could have been made by one word responses i.e. Yes/No.

- **Modelling**: The modelling process works as a developmental process, in which the practitioner scaffolds by using questioning strategies to extend the learning experience. This is often conducted by allowing the child to observe and repeat.

- **Reciprocating**: Reciprocating takes the form of positive feedback and generally includes a positive affirmation from the practitioner. In this way, children come to feel at ease with the decisions they are making and are encouraged to progress.

- **Tuning In**: The tuning in process occurs when the practitioner take the time to familiarise themselves with a child or a group of children in what he/she is doing and then makes decision to intervene and extend learning.

- **Probing :** By tuning in into the child, through observation of body language, eye contact, visual gestures of smiling and nodding, the practitioner tunes in with the child's interest and level of development. Through this, the practioner can continue to 'probe' and extend further questioning, by asking for particular responses to confirm learning.

- **Prompting:** Through initial methods of probing, the instructor is able to encourage the child to describe their efforts, their reasoning, and ideas, and encourage extension of dialogue. This type of prompting can clarify concepts and in some cases, it can lead to follow up questions in varying levels of easiness and difficulty.

The more successful practitioner and child interactions highlighted the integrated use of Sustained Shared Thinking pedagogical strategies, which when used correctly, helped move forward the learning experience for the children. The uses of appropriate phonetic instructions was found to build upon the child's interests and helped keep them engaged for sustained periods. In discussion with early years practitioners, keeping children engaged for a length of time in a learning activity is a challenge itself, but with the possibility of doing so, there is more potential of deeper learning taking place and for children becoming motivated.

> "If we can describe and evaluate the ways that practitioners attempt to scaffold children's learning with computers then we might be able to help practitioners understand and perform their role in supporting children's computer based activities" (Mercer and Fisher 1997, p.210).

9.4.4. Well-Being and Involvement

The quality of care and well-being, inclusive of emotional interactions are not always considered in discussion of appropriate pedagogy, despite the inter-subjectivity in the learning processes demonstrated by the practitioners in the socio-cultural tradition. It still remains an underdeveloped area of empirical work with young children (Stephen 2010). This research emphasied that for learning to take place holistically with a planned learning setting, it is necessary to consider both the quality of care and involvement with young children, when constructing a planned and holistic learning environment. This research adopted Laever's quantitative approach by scanning a child every two minutes, to measure their levels of care and engagement, within a planned learning setting.

The Experiential Education model (EXE) suggests that for a learning environment to be conducive for a young learner, the children to a degree should feel at ease, act comfortably within their natural environments, show vitality and self-confidence. All this indicates that the basic needs of the child needs are satisfied in which learning and development can be facilitated through mutuality of comfort and facilitated by participation between practitioner and child. This is jointly bound by involvement of the child where for learning to occur and become effective, there is to be a symbiotic relationship to be developed between the adult and child (Pascal and Bertram 1995), in where the type of learning which occurs has the potential to engage children, for lengthy periods of time, in activities that matter to them (Richmond and Drummond 2006).

Through subject analysis and description, the research findings indicated that through an appropriate set up of technology, structure, organisation, pedagogic approach and pedagogical strategies, the children demonstrated high levels of well being and involvement scores. The average scores of well-being indicated MODERATE to HIGH achievement 3.40 (see Appendix 23) of which the child had a neutral posture and there were no clear facial expressions, indicating sadness or pleasure, to the high levels of the child who showed obvious signs of satisfaction, where the facial expression were constant with same intensity. These results indicated that children were cared for and comfortable within their planned learning settings, in which there would be little or no inhibitions in the progress of learning.

Likewise, the average scores of involvement indicated levels of HIGH achievement, approximately 4.07 (see Appendix 23) of which there were clear signs of sustained involvement and engagement. These high levels of well being and involvement were demonstrated in most of the settings where children were found to be engaged and motivated for the entire twenty minute sessions. The analysis of the involvement scales indicated the reliable and valid basis of the dialectical interventions taking place between the participants.

By considering the setting, approaches and within context, the practitioner's instructional style, the Leuven's scales aided in confirming the appropriateness of the pedagogy, when applied with technology, in an early years setting.

> "Most of them were smiling and happy.... I have seen the children and I know the children have understood it because they come away and during activity time, one girl was able to say that this is an 'A' and was able to make the sounds attached to it" (Appendix 12c, p.255).

9.5. Research Contribution

This research is intended to make good contribution to the educational field of pedagogy with technology, and its implications, within the early years phonetic curriculum. Many researchers have highlighted the need to study the direct correlation of pedagogy, whilst integrating forms of technologies in classrooms, but as yet, no substantive research study has addressed this educational practice in as much depth, with very young children. This study, therefore, comes at an opportunistic time and informs an area of research locally, and possibly internationally, where little data is available to guide practice.

This research is a contribution to early childhood literature for using forms of new technology with young children. As most contributions to new knowledge, it benefits from and builds on the earlier contributions of other researchers. Building on the proxies of effective early years pedagogical models and qualities, the novelty in this study, is that it provided for determining an appropriate pedagogy and pedagogical strategies, applied with technology, with respect to phonetic acquisition.

Based on this study of nine preschools, the findings show that the application of an appropriate pedagogy with new technology is most feasible and appropriate when areas of technical, structural and organisational issues of learning settings have initially been established. Considered as pre-scaffolding features, it is only once these variables have been determined, that a suitable pedagogic approach can be applied to the learning environment. For without these necessary elements in place, even the most suitable pedagogical approach cannot be found to be completely effective.

Within this study with young children, the Communication and Collaboration approach is found to be the more developed pedagogic intervention for the use of technology in the classroom, where both the practitioner and children can work as partners in co-constructing knowledge, to extend a dialogue of interests and learning. This was conducted within small groups where there was a ratio of 1:2, with one practitioner to two children. This small group setting demonstrated more intimate interactions between the participants where the practitioners allowed themselves to view the world through the child's eyes, to listen to the children through the child's ears and to make sense of the world around them from a child's perspective, in which they became learning companions.

While this study showed that the early years Communication and Collaboration pedagogic approach (Siraj-Blatchford, I., 2007) is the more appropriate pedagogy when using new technology with young children, the outcomes demonstrated that it was not sufficient for an open-ended mutual dialogue to take place between participants. By applying more appropriate pedagogical strategies, particularly in the form of the early years Sustained Shared Thinking strategies (Iram-Siraj Blatchford 2005), the practitioners were able to facilitate and extend the recognition of phoneme awareness with the young children. These effective SST strategies include that of open questioning, modelling, prompting, probing, tuning in and reciprocating. This research illustrated that when both the practitioner and children are found to contribute to specific types of phonetically related instructions and is able to communicate their thinking with each other, it is then the progress of phonetic development is more likely to develop.

Just as it is important in determining the pre-scaffolding features in a technology rich environment, for the purpose of facilitating the appropriate use of the pedagogy, the same application of the pedagogy and pedagogical strategies can only be considered successful if the well-being and involvement of the child has been positively affected. Therefore in this research, Ferre Laever's (1994) scales of Well-Being and Involvement were utilised on the basis for determining the appropriateness of the pedagogy and the interactions that were taking place between the participants. The outcomes from this research showed high levels of well-being and involvement scores for the children, which further validated the appropriateness of the pedagogy within an early years technological setting, and established the reliability of interactions and planned interventions that were taking place within the participants, for the preschools in this study.

The following figure outlines the signficance of this research. It shows that while an appropriate pedagogy is necessary in the communication and extension of learning and development with young children, within a technology rich environment, the effective delivery of the pedagogy is dependent upon a good understanding and implementation of the pre-scaffolding features as well as post evaluation of the planned learning setting, taking into consideration both the quality of wellness and involvement of the participants.

Pre-Scaffolding		**Pedagogy and Pedagogical Strategies**		**Post Evaluation**
Technical Structural Organisational	+ ⟷	Communication and Collaboration Sustained Shared Thinking Strategies	+ ⟷	Qualities of Well-Being Involvement

Figure 13 – Technological Adapted Pedagogy

This research is a contribution to early childhood education and pedagogy. There is reference in early literature to show that young children often abandon using the technology due to technical failures or a lack of an appropriate setting (Plowman and Stephen 2006). There is also reference in the literature to show that early practitioners are not confident in their approach of pedagogy and therefore as a result, children are less engaged and motivated to continue (Flewitt and Wolfe 2011). Athough this research has focused on the appropriate pedagogy to be applied in a technological adapted learning setting, the quality of the findings and research work has brought to surface dependant pre-scaffolding variables and post-evaluative features, which together support suitable interactions to take place between the practitioner and children; for without them, the appropriate application of the pedagogy can become hindered. This new contribution to knowledge can provide a foundation or starting point for practitioners and researchers to adopt and further develop. The nine preschools that have taken part in this study have actively adopted the diagram above and use it as a point of reference when working with new forms of technologies in their playrooms.

Overall, this study has shown that early childhood practitioners are open to new ideas and can reflect on their current practices through new forms of pedagogical practices, when probed and given the opportunity. They recognise that the children of today have technology at their forefront in their future and are committed to providing quality learning experiences for their children, whilst at the same time acting as gatekeepers for the technology. The practitioners who have taken part in this research advocate for future research and the importance of integrating technology, both effectively and appropriately, within the various areas of the Early Childhood curriculum.

9.6. Limitations of the Study

As with any research effort, this study has some limitations. The following is discussed:

1. **Sample Size:** The sample size could have been much larger to increase the statistical power of analysis. For this research, a total number of 82 children took part in this study, of which they were grouped in sets of two, thereby totalling it to 41 sets of study in all three stages. From a qualitative approach, it would seem that the sample size may be appropriate, in terms of constructing an appropriate pedagogic concept. However in terms of quantifiable results, it becomes statistically not representative to the majority of children in the early years. Therefore, it is not feasible to suggest that the findings in this study can be generalised. However, as described in chapter six of Research Methodology, this research is not solely aimed at gathering a selection of studies from which generalisations can be made, but as Yin (1989) indicates, more as an attempt to replicate and validate a design.

2. **Sampling of Participants:** As this is a relatively new area of research and one that is under-researched, it was decided to keep the sampling of participants to a minimum. For the purpose of this research, two specific variables were considered mandatory, one of which children must be of preschool age between the ages of three to five years and for the them to be involved in an early years educational setting that follows the UK EYFS framework. This research can benefit from considering the differences in the gender of children who can benefit from learning to read better and faster at an earlier age, when applying the appropriate pedagogy and pedagogical strategies whilst using technology.

3. **Biases:** The greatest drawback is of researcher bias is based on his/her own thinking and the rationales which were created through personal experiences and through the study of the literature. Regardless of conducting research triangulation, using both interviews and observations to counter-act biases, there is always the potential that the researcher's own biases can influence the analysis of the findings and the potential to limit the complete openness of the research process.

4. **Regionally Focused:** The research is regionally focused. Although, this was intentional, purely for geographical reasons and for financial implications for the researcher, it could benefit from becoming more diverse.

5. **Parental Involvement:** Unfortunately, this research design did not include parental contributions and/or interviews. This was due to time constraints and manageability of the research. During the study, it became apparent that parents were keen to become involved and continue some of the research processes at home.

9.7. *Recommendations*

This study has a number of implications for UK Early Childhood Policy Makers. These are summarised below:

- **Ensure appropriate learning and development settings:** To provide knowledge and information about the technological, organisational and structural benefits and limitations, when setting up a learning environment within the early years classroom. The learning activity offered to the child, whilst using the technology, should provide an appropriate level of challenge and encourage children to think more in depth, without curbing their levels of well-being and involvement.

- **Emphasise the importance of appropriate pedagogy and pedagogical strategies, whilst using technology with young children in an early years setting.** The Communication and Collaboration approach, blended with pedagogical strategies of Sustained Shared Thinking strategies, is found to be particularly valuable in driving forward children's learning and development, when applied with technology. This approach has been found to be well-suited, as both partners are working together, as co-constructive learners, in driving the learning forward and participating in the activity together. This is particularly valuable for encouraging children to learn to read, in progressing with their letters and sounds, within the early years curriculum.

- **Ensure the high quality of practitioner professional development:** More attention needs to be paid to early years practitioners with regard to pedagogical and subject content knowledge, in delivering a learning session through the use of technology. Pedagogical training and awareness of new forms of new technology should be more generally made available to the early education sector. This can be facilitated and delivered through in-house coaching and training sessions and/or regional seminars, so as to facilitate the process of sharing best practices between early education centres.

- **Provide for future research for the appropriate integration of new learning technologies into other areas of the curriculum:** The research evidence in this thesis shows that by integrating appropriate pedagogy and strategies with new technology, learning can be enhanced and enriched, through the collaborative approach between the practitioner and children, with respect to phonetic learning. Future research can potentially be developed in this area to complement other areas of development in the UK EYFS framework such as, numeracy, creativity, communication etc.

9.8. *Future Research*

This study has provided new knowledge of what constitutes as appropriate pedagogy, when applied with new technology, to encourage phonetic awareness with young children. However, more extensive research is needed if early years educators are to develop further understandings of the children's capabilities, needs and potential, as they interact with newer forms of technology. The following priorities for future research are suggested:

- Longitudinal and observational studies of this research can be developed to demonstrate the effectiveness and assessment of the appropriate pedagogy, for encouraging the phonetic development and recognition of the *Letters and Sounds* in the early years curriculum, whilst using new technology.

- Parallel studies can be developed to study the impact of new learning technologies in gender difference, between that of boys and girls in curriculum areas of literacy, numeracy, creativity etc. Other key variables of social status, ethnicity, family background, home language and influence of siblings or peer relationships can also be considered for future research.

- Whilst this study has been focused in the UK and within the EYFS curriculum, further research can be conducted and extended on a more global scale, in countries such as the United States and Australia, where much importance is dedicated to the study of integrating new technology within educational settings (Naace 2012; Heppell 2011; O'Rourke and Harrison 2004).

- On a broader scale, further research can be developed to consider the application of the findings in this thesis to other areas of key stages in education; including that of primary, secondary and higher school education. Taking into consideration the nature of appropriate pedagogic approaches, which will be more applicable to the specific year groups.

- More studies can be developed based on some of the latest forms of technology, i.e. tablet applications, in investigating its potential in enhancing learning and development with young children: In constituting the design and development of appropriate apps, technological implications of integrating tablets in the school environment, in applying appropriate pedagogy, and in determining the criteria of selecting appropriate apps, within the curriculum aims and objectives.

- More research can be offered to investigate whether some of the latest mobile technologies, i.e. tablet applications, can extend forms of learning and development for children with special educational needs (SEN).

- New research can be dedicated to investigate how the tablet technology can look to bridge and/or strengthen the home-school educational connections.

9.9. Personal Reflection

The study and significance of this study has played such a valuable role in my life that I am now working as Head of Digital Innovation at two independent preparatory schools in Southwest London. I am continuing to promote both effective and appropriate forms of appropriate pedagogical strategies within classroom settings and offer advice on integrating technology within curriculum and subject areas. This is currently being extended by professional staff development and in technology training, through workshops, demonstrations and one to one training.

I have recently consulted for the DfE (Department of Education) in designing the new ICT Procurement Framework, which will come into effect September 2014. I am also on a journey with SchoolTech Hub and Tablets for Schools (T4S), in developing the most appropriate way forward for integrating, designing and applying mobile technology, i.e. tablets, into a primary school environment, used for creating good quality education, for the children of the next generation.

I have several publications and blogs to date with Pre-school and Primary EdTech Blogger for the Educational App Store, Mobile Learning, Anytime and Anywhere. These blogs are aimed for parents, educators and practitioners who wish to use tablet application apps, Apple, Google and/or Android apps, with young children to enrich and extend learning and development. My most current blogs are:

- February 19th, 2013: Learning Journeys: A Case Study: http://blog.educationalappstore.com/?s=case+study&submit=Search

- January 29th, 2013: Appropriate and Discrete use of Educational Apps within Curriculum: http://blog.educationalappstore.com/2013/01/29/appropriate-and-discreet-use-of-educational-apps-within-curriculum/

- January 10, 2013: Appropriate Pedagogical Practices when using Educational Apps in Classrooms http://blog.educationalappstore.com/2013/01/10/appropriate-pedagogical-practices-when-using-educational-apps-in-classrooms/

- December 14, 2012: Assessing the Quality of Apps for Usage with Young Children: http://blog.educationalappstore.com/2012/12/14/assessing-the-quality-of-apps-for-usage-with-young-children/

- Knowledge Learning Processes and ICT in Early Childhood Education (2011). http://www.hekupu.ac.nz/index.php?type=journal&issue=15&journal=265

- Creative Graduates ADM-HEA: Creative Futures Report (2009).http://www.adm.heacademy.ac.uk/projects/adm-hea-projects/looking-out-case-studies-effective-engagements-with-creative-and-cultural-enterprise

Appendix 1 – Developmentally Appropriate Practice

Reprinted from *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8, Third Edition,* Carol Copple & Sue Bredekamp, eds. Copyright 2009 by the National Association for the Education of Young Children. www.naeyc.org.

Key Messages of the Position Statement

The NAEYC position statement on developmentally appropriate practice reflects both continuity and change in the early childhood field. Still central since its last iteration (NAEYC 1996) are our fundamental commitments to ***excellence and equity*** in educating children and our core understanding of how children learn and develop. At the same time, new knowledge gained over the last decade has deepened that understanding, allowing us to revise and refine our ideas about how to promote every child's optimal development and learning.

What is developmentally appropriate practice?

• Developmentally appropriate practice requires both meeting children where they are—which means that practitioners must get to know them well—and enabling them to reach goals that are both challenging and achievable.

• All teaching practices should be appropriate to children's age and developmental status, attuned to them as unique individuals, and responsive to the social and cultural contexts in which they live.

• Developmentally appropriate practice does not mean making things easier for children. Rather, it means ensuring that goals and experiences are suited to their learning and development *and* challenging enough to promote their progress and interest.

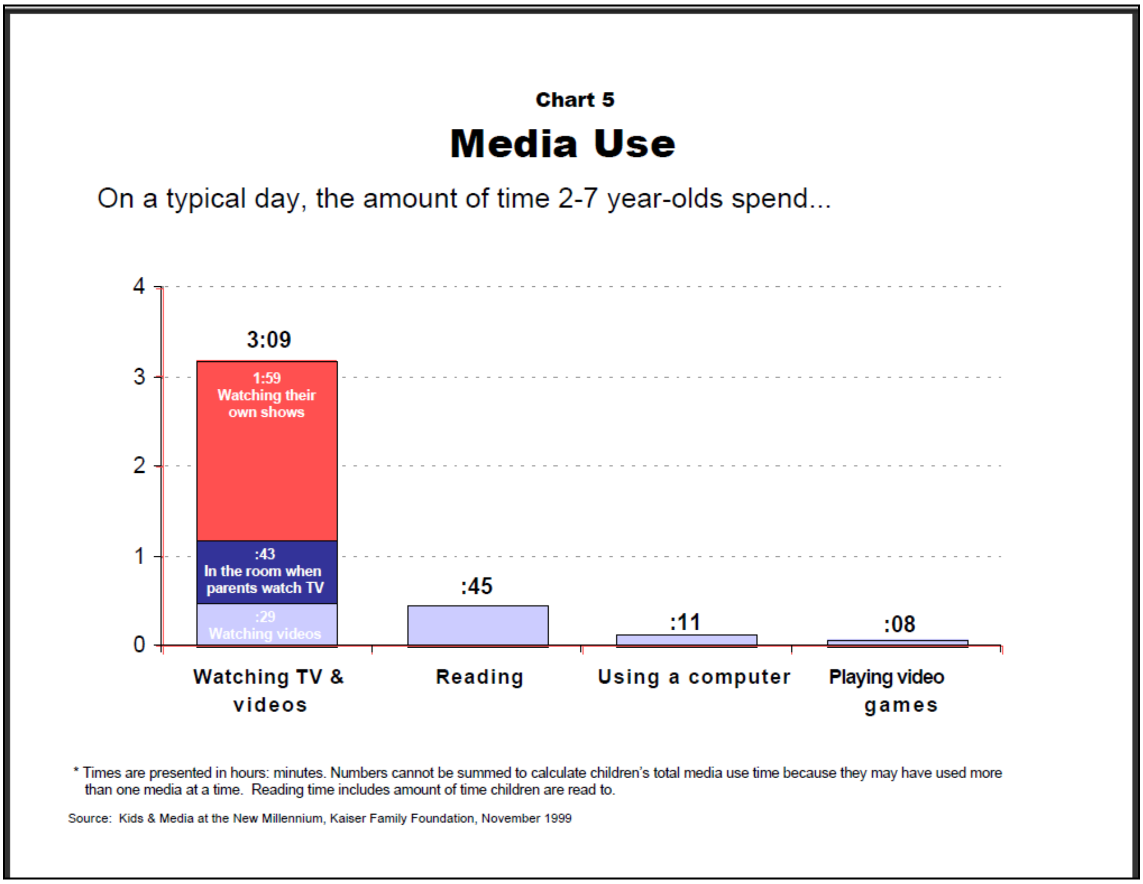
• Best practice is based on knowledge—not on assumptions—of how children learn and develop. The research base yields major principles in human development and learning (this position statement articulates 12 such principles). Those principles, along with evidence about curriculum and teaching effectiveness, form a solid basis for decision making in early care and education.

• Effective practitioners are intentional in their use of a variety of approaches and strategies to support children's interest and ability in each learning domain. Besides embedding significant learning in play, routines, and interest areas, strong programs also provide carefully planned curriculum that focuses children's attention on a particular concept or topic. Further, skilled Practitioners adapt curriculum to the group they are teaching and to each individual child to promote optimal learning and development.

• To ensure that practitioners are able to provide care and education of high quality, they must be well prepared, participate in ongoing professional development, and receive sufficient support and compensation.

Appendix 2 – Children's Media Use

Kaiser Family Foundation Report (1999)



Appendix 3 – EPPE ICT Results

EPPE: ICT in the Foundation Stage: A Position Paper

Iram Siraj-Blatchford, Institute of Education, University of London

John Siraj-Blatchford, Faculty of Education, University of Cambridge (p.6)

Although the EPPE project findings showed these centres to be effective in promoting learning they were found to be less effective in integrating ICT into the curriculum. The 'excellent' strategies they had developed tended not to be applied in the context of ICT. The quality of the ICT learning environment in the settings was measured using an ICT Early Childhood Environmental Rating Subscale (ICT-ECERS) which covered provisions for the development of:

• Information handling and Communication Skills

• Access and control of ICT tools

• Learning about the uses of ICT

This rating scale was modelled on the ECERS (Early Childhood Environmental Rating Scale) (Harms, Clifford & Cryer, 1998) and its construction was strongly informed by the Curriculum Guidance for the Foundation Stage (QCA, 2000). The instrument was originally devised as part of the Developmentally Appropriate Technology in Early Childhood (DATEC) project referred to previously.

The scores attributed to the scales reflect the practices observed rather than any future plans that the centres might have, however, the practitioners were questioned at the end of the observation period for clarification of their current practices. The ICT-ECERS measures from 1 to 7 with 1 = inadequate practice, 3 = minimal practice 5 = good practice and 7 = excellent practice. The following table shows the average level of provision that was being made in developing the ICT curriculum in these 'effective' preschools

According to the ECERS ICT subscale during 2001: ICT ECERS Item Score:

Information handling and Communication Skills - 2.5

Access and control of ICT tools - 1.58

Learning about the uses of ICT - 2.25

Appendix 4 – Definitional Issues

Bowman et al., (2000): Eager to Learn, p. 33 – 34.

Definitional Issues

Because a number of the key terms used in this report may have varied meanings, we present below the definitions used by the committee in its work. We use *development* broadly to encompass cognitive, emotional, social, and physical growth. Conceptually, development means the process of becoming "more complex or intricate; to cause gradually to acquire specific roles, functions, or forms, to grow by degrees into a more advanced or mature state" (*American Heritage Dictionary*, 1992). What is critical about developmental theory is that it focuses on dynamic change over time (Miller, 1989).

Pedagogy is also conceived broadly, as cultivating the process of development within a given culture and society. At its simplest, it may be defined as "any conscious activity by one person designed to enhance the learning in another" (Watkins and Mortimore, 1999:3). Pedagogy has three basic components: (1) the content of what is being taught, (2) the methodology or the way in which teaching is done and (3) the repertoire of cognitive and affective skills required for successful functioning in the society that it promotes.

The *content* of teaching may be designed to encourage learning processes (memory, attention, observation) and cognitive skills (reasoning, comparing and contrasting, classification), as well as the acquisition of specific information, such as the names of the letters of the alphabet (Wiggins and McTighe, 1998).

Methods are the arranged interactions of people and materials planned and used by practitioners and caregivers. They include the practitioner role, teaching styles, and instructional techniques (Siraj- Blatchford, 1998); the key informing principle for early childhood pedagogy is responsiveness.

Cognitive socialization is the role that practitioners/caretakers in early childhood settings play, through their expectations, their teaching strategies, their curricular emphases, to promote the repertoire of cognitive and affective characteristics and skills that the young child needs to move down the path from natal culture to school culture to the culture of the larger society.

Appendix 5 - Assimilation and Accommodation

Learning and Teaching Information
http://www.learningandteaching.info/learning/assimacc.htm

Assimilation and Accommodation are the two complementary processes of Adaptation described by Piaget, through which awareness of the outside world is internalised. Although one may predominate at any one moment, they are inseparable and exist in a dialectical relationship. The terms are also used to describe forms of knowledge in Kolb's elaboration of the cycle of experiential learning.

In **Assimilation**, what is perceived in the outside world is incorporated into the internal world (note that I am not using Piagetian terminology), without changing the structure of that internal world, but potentially at the cost of "squeezing" the external perceptions to fit — hence pigeon-holing and stereotyping.

If you are familiar with databases, you can think of it this way: your mind has its database already built, with its fields and categories already defined. If it comes across new information which fits into those fields, it can **assimilate** it without any trouble.

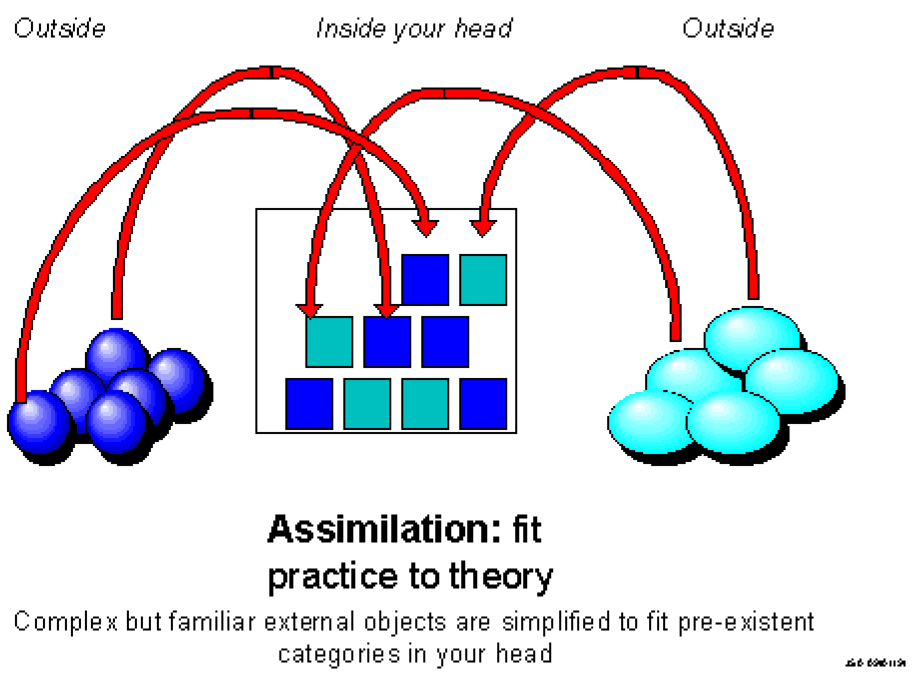


Figure 14 - Assimilation

In **Accommodation,** the internal world has to **accommodate** itself to the evidence with which it is confronted and thus adapt to it, which can be a more difficult and painful process. In the database analogy, it is like what happens when you try to put in information which does not fit the pre-existent fields and categories. You have to develop new ones to accommodate the new information.

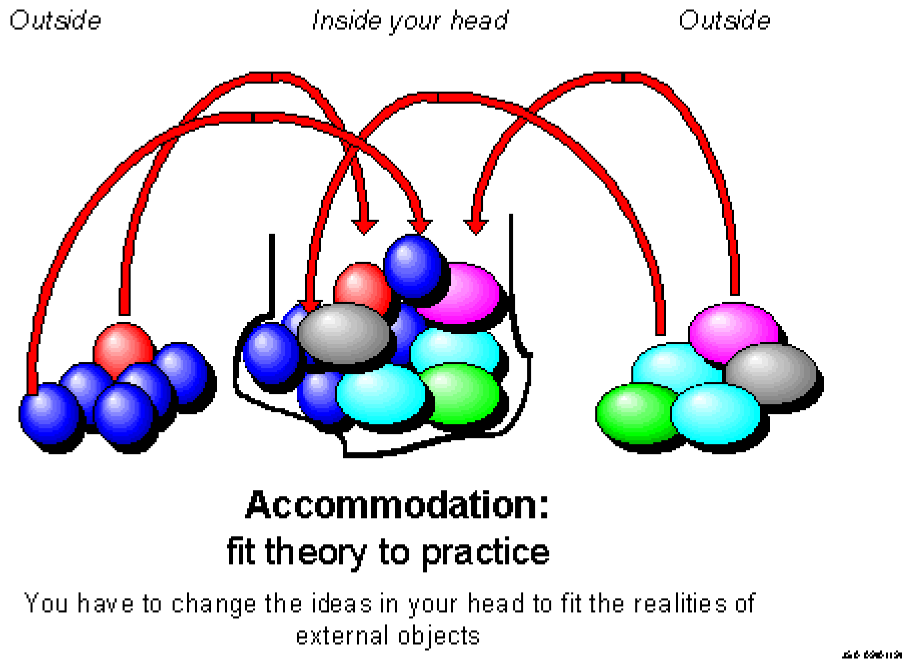


Figure 15 - Accommodation

In reality, both are going on at the same time, so that—just as the mower blade cuts the grass, the grass gradually blunts the blade—although most of the time we are assimilating familiar material in the world around us, nevertheless, our minds are also having to adjust to accommodate it.

Appendix 6 - OECD Curriculum Outlines

Siraj-Blatchford, I., (2007) Creativity, Communication and Collaboration: The Identification of Pedagogic Progression in Sustained Shared Thinking, *Asia-Pacific Journal of Research in Early Childhood Education*, Vol. 1, No. 2, p.11

Table 1: OECD Curriculum Outlines

	Practitioner's initiating activities	Practitioner's extending activities	Differentiation and Formative Assessment	Relationships and conflict between children	*Sustained Shared Thinking*
EEL[1]	"Introducing new activities"	"Enriching interventions"	"Observe children"	"Work out sustaining relations"	"Engagement"
High Scope	"Sharing Control"	"Participation as partners"	"Plan – do- review"	"Adopt a problem solving approach"	"Authentic dialogue"
Reggio Emilia	"Development of short and long-term projects"	"Sustaining the cognitive and social dynamics"	"Practitioners first listen don't talk"	"Warm reciprocal relationships"	"Reciprocity of interactions"
EPPE/ REPEY	*Correlations found with effective practice*	*Correlations found with effective practice*	*Correlations found with effective practice*	*Correlations found with effective practice*	*Correlations found with effective practice*

Appendix 7 - Different types of phonics

A Step at a Time Synthetic Phonics
http://www.astepatatime.co.nz/what_is_synthetic_phonics.htm

Embedded Phonics

This type of phonics approach is not used systematically but simply in those 'teachable moments' that arise. It is used in conjunction with whole language teaching. Embedded phonics is commonly used when it has been noticed that a particular child (or a group of children) are having a problem with a certain word/sound in their book. The practitioner may stop the reading to teach the child/ren that particular sound.

Synthetic Phonics

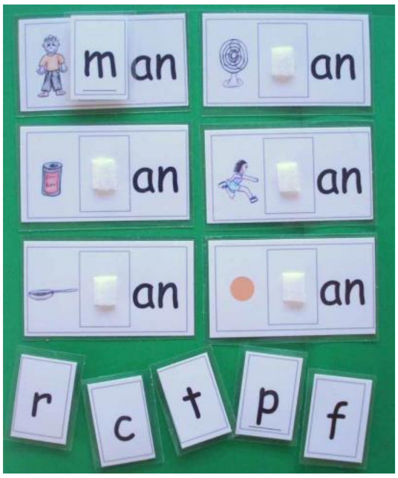
With synthetic phonics children are taught to read and spell at the same time. They are taught to convert letters into sounds and then blend the sounds to form words. For example c-a-t = cat, or sh-oo-k = shook. It also teaches children to segment (pull apart) those sounds in order to spell. For example dot = d-o-t, or cheek = ch-ee-k. Children are taught the sounds of the English language and other common rules. They are taught to understand the alphabet code so that when they come across an unknown word they do not guess from context, picture, initial letters or word shape. They are explicitly taught to use their knowledge to independently and confidently work out new words. With synthetic phonics children are not exposed to words that they do not have the knowledge to decode. This ensures that they are constantly successful.

Analytical Phonics

With analytical phonics children are likely to be asked to analyse a particular sound within a word or words. So for example a practitioner may place up on the board a list of words such as: 'cloud', 'house', 'loud' and 'mouse'. The practitioner will then draw the children's attention to the common sound that she wishes them to note, in this case the 'ou' sound. Children will not be asked to blend the sounds together to form words like they are in synthetic phonics. Instead they will start with the whole word and then analyse a part of it (the complete opposite of synthetic phonics). In analytical phonics children will also be taught many consonant blends, for example: 'br', 'st' and 'bl'. This approach, like embedded phonics, is commonly used alongside whole language teaching.

Analogy Phonics

This is a type of analytical phonics. It might also be called 'chunks' or 'word families' as it looks at a 'chunk' of a word/s. For example a practitioner might be looking at a group of words that end with 'at', 'an' or 'ip'. The first sound may be added or changed to make different words: c-an, f-an, m-an or r-an like the example given below.



Onset-rime phonics (Stephanie-Smith)
http://www.crossboweducation.co.uk/static/articles/onset-and-rime-%28analytic-phonics%29.aspx

Onset and Rime are technical terms used to describe phonological units of a spoken syllable. A syllable can normally be divided into two parts: the onset, which consists of the initial consonant or consonant blend, and the rime which consists of the vowel and any final consonants. So in the word "strap", "str" is the onset and "ap" is the rime. Words which share the same rime will also rhyme, but the spelling will be constant and not vary as it does with rhyme.

Most children will be aware of onset and rime before they begin school and certainly before they learn to read. This is clear by the interest they show in nursery rhymes and in their ability to create their own verses/chants using rhyme and alliteration. It would seem that young children can group words on the basis of sound. Whichever approach is taken to teach reading and spelling through onset and rime, multisensory structured methods must be used. These should include large amounts of kinaesthetic reinforcement so that sound>symbol>written>symbol>motor pattern is well established. The same target rimes will normally have to be taught and revised several times, so the more varied the programme the better! Short lessons every day will be more valuable than one long lesson once a week.

Appendix 8 – Interview with Joe Elliot

Joe Elliot – ***Alphablocks***

Researcher: Thank you for taking the time to talk to me today. Would you like to tell me more about *Alphablocks* and your aims and objectives for this software?

Joe: *Alphablocks* is a multiplatform learning platform for kids. At the heart of it is a TV show consisting of 26 episodes with the aim to engage children in playing with words and word play. We want kids to enter the world and come out thinking, WOW, I like it. I want more of it.

From a benefit point of view, we think that there actually may be some learning of phonics. Evidence showing that there is quite a bit of it and some children have learned to read just by watching *Alphablocks*.

Researcher: What do you think some of the benefits and challenges are with *Alphablocks*?

Half the battle is engaging the kids and if you win that half of battle, the rest is so much easier and if you don't does this, then you may as well go home. The Alphablock software shows how to make the word play magical.

In the making of the TV show we were aware that we want children to interact with letters and sounds. But with the online version, it is letting kids do it themselves. We feel that is a very powerful component (interaction + do it yourself).

Researcher: So, when you were designing *Alphablocks*, what did you have in mind?

Designing characters that are easy to play with. With little alphablock characters picking them up, playing with them, telling stories and putting them together to make words – that is interaction. In terms of making a character is this something that a child will remember. Does it characteristics resemble the sound for the child to remember in a very playful manner.

Researcher: What makes it appealing to young children?

Characters are appealing enough to young children. Gives it time for children to bond with them Inspiration from book called Flat Land – 1880 – square in two dimensions. Thought really hard about how to give 26 characters for them to do what they do. If we discovered that the letters were alive, how would vowels differ from consonants? Different sounds...

Also tried to be aware of the phonic rules using British Standards. We had a model to work from. We had to do something to allow for 2 s's in words. Followed Phonic Rules. Try to find a bit of word play which is easy enough for the child to remember. Something else that works is for characters to care about something and to have a theme to follow it.

Make sure never to tax the child's brain. For example, you need to remember it, you have to play this. Never assume that the child has learned something or has to remember it to move along. There are many opportunities for the child for this to happen.

Bringing a word to life!

Researcher: So, would you say that *Alphablocks* is aimed at young children learning their phonetics?

I am an ex-practitioner/curriculum advisor where I follow the rules not in a text book manner but playful with young children. But overall, it is fairly squared and aimed at 4-7 year olds. Yet, many parents have taken it forward to young children. I am guilty of that too. I have exposed my young little ones to *Alphablocks* and they really do enjoy watching them online.

Researcher: What, then do you think makes for a good learning environment using *Alphablocks*?

Interesting, as my work is with younger children.....and *Alphablocks* really helps with children who know their alphabets and to quicken their process.

Lot of reception and year 1 use it in schools. In early settings? You might want to select your episodes. The early ones are more CBBC based. Many parents showed it to their 2 years old and evidence of good results. We find that working on a one to one basis, or intimate surroundings work best. The right conditions engage kids and when this happens, you can teach them rocket science.

Never attended it for kids to acquire their alphabets. But parents have said that children are immersed in their world and come out with some awareness of the alphabets. But what you need is a good practitioner in the scenario to make it work. Where practitioners can pick it up and use it as an enhancement tool to increase awareness.

If one was to ask practitioners to work with it, they would find various ways to work with it.Such as, lesson starters. If you play an episode, you can slow it down and give a commentary and pick games to engage and further motivate the child. However, there are some parents who are anxious about showing content that is slightly levelled up. But there are other parents who wouldn’t mind this. As some episodes can help children to learn some letters and others do other sounds.

This works well because practitioners can introduce one letter at a time and/or for those children who know that particular letter, they can start becoming aware with the next letters.

Researcher: You said that you worked with the Department of Education (DfE) to ensure that the sounds of letters are precise so that good working practices can be shared. Can you elaborate on this please?

We have conducted rigorous research to follow Letters and Sounds. The only thing we are not, we are not a level phonics programme and so we do not say watch episode 1, learning from it and then do episode 2 and then you are learning.

We haven’t got one episode that concentrates the first 6/8 letters that you have to follow but the practitioner can do the following. So there are 26 episodes but to do it properly you will need at least 100 episodes.

If you want lasting appeal - Need to make sure it follows the curriculum and follows it properly. But you will definitely not find a wrong note in there. We have not had any objection from practitioners in terms of sounds of the phonemes.

Researcher: What about the modelling of online narrative? Was this a challenge in itself?

We had to study interactive stories and see whether they work. Broadly, a lot don't work. Any good interactive story has to keep what is good about linear story and not throw it away. So, for *Alphablocks,* we took a very light touch was because we knew that we needed to get the TV content right so that online can take off.

You want to keep it simple anyway. 13 are interactive out of 26. One of them, the first introductory episode, is simple and linear. The storyline breaks into three; the beginning, the problem, and then you resolve it. We took the episode and revolve around making a word and solve it. So, we offer examples first for children to know what to do. We let the children play and then experiment.

We don't want the children to think they are being tested or anything like that. We just wanted them to put letters together and it makes a word. Sometimes, a nonsensical word is made but it's alright. *Alphablocks* rewards multiple viewing that is it can be repeated many times to make maximum impact. The first time they may just watch it to get the mood and idea of the episode, but by the second/third and fifty time, children start becoming aware that letters have individual phonemes sounds which make words.

We tried to create a half way house which follows the phonic rules of the alphabets resulting in reading a book that you want to read.

Researcher: This sounds really exciting. What would you say is the novel approach of *Alphablocks* in learning?

We wanted to show you something where you have letters and words and have pleasure making words and have fun with it. By the time you learn to read you will have such fun. But actually you can start now, you don't have to wait.

Stimulate the child's cognitive development – Yes. Honestly, the thing in computers that works most often is game. Where you are making it happen and you have hold of it. My hypothesis would be that there is something special happening when the child is watching the episode on line and is engaging in game play. In interaction, they can really have a play.

The whole proposition in phonics is in putting sounds together to make words – that is the basis of any phonic language. Learning happens when you are in a zone and when the child is engaged and motivated to want to continue. And interactivity is creating the right conditions for it. You are immersed, you are engaged, you are doing something creative, your brain is switched on..and *Alphablocks* can support you so that you can progress. There is room for experiment so there is no right or wrong answer.

Researcher: How does the use of *Alphablocks* differ from traditional forms of learning the alphabets?

Learning alphabets is largely dependent on the practitioners and the way they teach it. It's good to hear the alphabet song several times - research shows. Parents sing ABC with them. A lot of practitioners don't know how to really pronounce words. M and B and in this way *Alphablocks* makes sure the right sounds are coming through.

Alphablocks is really only a compliment in teaching. It invites a dialogue of shared language in increasing awareness of phonetics with parents and practitioners.

Researcher: What would you say you were aiming at?

We are preparing learners for the 21st century and we have no idea what learners we are going to get for the 22nd century. But, we know that children are interacting with more media of today so we have got to broadly give them media to learn with because once you make one of these things, they are there forever. Once it's there, it's there.

For younger kids, personally, I am not keen on multi-tasking and getting my 2rd year old onto media. I know my children will inherit a multiple world and virtual world but I would quite like them to begin doing other things than get stuck just using media. Give them a healthy start experience. I find it is very important for children to focus for periods for time and by offering too much media, there is the possibility of short attention spans and just avoiding that for the moment. What you do need is to help children with navigation on the screen as it can become complicated.

I see a huge value in dialogue happening around the screen when something is happening.

The End.

Appendix 9a – Stage 2: Ethics Checklist

Institute of Ethics Form – Stage 2 - Pilots

Bournemouth University

Initial Research Ethics Checklist

Note: ***All researchers*** should complete this brief checklist to identify any ethical issues associated with their research. Before completing this, please refer to the BU *Research Ethics Code of Practice* which can be found *www.bournemouth.ac.uk/researchethics*. School Research Ethics Representatives (or Supervisors in the case of students) can advise on appropriate professional judgement in this review. A list of Representatives can be found at the aforementioned webpage.

Sections 1-5 must be completed by the researcher and Sections 6 – 7 by School Ethics Representative or Supervisor prior to the commencement of any research.

1 RESEARCHER DETAILS						
Name	**Neelam Parmar**					
Email	**nparmar@bournemouth.ac.uk**					
Status	☐ **Undergraduate**		☒ **Postgraduate**		☐ **Staff**	
School	☐ **BS**	☐ **CS**	☐ **DEC**	☐ **HSC**	☒ **MS**	☐ **SM**
Degree Framework & Degree Programme	**PhD**					
2 PROJECT DETAILS						
Project Title	**New Pedagogy Learning with Young Children**					
Project Summary ***Sufficient detail is needed in order to make judgements on ethical concerns/ risks;***	**This study explores the intervention of appropriate pedagogy practice in early years and considers the implications of using technology to encourage learning of the smallest units of sounds in speech with young children.** **Three test pilots will be conducted and applied in preschool education with**					

include methodology, sample, outcomes etc	**children between the ages of three to five years using the online literacy software, Cbeebies' *Alphablocks*, through the uses of the Internet. The creation of *Alphablocks* has worked in conjunction with The National Strategies, Department of Education, to meet the requirements for Letters and Sounds; Articulation of phonemes (Vowels and Consonants). With this in mind, the early year provider and parents of the child can be ensured that the learning which will take place through the use of new media is of good quality and meets the required literacy standards for progression.** **As the use of the Internet and the computer is already established in the current preschool learning environments (for those who have the infrastructure and technology in place), there will be no additional equipment required for this research. What will remain constant is the use of the Internet via a device, be it the PC, laptop or tablet, the children, researcher and the practitioner involved in the process.** **The research takes a pragmatic epistemological frame of reference. In this stage, a qualitative methodology of Action Research is used to encourage critical reflection where changes are analysed, undertaken, observed and implemented. Methods of data collection will include the uses of video observations, audio recordings and informal discussions with the young children (along with interactions with the practitioners).** **As each child will always be accompanied by their dedicated practitioner, and not left alone with the researcher, no further Criminal/Records Bureau Clearance is required. Nevertheless, the researcher holds a clear CRB check and will offer this as supporting document to both the preschools and the parents involved in the study.** **Another three preschools will be employed in this stage with approximately 30 children. The research case study will take place in as much of a 'naturalistic' preschool classroom where there is a dedicated practitioner to each child and where the child is most comfortable (Hayes, 1980) as opposed to more laboratories and experimental settings. Prior to the beginning of the research process and to avoid concerns of stranger anxiety and disruption, the researcher will familiarise herself with the children and spend approximately ten minutes talking to them. Each case study will last no longer than approximately 20 minutes to ensure that health and safety standards for computer use. The research sessions will take place in the morning and afternoon, during 'free-play' sessions over a two day period.** **The research will employ the use of primary, secondary and experimental data (Delbridge and Kirpatrick, 1994). It will include anecdotal observations about what is happening throughout the research process, including statements of what is being said by the children, the role of the practitioner involved and descriptive notes of the types of behaviours, feelings, attitudes and surrounding factors during the research process. These notes will be captured in a journal which can be used as part of data collection to determine the changing interpretations of the study and further implications.**

Proposed Start and End Dates of Data Collection	**01/2011** **06/2012**
Project Supervisor	**Dr. Stephen Heppell and Dr. Richard Berger**
Framework Project Co-ordinator	

3 ETHICS REVIEW CHECKLIST – PART A

I	Has a health & safety evaluation / risk assessment been conducted?	☒ **Yes**	☐ **No**
II	Is approval from an external Research Ethics Committee (e.g. Local Research Ethics Committee (REC), NHS REC) required/being sought?	☒ **Yes**	☐ **No**
III	Is the research solely literature-based?	☐ **Yes**	☒ **No**
IV	Does the research involve the use of any dangerous substances, including radioactive materials?	☐ **Yes**	☒ **No**
V	Does the research involve the use of any potentially dangerous equipment?	☐ **Yes**	☒ **No**
VI	Could conflicts of interest arise between the source of funding and the potential outcomes of the research? (see section 8 of BU Research Ethics Code of Practice).	☐ **Yes**	☒ **No**
VII	Is it likely that the research will put any of the following at risk:		
	Living creatures?	☐ **Yes**	☒ **No**
	Stakeholders?	☐ **Yes**	☒ **No**
	The environment?	☐ **Yes**	☒ **No**
	The economy?	☐ **Yes**	☒ **No**
VIII	Does the research involve experimentation on any of the following:		
	Animals?	☐ **Yes**	☒ **No**
	Animal tissues?	☐ **Yes**	☒ **No**
	Human tissues (including blood, fluid, skin, cell lines)?	☐ **Yes**	☒ **No**
	Genetically modified organisms?	☐ **Yes**	☒ **No**
IX	Will the research involve prolonged or repetitive testing, or the collection of audio, photographic or video materials?	☒ **Yes**	☐ **No**

X	Could the research induce psychological stress or anxiety, cause harm or have negative consequences for the participants or researcher (beyond the risks encountered in normal life)?	☐ **Yes**	☒ **No**
XI	Will the study involve discussion of sensitive topics (e.g. sexual activity, drug use, criminal activity)?	☐ **Yes**	☒ **No**
XII	Will financial inducements be offered (other than reasonable expenses/ compensation for time)?	☐ **Yes**	☒ **No**
XIII	Will it be necessary for the participants to take part in the study without their knowledge / consent at the time?	☐ **Yes**	☒ **No**
XIV	Are there problems with the participant's right to remain anonymous?	☐ **Yes**	☒ **No**
XV	Does the research *specifically* involve participants who may be vulnerable?	☐ **Yes**	☒ **No**
XVI	Might the research involve participants who may lack the capacity to decide or to give informed consent to their involvement?	☒ **Yes**	☐ **No**

4 ETHICS REVIEW CHECKLIST – PART B

Please give a summary of the ethical issues and any action that will be taken to address these. If you believe there to be no ethical issues please enter "NONE" into the box.

Ethical Issue	Action
The research involves young children participants between the ages of three to five years. In clause 12.5 of The BU Ethics Research Codes of Practice (2009), if children are involved in a research study, they should be included in key aspects of the process of consent and the child's parent/legal guardian must be informed and given their consent to participate in the study.	**Prior to the beginning of the research, a letter of consent will be distributed within the preschool learning environment to request permission for the child to take part in the research.** **The letter will list the required methods of data collection such as the uses of video's/camera's/voice recorders and informal**

	discussions with the young children. **Out of respect of the privacy of the children, confidentiality will also offered in the letter. This is to ensure full confidentiality of the child/children involved which can identify the individual beyond the preschool practitioner and research.**

5	**STATEMENT – to be signed by Researcher**		
I believe that the information I have given in this form is correct. I have read and understood the BU Research Ethics Code of Practice, evaluated relevant insurance issues, performed a health & safety evaluation/ risk assessment and discussed any issues/ concerns with a School Ethics Representative/ Supervisor.			
Signed	**Neelam Parmar**	**Date**	**01/01/2011**

6 RECOMMENDATION ON THE RESEARCH PROJECT'S ETHICAL STATUS – to be signed by School Research Ethics Representative/ Supervisor		
Satisfied with the accuracy of the research project ethical statement, I believe that the appropriate action is:		
The research project proceeds in its present form	☐ **Yes**	☐ **No**
The research project proposal needs further assessment under the School Ethics procedure*	☐ **Yes**	☐ **No**
The research project needs to be returned to the research student for modification prior to further action*	☐ **Yes**	☐ **No**
** The School is reminded that it is their responsibility to ensure that no project proceeds without appropriate assessment of ethical issues. In extreme cases, this can require processing by the School or University's Research Ethics Committee or by relevant external bodies.*		

7 AFFIRMATION BY SCHOOL RESEARCH ETHICS REPRESENTATIVE/ SUPERVISOR
I have read this Ethical Review Checklist and the BU Code of Practice and I can confirm that, to the best of my understanding, the information presented is correct and appropriate to allow an informed judgement on whether furthe ethical approval is required.

Applicant Signature	Neelam Parmar	**Date**	**01/01/2011**
Reviewer Signature	Richard Berger.		**3rd January 2012.**

Appendix 9b – Stage 3: Ethics Checklist

Institute of Ethics Form – Stage 2 and 3

Bournemouth University

Initial Research Ethics Checklist

Note: ***All researchers*** should complete this brief checklist to identify any ethical issues associated with their research. Before completing this, please refer to the BU *Research Ethics Code of Practice* which can be found *www.bournemouth.ac.uk/researchethics*. School Research Ethics Representatives (or Supervisors in the case of students) can advise on appropriate professional judgement in this review. A list of Representatives can be found at the aforementioned webpage.

Sections 1-5 must be completed by the researcher and Sections 6 – 7 by School Ethics Representative or Supervisor prior to the commencement of any research.

1 RESEARCHER DETAILS						
Name	**Neelam Parmar**					
Email	**nparmar@bournemouth.ac.uk**					
Status	☐ **Undergraduate**		☒ **Postgraduate**		☐ **Staff**	
School	☐ **BS**	☐ **CS**	☐ **DEC**	☐ **HSC**	☒ **MS**	☐ **SM**
Degree Framework & Degree Programme	**PhD**					
2 PROJECT DETAILS						
Project Title	**Determining Appropriate Pedagogy whilst using New Learning Technology with Young Children**					
Project Summary ***Sufficient detail is needed in order to make judgements***	**This study explores the intervention of appropriate pedagogy practice in early years and considers the implications of using new forms of technology to encourage learning of the smallest units of sounds in speech with young**					

on ethical concerns/ risks; include methodology, sample, outcomes etc	**children.** **The development of pedagogy will be conducted and applied in preschool education with children between the ages of three to five years using the online literacy software, Cbeebies' *Alphablocks*, through the uses of the Internet. The creation of *Alphablocks* has worked in conjunction with The National Strategies, Department of Education, to meet the requirements for Letters and Sounds; Articulation of phonemes (Vowels and Consonants). With this in mind, the early year provider and parents of the child can be ensured that the learning which will take place through the use of new media is of good quality and meets the required literacy standards for progression.** **As the use of the Internet and the computer is already established in current preschool learning environments (for those who have the infrastructure and technology in place), there will be no additional equipment required for this research. What will remain constant is the use of the Internet, via a PC, laptop or tablet along with the children, researcher and the practitioner involved in the process.** **The part of the research is divided into two stages where Piagets Interviews, in the stage 2, take a qualitiative stance in determining what will constitute as appropriate pedagogy, while using technology with young children. This process includes a semi-structured interview process through dialogue and facilitation between the researcher and child.** **Again, no child will be left alone with the researcher. Each child will be accompanied by the practitioner, who will be taking an observer stance, during this phase. Nonetheless, the researcher holds a clear CRB check and will offer this as supporting document to both the preschools and the parents involved in the study.** **Prior to the beginning of the research process and to avoid concerns of stranger anxiety and disruption, the researcher will familiarise herself with the children and spend approximately ten minutes talking to them. Each case study lasts no longer than approximately 20 minutes to ensure that health and safety of working alongside very young children. The research sessions will take place in the morning and afternoon, during 'free-play' sessions over a two day period.** **The research will employ the use of primary, secondary and experimental data (Delbridge and Kirpatrick, 1994). It will include anecdotal observations about what is happening throughout the research process, including statements of what is being said by the children, the role of the practitioner involved and descriptive notes of the types of behaviours, feelings, attitudes and surrounding factors during the research process. These notes will be captured in a journal which can be used as part of data collection to determine the changing interpretations of the study and further implications.** **Stage 3 will focus on the impact of interviews/dialectial conversations through the process of Piaget's interviews followed by natural and more systematic observations. The use of recorders, note taking, and video recording will also**

	be utilised. Again, these notes are capture in a journal and can be used as part of data collection.
Proposed Start and End Dates of Data Collection	**01/2012** **03/2012**
Project Supervisor	**Dr. Stephen Heppell and Dr. Richard Berger**
Framework Project Co-ordinator	

3 ETHICS REVIEW CHECKLIST – PART A

I	Has a health & safety evaluation / risk assessment been conducted?	☒ **Yes**	☐ **No**
II	Is approval from an external Research Ethics Committee (e.g. Local Research Ethics Committee (REC), NHS REC) required/being sought?	☒ **Yes**	☐ **No**
III	Is the research solely literature-based?	☐ **Yes**	☒ **No**
IV	Does the research involve the use of any dangerous substances, including radioactive materials?	☐ **Yes**	☒ **No**
V	Does the research involve the use of any potentially dangerous equipment?	☐ **Yes**	☒ **No**
VI	Could conflicts of interest arise between the source of funding and the potential outcomes of the research? (see section 8 of BU Research Ethics Code of Practice).	☐ **Yes**	☒ **No**
VII	Is it likely that the research will put any of the following at risk:		
	Living creatures?	☐ **Yes**	☒ **No**
	Stakeholders?	☐ **Yes**	☒ **No**
	The environment?	☐ **Yes**	☒ **No**
	The economy?	☐ **Yes**	☒ **No**
VIII	Does the research involve experimentation on any of the following:		
	Animals?	☐ **Yes**	☒ **No**
	Animal tissues?	☐ **Yes**	☒ **No**
	Human tissues (including blood, fluid, skin, cell lines)?	☐ **Yes**	☒ **No**
	Genetically modified organisms?	☐ **Yes**	☒ **No**
I	Will the research involve prolonged or repetitive testing, or the collection of audio,	☒ **Yes**	☐ **No**

X	photographic or video materials?		
X	Could the research induce psychological stress or anxiety, cause harm or have negative consequences for the participants or researcher (beyond the risks encountered in normal life)?	☐ **Yes**	☒ **No**
XI	Will the study involve discussion of sensitive topics (e.g. sexual activity, drug use, criminal activity)?	☐ **Yes**	☒ **No**
XII	Will financial inducements be offered (other than reasonable expenses/ compensation for time)?	☐ **Yes**	☒ **No**
XIII	Will it be necessary for the participants to take part in the study without their knowledge / consent at the time?	☐ **Yes**	☒ **No**
XIV	Are there problems with the participant's right to remain anonymous?	☐ **Yes**	☒ **No**
XV	Does the research *specifically* involve participants who may be vulnerable?	☐ **Yes**	☒ **No**
XVI	Might the research involve participants who may lack the capacity to decide or to give informed consent to their involvement?	☒ **Yes**	☐ **No**

4 ETHICS REVIEW CHECKLIST – PART B

Please give a summary of the ethical issues and any action that will be taken to address these. If you believe there to be no ethical issues please enter "NONE" into the box.

Ethical Issue	Action
The research involves young children participants between the ages of 3-5 years. In clause 12.5 of The BU Ethics Research Codes of Practice (2009), if children are involved in a research study, they should be included in key aspects of the process of consent and the child's parent/legal guardian must be informed and given their consent to participate in the study.	**Prior to the beginning of the research, a letter of consent will be distributed within the preschool learning environment to request permission for the child to take part in the research.** **The letter will list the required methods of data collection such as the uses of video's/camera's/voice**

	recorders and informal discussions with the young children. **Out of respect of the privacy of the children, confidentiality will also offered in the letter. This is to ensure full confidentiality of the child/children involved which can identify the individual beyond the pre-school practitioner and research.**

5 STATEMENT – to be signed by Researcher			
I believe that the information I have given in this form is correct. I have read and understood the BU Research Ethics Code of Practice, evaluated relevant insurance issues, performed a health & safety evaluation/ risk assessment and discussed any issues/ concerns with a School Ethics Representative/ Supervisor.			
Signed	**Neelam Parmar**	**Date**	**01/01/2012**

6 RECOMMENDATION ON THE RESEARCH PROJECT'S ETHICAL STATUS – to be signed by School Research Ethics Representative/ Supervisor		
Satisfied with the accuracy of the research project ethical statement, I believe that the appropriate action is:		
The research project proceeds in its present form	☐ **Yes**	☐ **No**
The research project proposal needs further assessment under the School Ethics procedure*	☐ **Yes**	☐ **No**
The research project needs to be returned to the research student for modification prior to further action*	☐ **Yes**	☐ **No**
** The School is reminded that it is their responsibility to ensure that no project proceeds without appropriate assessment of ethical issues. In extreme cases, this can require processing by the School or University's Research Ethics Committee or by relevant external bodies.*		

7 AFFIRMATION BY SCHOOL RESEARCH ETHICS REPRESENTATIVE/ SUPERVISOR
I have read this Ethical Review Checklist and the BU Code of Practice and I can confirm that, to the best of my understanding, the information presented is correct and appropriate to allow an informed judgement on whether furthe ethical approval is required.

Applicant Signature	Neelam Parmar	**Date**	**01/01/2012**
Reviewer Signature	Richard Berger.		**3rd January 2012.**

Appendix 9c – Stage 4: Ethics Checklist

Institute of Ethics Form – Stage 4

Bournemouth University

Initial Research Ethics Checklist

Note: ***All researchers*** should complete this brief checklist to identify any ethical issues associated with their research. Before completing this, please refer to the BU *Research Ethics Code of Practice* which can be found *www.bournemouth.ac.uk/researchethics*. School Research Ethics Representatives (or Supervisors in the case of students) can advise on appropriate professional judgement in this review. A list of Representatives can be found at the aforementioned webpage.

Sections 1-5 must be completed by the researcher and Sections 6 – 7 by School Ethics Representative or Supervisor prior to the commencement of any research.

1 RESEARCHER DETAILS						
Name	**Neelam Parmar**					
Email	**nparmar@bournemouth.ac.uk**					
Status	☐ **Undergraduate**		☒ **Postgraduate**		☐ **Staff**	
School	☐ **BS**	☐ **CS**	☐ **DEC**	☐ **HSC**	☒ **MS**	☐ **SM**
Degree Framework & Degree Programme	**PhD**					
2 PROJECT DETAILS						
Project Title	**Determining Appropriate Pedagogy whilst using New Learning Technology with Young Children**					
Project Summary ***Sufficient detail is needed in order to make judgements***	**This study explores the intervention of appropriate pedagogy practices in early years and considers the implications of using new forms of technology to encourage learning of the smallest units of sounds in speech with young**					

on ethical concerns/ risks; include methodology, sample, outcomes etc	**children.** **The validation of the pedagogy will be conducted and applied in preschool education with children between the ages of three to five years using the online literacy software, Cbeebies' *Alphablocks*, through the uses of the Internet. The creation of *Alphablocks* has worked in conjunction with The National Strategies, Department of Education, to meet the requirements for Letters and Sounds; Articulation of phonemes (Vowels and Consonants). With this in mind, the early year provider and parents of the child can be ensured that the learning which will take place through the use of new media is of good quality and meets the required literacy standards for progression.** **As the use of the Internet and the computer is already established in current preschool learning environments (for those who have the infrastructure and technology in place), there will be no additional equipment required for this research. What will remain constant is the use of the Internet, via a PC, laptop or tablet along with the children, researcher and the practitioner involved in the process.** **The part of the research is in its final stage of the study. It uses Piaget's teaching experiments in verifying the pedagogy developed and determined in the earlier stages. The new knowledge developed from findings will be imparted onto the practitioners who will take the lead. This will take place in a further three preschool learning environments with a total of 30 children (possibly more). Taking a quantitative frame of reference, it will also employ Laever's scales of Well-Being and Involvment in determining the quality of care and well-being of a planned learning environment, with the young children. This will involve structured, objective observations, conducted by the researcher.** **Again, no child will be left alone with the researcher. Each child will be accompanied by the practitioner, who will be taking an observer stance, during this phase. Nonetheless, the researcher holds a clear CRB check and will offer this as supporting document to both the preschools and the parents involved in the study.** **Prior to the beginning of the research process and to avoid concerns of stranger anxiety and disruption, the researcher will familiarise herself with the children and spend approximately ten minutes talking to them. Each case study lasts no longer than approximately 20 minutes to ensure that health and safety of working alongside very young children. The research sessions will take place in the morning and afternoon, during 'free-play' sessions over a two day period.** **This stage will focus on transferring knowledge to the practitioners to employ appropriate pedagogic practices when working with technology. It will drill further down into providing approrpriate strategies, when looking to encourage phonetic learning, with the young children. Using Laever's scales, it will include structured, 2 minute anaecdotal observations based on Laever's scales of 1 – 5; where 1 includes high levels of invovlmenet and well-being and 5**

	being the lowest. The use of recorders, note taking, and video recording will also be utilised. Again, these notes are capture in a journal and can be used as part of data collection.
Proposed Start and End Dates of Data Collection	**04/2012** **06/2012**
Project Supervisor	**Dr. Stephen Heppell and Dr. Richard Berger**
Framework Project Co-ordinator	

3 ETHICS REVIEW CHECKLIST – PART A

I	Has a health & safety evaluation / risk assessment been conducted?	☒ **Yes**	☐ **No**
II	Is approval from an external Research Ethics Committee (e.g. Local Research Ethics Committee (REC), NHS REC) required/being sought?	☒ **Yes**	☐ **No**
III	Is the research solely literature-based?	☐ **Yes**	☒ **No**
IV	Does the research involve the use of any dangerous substances, including radioactive materials?	☐ **Yes**	☒ **No**
V	Does the research involve the use of any potentially dangerous equipment?	☐ **Yes**	☒ **No**
VI	Could conflicts of interest arise between the source of funding and the potential outcomes of the research? (see section 8 of BU Research Ethics Code of Practice).	☐ **Yes**	☒ **No**
VII	Is it likely that the research will put any of the following at risk:		
	Living creatures?	☐ **Yes**	☒ **No**
	Stakeholders?	☐ **Yes**	☒ **No**
	The environment?	☐ **Yes**	☒ **No**
	The economy?	☐ **Yes**	☒ **No**
VIII	Does the research involve experimentation on any of the following:		
	Animals?	☐ **Yes**	☒ **No**
	Animal tissues?	☐ **Yes**	☒ **No**
	Human tissues (including blood, fluid, skin, cell lines)?	☐ **Yes**	☒ **No**
	Genetically modified organisms?	☐ **Yes**	☒ **No**

IX	Will the research involve prolonged or repetitive testing, or the collection of audio, photographic or video materials?	☒ **Yes**	☐ **No**
X	Could the research induce psychological stress or anxiety, cause harm or have negative consequences for the participants or researcher (beyond the risks encountered in normal life)?	☐ **Yes**	☒ **No**
XI	Will the study involve discussion of sensitive topics (e.g. sexual activity, drug use, criminal activity)?	☐ **Yes**	☒ **No**
XII	Will financial inducements be offered (other than reasonable expenses/ compensation for time)?	☐ **Yes**	☒ **No**
XIII	Will it be necessary for the participants to take part in the study without their knowledge / consent at the time?	☐ **Yes**	☒ **No**
XIV	Are there problems with the participant's right to remain anonymous?	☐ **Yes**	☒ **No**
XV	Does the research *specifically* involve participants who may be vulnerable?	☐ **Yes**	☒ **No**
XVI	Might the research involve participants who may lack the capacity to decide or to give informed consent to their involvement?	☒ **Yes**	☐ **No**

4 ETHICS REVIEW CHECKLIST – PART B

Please give a summary of the ethical issues and any action that will be taken to address these. If you believe there to be no ethical issues please enter "NONE" into the box.

Ethical Issue	Action
The research involves young children participants between the ages of 3-5 years. In clause 12.5 of The BU Ethics Research Codes of Practice (2009), if children are involved in a research study, they should be included in key aspects of the process of consent and the child's parent/legal guardian must be informed and given their consent to participate in the study.	**Prior to the beginning of the research, a letter of consent will be distributed within the preschool learning environment to request permission for the child to take part in the research.** **The letter will list the required methods of data**

	collection such as the uses of video's/camera's/voice recorders and informal discussions with the young children. **Out of respect of the privacy of the children, confidentiality will also offered in the letter. This is to ensure full confidentiality of the child/children involved which can identify the individual beyond the pre-school practitioner and research.**

5 STATEMENT – to be signed by Researcher			
I believe that the information I have given in this form is correct. I have read and understood the BU Research Ethics Code of Practice, evaluated relevant insurance issues, performed a health & safety evaluation/ risk assessment and discussed any issues/ concerns with a School Ethics Representative/ Supervisor.			
Signed	**Neelam Parmar**	**Date**	**01/01/2012**

6 RECOMMENDATION ON THE RESEARCH PROJECT'S ETHICAL STATUS – to be signed by School Research Ethics Representative/ Supervisor		
Satisfied with the accuracy of the research project ethical statement, I believe that the appropriate action is:		
The research project proceeds in its present form	☐ **Yes**	☐ **No**
The research project proposal needs further assessment under the School Ethics procedure*	☐ **Yes**	☐ **No**
The research project needs to be returned to the research student for modification prior to further action*	☐ **Yes**	☐ **No**
** The School is reminded that it is their responsibility to ensure that no project proceeds without appropriate assessment of ethical issues. In extreme cases, this can require processing by the School or University's Research Ethics Committee or by relevant external bodies.*		

7 AFFIRMATION BY SCHOOL RESEARCH ETHICS REPRESENTATIVE/ SUPERVISOR
I have read this Ethical Review Checklist and the BU Code of Practice and I can confirm that, to the best of my understanding, the information presented is correct and appropriate to allow an informed judgement on whether furthe

ethical approval is required.			
Applicant Signature	Neelam Parmar	**Date**	**01/01/2012**
Reviewer Signature	Richard Berger.		**3rd January 2012.**

Appendix 10 – Stage 1: Pre-Pilot Opening Questionnaire

4th, 5th and 6th March, 2011

List of Preschools	Do you use new technologies such as online educational websites via the Internet, through touch screen, laptops and/or tablet applications with the children in your preschool?	What do you think is the most effective pedagogic approach (instructional approach) for encouraging the use of new technology in learning and development with young children?
1	Yes – laptops and CD's.	"**Well, whatever we do, we are always with them.** We tend to sit with the child (ren) and show them the CD/game (each child has 20 minutes at a time) and play alongside with them. Help them interact with the technology and repeat the alphabet sounds".
2	Yes – Internet, Touch Screen, Laptops	"**Don't know for sure**. Along the lines of exploratory play. What we tend to do is encourage the children to have some exploratory play and familiarise themselves with the technology so they can play".
3	Yes – Internet and Touch Screens.	"**I don't really know**. We have some literacy software. We let the children play for 20 minutes at a time. We have a timer. If the children get stuck, they call on us and we come along to help fix the problem so the child can continue. Most of the time the children know what they are doing".
4	Yes – Internet and Touch Screens	"**I don't know but we are hoping you would know**. At the moment, the children don't really use the computer. They used it a lot initially but found it difficult at times when we were not around to always help them".
5	Yes – Internet and Touch Screens	**"Can't know for sure.** The children use the Internet and watch Cbeebies. Sometimes they play games that help them learn their alphabets. Playing the computer is often during free-flow play time."
6	Yes – Internet, Touch Screens and Laptops	**"(laughs – not really sure).** We have a computer. The children access the Internet. Often Cbeebies and Nick Junior. Sometimes, we sit with them and help them play games such as learning their alphabets, shapes, and numbers. Generally they access the computer on their own, but often children play with each other and we are always there to help them if they get stuck."
7	Yes – Computer	Let children go through programs by themselves. We don't help them but when they get stuck, we can help them to read the instructions. **There is no effective teaching method.**
8	Yes – Computer/Internet	**"**Don't use it for teaching. Mainly use for demonstrating and showing music, examples of the

		ocean. **No particular teaching** but general interaction with groups of children."
9	Yes – Computer/Internet and Laptops	"Anything through games. Join dots to dots. Play literacy Simple Games. Depends on the child but **no particular method of teaching developed yet**."
10	Yes – Computers/ Internet	"To be honest, **don't use it as a teaching aid.** It's for children for children to experience in their own rate. This happens in free flow. We don't use new technologies in teaching as yet – would be different if had smart boards or anything like that. At present, children use it as free play."
11	Yes - Computer /CD's	"**We don't use the computer in teaching.** Children play games on the computer with shapes, joining dots etc. They do it themselves. We use the computer to teach them mouse control. But they are better than us."
12	Yes – Computer – Built in games.	"**We have various methods.** They generally tend to play games by themselves or with other children. We don't let them access the Internet even though we know they do at home. Our practitioners show them the games and how to use them and then let them get on with it."
13	Yes – Computer/ Laptops with CD Rom's and Internet.	"Using lab tops with children. Used the Internet with Bournemouth Air Festival to show them aeroplanes. Use to show celebration such as the Caribbean Photos and Carnival. It's important for children to learn using the technology themselves. But have **never used it in a learning environment.** The children use the software and play literacy games to listen to and make sounds."
14	No, don't encourage it.	-
15	No. Not interested	-
16	Yes. Only a desktop PC	We have only been granted the use of Internet in our nursery. So far, we have only showed the children once that we have the Internet but we don't use in on an occasional basis…in terms of a teaching method**, I would think we will let the children have go and explore on** their own – of course, we must put in the necessary internet restrictions.
17	Yes – Computer and CD's. Nothing else. It's too expensive.	"Mostly numeracy games. We let them sit down and play the games. Mainly for them to learn to use the computer. **We don't have a teaching method.**"
18	Yes – Laptop and Computer	"For the younger children, it's for them how to use the mouse. For the older children, a lot of them are monitored. The adults sit with the children to help them if they require any help. **No selected style**."
19	Yes – Laptops CD.	"We would like to buy an iPad. But it's expensive…But, they just tend to play games and take

		it in turns…**Exploratory play** at free time.”
20	Yes – Internet Access and Laptop and CD Rom’s with age related games.	“Learned through play and topic based. Use the Internet to further explore a theme. **Adult supported means.** We interact with the children as they are still so young.”
21	Yes – laptop by the council	It’s a very old laptop but it’s a laptop nonetheless. We have showed the children how to get onto CBeebies and Nick Junior websites. They really like it. Most of the time we just let them get on with it. They share really well with the egg timer and if they need help then we are there to help them. I think the children are learning off each other – (**peer learning taking place).**
22	None	We don’t agree with technology and young children. It may be something we have to look at again as the EYFS have now reinstated it as necessary.
23	Yes, we have 2 computers.	We have 2 preschool units so we have two computers. The children generally use the CD’s that we have bought for them. Once we have shown the children what to do, how to put the computer on and insert the disk, then we sit down with them and show them what to do. **Often, there is a Practitioner with them, helping them to move from one level to the next.** There is also the Internet but we are not sure how to put on the restrictions. We would like to try using online educational websites with them. The research shows its good for them.
24	One computer	We have a really nice computer and a fancy kid’s desk with it. We have taken all the necessary steps to ensure that the children have a child friendly mouse and that the bench can hold up to two children at a time. We have downloaded two bits of software on the computer. The children mainly use that but in the beginning the children really wanted to use the computer. Now, they don’t use it as much. I think it’s because the offline screen comes on and the screen turns black so the children are not really aware of it. **We do not have a teaching method with the computers and I think it’s because we don’t seem to use it enough.**
25	Internet and 2 laptops	We are really lucky. We have 2 brand new laptops and child friendly big mice. The children love it. They are on it all the time. The best part is that the children can carry their laptop around with them – so sometimes we use it in the garden, other times we use it on the floor during circle time. We use the Internet all the time. **So far, the computer has been used as a group and there is always an adult around to work with the children.**
26	One laptop	We have one laptop that we share among staff and children. We are not a very big preschool and most of our time is focused on developing the child. We do use the Internet with our children but mainly for

		educational purposes. So, if the set theme is the stud of the planets and solar system, then the practitioner shows them pictures on the laptop. There is so much on the Internet and we do not really want the children to have access to it all....**So, I suppose we don't really let the children on the laptop very much on their own.**
27	Internet and Computer	We have both the Internet and the Computer and the children really enjoy using it. We have put in all the necessary permissions, as they call it, and so we have ensured that our children are using it safely. The parents were really keen to have it at there for the children too. The children often go the websites they like – sometimes Cbeebies, sometimes others. We are there to help them put it on. **Usually, the children explore at first and then click on a story/page that they really like and just go with the flow**. So far, we have not really used any online educational websites to encourage a form of developmental learning but this is something we are looking forward to doing. The government is now making technology quite important in our EYFS plans so this is something we really need to get around. **What do you suggest?**
28	No internet but one computer	We do not have the Internet. We are not able to get internet access where we are but I know our manager is looking into it. The children really enjoy using the computer and we would like to extend their learning by using some of the websites on the Internet. They talk about it all the time which itself is a reason to get the Internet. **No particular type.**
29	Computer and CD's	We don't have the Internet at yet but hope to soon. The children use the computer **but most of us are not really sure how to work it all the time.** The children prefer to play outside.
30	Internet and Computer and CD's	We have a computer and several CD's. Not all of them work anymore but the children do have some that still work and use them on a regular basis. We also have Internet access. A key worker is always with the child when he/she is working on the computer. We try to follow a concept called **Guided Interaction** where the Practitioner can help encourage the child to move along and progress, in their own level. We find that it works very well.

Appendix 11a – Stage 2: Pilot 1 Interview

Research Interview Questionnaire – New Learning Software in preschool

Definitions:

ICT – ICT (Information and Communications Technology – and new forms of technologies) is an umbrella term that includes any communication device and fulfils information processing. This includes the use of Computers, Internet, TV/Video, Radio, Digital Camers etc.

New Learning Software – Websites such as Cbeebies *Alphablocks*, Nick Junior Learning Shapes, Barney Learning Colours etc accessed via the Internet.

Note: This interview will focus on the use of Cbeebies Website via the Internet

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Interview with M (Nursery Manager)

General Background:

1) **What types of activities do the children do in nursery?**
    - Role Play
    - Outdoor Games and Activities
    - Construction Games
    - Books, Comics etc..
    - Drawing/Writing
    - Musical Activities
    - Soft Teddies and Soft Play
    - Cars, Trains, Models
    - Health and Safety
    - ICT - TV/Video/DVD Player/CD Tape Player/ Mobile Phone/Camera/Digital Camera, Video Camera/Computer/Video Games/Robot Toys/Musical Keyboard

   Answer: We do all these activities in the nursery. Not video games though. No TV or Video in the nursery. The safe guarding laws say no use of TV/Video use in the nursery within the EYFS model.

2) **Do you use the computer in the nursery?**

    - If yes, **(Go to question 2).**

   Answer: Yes

If no, why not? Evidence suggests that nurseries and preschools in the UK must abide by Early Years Foundation Stage (EYFS) standards. **END OF INTERVIEW**.
http://ictearlyyears.e2bn.org/planning.html

3) What types of software (CD's/PC Games/PC related) do you use on the computer?

Answer: Learning Software on the Computer. Preview photographs which we or they take. They make videos and have interactive videos to cover festive themes. We got Habitat, Health and Safety, Numbers and Letters, Seasons and Farms. It was all promoted through the e-credits about ¾ years ago. It was offered by the government and providers/services by the Education. But e-credits do not exist anymore. We just got lucky when it came out. There is no further support with this.

4) Do you use the internet in the nursery?

- If yes, how is it used currently? (go to question 5).
- If no, why not? Is this something you would like to do in the near future? (go to number 15)

Answer: Not at present. We have the internet access onsite but as we have the new minibooks, we have not been able to set things up recently. However, in the past, we have used the Internet on one of our older PC's which is very slow, for the present time, but when we did have it; the children used it quite a bit. They enjoyed being able to get onto the Internet.

New Technology - Websites

5) What sorts of websites do you use (or did you use)?

- Cbeebies
- Nick Junior
- Other

Answer: We mainly used Cbeebies as the children are so familiar with it. We also found that we could keep them engaged using Cbeebies for the length of the time on the timer. Each child has 20 minutes on the timer and often, we find that children want longer but we just have to move onto the next child as there is often such a lot of children that want to use the computer too.

6) How often do the children use the internet in the early years settings (in the case, when you did have it)?

- Everyday
- Sometimes a week
- Once a week
- Once a month

Answer: The children used it every day: sometimes on their own, sometimes on their own and sometimes with their friends.

7) Does the child access the websites on his/her own or with the Practitioner?

- Always
- Sometimes
- Never

Answer: We always start it off with them. The children that are young rising two to three years of age are still very young so we generally show them how to start things up. Show them mouse control, the on/off button, how to print etc..just the basic controls to start them up. Then as they get older and 'wiser' we let them get on with it. We find that children like to use the computer together and so let them get on with it. Often, they seem to know what they are doing better than we are. And they often tell us what to do if there is a problem.

8) Do the children use the websites

- Alone
- Usually use it alone but needs help from time to time
- Usually with a staff member

Answer: With the older ones, we let them do it alone and give them their independency. But there is always an adult nearby or fairly close. There are 26 children per day.

9) Do you think the children enjoy using these websites? Or Not?

Answer: Yes, the children often liked using the websites. But now that we have the mini notebooks, we haven't had the time to set it up.

How long have you had them?

Answer: We have had them for six months now (laughter!) but nurseries are busy and we don't really know how to set up the computers so quickly and so really need to take our time with it. Also, no one else here knows how to set it up so the responsibility is down to me but as I am on my course, at the moment, I have decided to wait and spend a weekend doing it, when I am done with my course.

New Technology in Learning

10) Have you used new learning website media to encourage learning within the early years curriculum?

- If yes, go to question 11
- If no, is this something you would consider? (go to number 15)

Answer: No, we don't really know how to go about this and whether it can be done. We are quite busy just sorting the nursery most of the time. Also, there are so many CD's/DVD's out there that to rely on one without having the legwork would not be advisable. What we really need is a list of good CD's/Online software that we know is 'prescribed' as good for the child and then use that as a reference/guide. A bit like guidelines from the Early Years Organisation.

11) Can you please describe how you went about using new technology 'to teach' the children?

Answer: NA

12) Did you see any improvements whilst using the technology?

Answer: NA

13) Did you face any problems whilst using the new media?

Answer: NA

14) Did the practitioners in the early years classroom settings apply a particular type of pedagogy practice when using new media software?

- If yes, what are they?
- If no, why not?

Answer: NA

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15) Would you consider using Cbeebies *Alphablocks* (online Cbeebies website) in your nursery to encourage phoneme awareness and recognition with the young children?

Answer: Yes. We would consider working with you. We are not really sure what it entails and what is expected out of us but happy to give it a try. I have asked one of our practitioners to work closely with you and help you when needed. You can tell her what needs to be done and what you would like her to do with the children. I like *Alphablocks* and would defintely choose, particularly for this age group. It also follows the phonic study for the EYFS which is good for us.

16) **If so, could I come back and conduct some research with you?**

Answer: Yes

17) **Do you think there would be any benefits to using the Internet to encourage phonetic learning in nursery?**

Answer: Yes, I believe there would be. If we use the right software, and I like *Alphablocks*, I think it could help speed things up. They can learn the uses of ICT and also are becoming more 'inquisitive' about general technology that is being used today. So, using the Internet/new media/technology, can 'kill two birds with one stone' - learn to use the technology and perhaps even get them to become more aware of their phonemes.

Also, they are so used to seeing new technology websites in everyday circumstances. Around 50-60% of the children in the nursery use these websites at home with and without their parents. Most of the ones we have here have older siblings and so they are exposed to it at home quite a bit. With those that don't have older siblings, the parents are using lots of new media like the mobile phones. And the children see their moms/dads using new media all the time.

18) **Do you think there would be any disadvantages to using online learning software in nursery?**

Answer: I think the biggest worry is the parents. Some of them may not want their children to use the Internet when they are in preschool care. But having said that, there are only one or two that may pose this concern. And as using ICT, the computer and Internet, is part of our preschool agenda, I don't think it should be too difficult. The best thing to do is get their permission before hand and for those parents who do not wish to get their children involved, we can leave them out of this.

We worry about how long children should be using new media so this would be our only concern. I mainly see benefits in using websites to promote phonetic awareness with our young children.

Current Phonetic Pedagogy Practices

19) **For now, could you please describe your pedagogic practices of how you currently instruct the alphabets to the children in your classroom?**

We use mainly plain phonetics. I know a lot of schools around here use jolly phonics and different techniques. Throughout the morning, we play with sounds, spelling things out, showing them letters, doing a phonetic letter each week. This continues till the end of the day. There is no specific way. We do it in role play. We do it in literacy table. ICT games on software – V-TECH. Magic Bus and The caterpillar. We use magnetic letters, books, reading, and singing....the basic sort of things.

The children don't know they are learning. They pick it up naturally through various activities. They make up silly words and rhymes. They make up words and just enjoy themselves. They do a lot of sounding out. We play with letters on the sand. It's literally across the whole morning till the rest of the day.

We usually have one letter of the week and continue till the end of the alphabet. We don't go through it linearly, in the order that they are given out. We do it in a more fun way. The letter this week is 'S'. And so we have a theme around S. They are writing the letter, drawing patters with S. Just bringing in sssssss sound this week in everything we do. At present, they are drawing S in air.

It's all very playful because if it is not, it won't engage them. It's got to be animated, visual and playful so that children want to learn and can learn better. They would get bored if it wasn't exciting.

20) Do you face any sorts of challenges (boredom, restlessness, engagement, involvement) when 'teaching' the sounds of the alphabets with the young children?

Answer: Of course there are challenges. We have children of all types of abilities. Some of them are far more advanced than the other. It comes down to what they are learning at home and the parent/adult interaction they have when they are not in school.

But we do have challenges. Some of the children who have knowledge of their alphabets get bored quickly and want to move on but as the other children are still new to it, we have to pace the lessons. So, in this way, we have to deal with children who get bored and try to keep them occupied with other things to do. With some children, we find it difficult to keep them engaged for more than 5 minutes at a time so we are always trying new things out.

Really, it's more about engaging the child and motivating them to want to continue so that they can learn to start to read.

21) What are some ways you overcome these challenges?

Answer: Persistence and keep on with it. Some children take longer to pick up on it. Sometimes, they haven't had the introduction. Sometimes, they are just difficult learners in as much as they don't want to do anything they want to do.

There is a lot of adult interaction with children who are challenging. Just try to find out what their interests look to engage them with it. We engage them with a lot of characters that they can associate themselves with – ones that they are familiar with.

I am happy to give anything a try. Thing are always changing and happy to give things a try. We just have to be sensible with it.

In the past, we have used some CD's - offline software – to help keep the older ones interested and for them to move along. It was found to help them with learning mouse control and getting them used to the different instructions on the computer.

In particular, we used the Mister Maker software which kept them involved for longer than 5 minutes at a time. I think it's because they see them on TV at home or have used it with their parents and they know about it that makes them want to do it more. It's so visual that they are easily engrossed into it.

But, the one thing we noticed that the program didn't have levels of difficultness. So, if the child had mastered the program, then that was it and we had nothing to replace or move on with it. Also, the CD is now ruined and it's too expensive to keep buying new CD's.

22) Any other comments?

Answer: None

Thank you.

Appendix 11b – Stage 2: Pilot 1 Dialogue

Participants include:

Child 1 – 3 year old boy

Child 2 – 3 year old girl

Researcher

Staff Practitioner

Note: This nursery wished to use the newly bought mini Fizz Books that were specifically designed for the use with small children.

....

Introduction

Researcher:	Hello Children. Today we will be looking at *Alphablocks*. Have any of you seen *Alphablocks*?
Child 1:	No
Child 2:	No
Researcher:	Well, let me tell you a little story. There are 26 *Alphablocks* that fall out of the sky onto an empty, white world. They realise that each one of them can make a sound and when they hold hands with one another, they can make a word. They sing, dance and help each other to have fun.
Researcher:	Would you like to join in with their fun?
Child 1:	Yes
Child 2:	Yes

....

Practitioner-led session (10 minutes)

1-2 minutes

Researcher:	Have either of you used the computer?
Child 1:	Yes
Child 2:	Yes

Researcher:	Would you like to have a look at *Alphablocks* on the computer today?
Child 1:	Yes
Child 2:	Yes
Child 2:	This is a little computer
Researcher:	Do you have a bigger computer?
Child 2:	Yes, so big (and shows me by extending her arms out).
(fizz books are hanging)	
Child 2:	Oh Oh...it's not working
Researcher:	Yes, looks like we are going to have to try again.
(Child 1 is very quite but looks interested. The fizz books start to work again. Child 1 gives a big smile).	

Introductory episode begins (2 minutes long)

Researcher:	(Plays the Introductory episode. The *Alphablocks* start singing on the screen introducing the sounds to each alphabets).
Child 2:	Sings along with the computer and gives a bit smile and then says "*Alphablocks*'.
Child 2:	"Aaaaah....apple"
Researcher:	Yes, that is correct.
Note: The practitioner has handed over the responsibility over to the researcher to facilitate conversation with the children. The researcher makes full attempt to hand over leadership to the practitioner. **Note:** Child 1, boy, did not take his eyes off the screen and was totally engrossed in watching the *Alphablocks*. Child 2, looked around, at me and then at the Child 1 to make sense of what was happening. It would appear that Child 2 was a little confused.	
Child 2:	llll...oh, that is a "L" (She looks over at the practioner. The practioners looks away)
Child 1:	(Child 1 is still very quiet and watching the screen intently).

At 3 minutes and 51 seconds

Child 1 – looks away from the screen and to the other activities in the classroom.

Note: (The researcher takes the lead and initiates dialogue with the aim to continue the research).

Researcher:	(Points to the screen) What sound do you think this letter makes?
Child 2:	"pppp...."
Researcher:	Close....have another look at it. What is the Alphablock doing?
Child 1:	(looks at the computer). It's a Tea Pot
Researcher:	Yes....what sound do you think it begins with?
Practitioner:	"Ttt...." "Ttttt..."
Child 2:	Oh, "Ttt...Ttt..."
Researcher:	Well Done
Child 2:	"www....www...looks its water. www..."
Researcher:	Yes, well done.
Note: The fizz books freezes. Required to re-start again.	

At 5 minutes

(Repeat of Alphablocks as the Fizz Book connection hung. We are all waiting for it to re-load)

Researcher:	This time we are going to do something different. We are going to watch *Alphablocks* again but now, we are going to repeat the sounds with them, OK?
Child 1:	(Quiet)
Child 2:	Yes
Researcher:	Should we make some sounds together?
Child 1:	(Quiet)
Child 2:	Ok

(Whilst re-loading the computer hung. It is soon becoming obvious that Fizz Books are not able to deal with the media richness of Flash).

Child 1 continues to carry on a conversation but I am not side-tracked trying to get the Computer to work. Child 2 is beginning to look restless. 2 minutes lost.

Alphablocks re-starts

At 7 minutes

Child 2:	Look, there is the pink one. I like the pink one.
Researcher:	(To child 2) What letter do you think she is? Can you make her sound?
Child 2:	It's a "Llll....."
Child 1:	(Still very quiet. Repeats sounds of the alphabets with us and smiles at some of the images on the screen).
Child 2:	(Child 2 is still also quiet and staring intently at the screen. It is obvious that he is totally involved in the moving images on the screen. He is also intermittently repeating sounds wtih us).
Child 1:	"mmmm...milk....the milk is from the cows". Mummy gives me milk from the cows.
Researcher:	Really. How interesting
Child 2:	"ZZZZ....an old man" (He stands up and points to the screen)
End of practitioner-led session. Note: The children repeated the sounds made by the *Alphablocks* and said them aloud with the researcher. By the second time, the children have become more familiar with the software and are keen to continue.	

Child-led session (Another 10 minutes)

At 9 minutes

Researcher:	Well, now you have a choice. You can do one of two things. You can either try a game out on the computer or you can do some colouring of the *Alphablocks*, on the table next to you. What would you like to do?
Child 1:	I want to do colouring.
Child 2:	I want to look at the computer
Researcher:	Ok. Is that ok with your practitioner?
Practitioner:	Sure, that is fine. I will help Child 2 – on the computer.
Child 1 starts to do some colouring on the table next to us so that she can still have a look at the computer whilst Child 2 plays. She colours in "Llll...." in pink. The staff practitioner continues to work with Child 2 and introduce Game 1. I, as the facilitator, take a back seat	

At 10 minutes

M= Practitioner

M:	Let's have a little look, shall we?
Child 2:	I want, I want....
M:	It says "click to play" so we want to...hang on....we have to click here....
Child 2:	I want to do this..........
M:	Can you use your finger. Look Look, use your finger...ooops...What happened now?
Child 2:	I dunno (looking very confused).
M:	Oooh..where has it gone?
Child 2:	I want that one. Not this one.
M:	What do you want to play?
Child 2:	That one (and points to the screen).
M:	Well, then we have to get the mouse over there, all the way over there, no no, try again...Put your mouse on the finger and take it there...and then....no, not that one...just a minute. Click this one here. That's it. Let's make it a big screen.
M:	(Asks the researcher) – Is there a game to play?
Researcher:	Yes, there is. But it seems that Child 1 wants to watch the song again.
Child 1:	I want to watch the song again. I know that.
M:	Oh, ok. (Navigates around the screen to find the *Alphablocks* song).
M:	What happened? Why is the screen all black now?
Researcher:	Oh, the screen saver is on. Ok, here you go.
Child 1:	(*Alphablocks* start). There it is.

14 minutes

M:	Have a look at the *Alphablocks* Child 1 and see if you can try to remember the sounds, Ok?

Child 1:	(Points to the screen and smiles).
M:	Can you repeat them? Press the button again.....
Child 1:	"Eeehhh...Eeehhh..."
M:	If you want, we can stop this and play a game....
Child 1:	Continues to "Lll....mmmmm....nnnn....ooooo..."
Note: (M looks a bit defeated and not sure what to do)/	
M:	Ok, lets see if we can stop this. There you go. Just click on this button to pause this song.
Child 1:	(Still repeating the sounds with the *Alphablocks* and looks confused)
M:	Come on, now you put your finger on the mouse pad and stop it. See, if you put your finger on this, it moves and then click on that button to stop it.
Child 1:	If you want to do it.
M:	I want you to do it.
(*Alphablocks* still playing in the background)	
M:	There you try. Put the arrow on there and click.
Child 1:	Over there?
M:	Not that one.....Look, put your finger on the mouse pad and drag it up there...
Child 1:	Over there?
M:	yes, you want to stop it over there.
M:	did you do it?! I think you did something. Somehow you managed it there. Right, what we are going to do now...
Child 1:	I don't want to play it.
M:	You don't want to – you don't want to play it sweetie?
Child 1:	I want to go out now.
M:	(looks at researcher)
Researcher:	OK, you don't have to play it. You have done really well.
M:	Oh, look there's lots of pictures here.
Child 1:	Ok, I will play that one.

M:	Is it ok if she plays that one?
Researcher:	Yes, of course. It's one of the beginner one's and at her level.

At 15 minutes – 16 minutes.

M:	Oh, this is going to take a while to load up. Maybe not such a good idea, after all. Sorry, sweetie, this a bit tricky.
Child 1:	a bit tricky?.......can we do it again next time?
M:	Yes, Child 1, it's not going to work now. But we can do it again next time.
Child 1:	I want to go out now.
M:	Ok, you go on out. Thank you.

Observations -

Child 1, who is a little 3 year old girl, is keen to find out about *Alphablocks*. The nursery insisted that we use their newly bought Fizz Books which are meant to be ideal for little children with little hands. I was happy to try it, in the event, that it would produce good results.

Child 1 has never seen *Alphablocks* and was excited to become hands-on with the computer. It would seem that the staff practioner was quite technical and good at using the computer. As the child, in this group, is very small, I concentrated more on introducing the alphabets in a sing and song mode; more than the concept of playing an interactive game.

Child 1 was excited and animated, responding well to the *Alphablocks* software and repeating the sounds, when required. However, the technology failed us and the connection kept hanging which in turn, frustrated the little child and she lost her attention. It would also seem that the dialogue between us stopped and started interrupting our train of thought.

It would also seem that the interaction between the staff practioner and child was mainly about technical use of the software rather than the study and observation of the alphabets in question. Overall, I think the study has been interrupted by technical limitations, the interruption of dialogue and practical usages of computer use.

Child 2, on the other hand, is a little 3 year old timid boy (of Asian orient). He was very quiet and for the first ten minutes, concentrated on *Alphablocks* on the screen. Again, the technical infrastructure failed us and would hang all the time. This however, did not bother the child and he continued to move with the flow.

Child 2 has never seen *Alphablocks* and it became obvious quickly that he was not going to repeat the sounds. He, however, liked watching the screen and moving images. He also made an attempt to associate the letter ZZz....with his Dad. So, it is clear he was aware of what we were doing.

Unlike Child 1, Child 2 did not have the same sort of excitement and keenness. After ten minutes, he was happy to leave and play out-doors. However, he did say, out of his own accord, that this was fun. Child 2 was also a little lost with the Fizz Book and also seemed to drift away when I had to stop and re-start *Alphablocks* due to loss of connection.

Overall, I think there are limitations in the dialogue that was taking place between the practitioner and children. In the last ten minutes that the practitioners spend working with Child 1, there was clearly no learning taking place. Why?

- More focus on technical operational difficulties
- Lack of initiating questions and probing for information.
- Lack of familiarity of the software and what it does and what it does not do.

For the next stage, it will be important to rectify:

1. Technical Limitations – Internet connection, vehicle of delivery, mouse pad, keyboard.
2. Watch for noise levels and find a room/space where there are fewer temptations for the children.
3. Group children of similar age, knowledge of *Alphablocks*, and possibly similar personalities?
4. Focus on the dialogue that will take place between the adult and child - what makes for an appropriate dialogue to facilitate learning and/or determine 'understanding of new knowledge' in the child?

Very important: It was determined by the end of stage 2 that the researcher turned facilitator will continue with the research process where the practitioner will take more of an observers role and the researcher, more of a 'facilitator' role.

Appendix 11c – Stage 2: Pilot 1 Follow Up Interview

First, thank you for taking the time to do my research with me.

Just a few reflective questions:

M = Practitioner

L = Nursery Manager

1. **Having conducted some *Alphablocks* sessions with the young children, what did you think of this experience?**

M - I thought it was a really important for the children to have a focus because I haven't really personally worked with the children using ICT equipment.

I particular like *Alphablocks* because of the phonics and the correct sounds that are being produced and I don't think it's wrong to use software to encourage phonic learning when the sounds itself are not correct. There is no point in it. One of the biggest problems is the accents that are involved. The area of literacy is a personal thing for me and I like to promote its uses in my nursery.

I think if there was some kind of 'body' that could give a set of guidelines of what software is appropriate for children in the particular age range that would be brilliant! But, this does not exist, does it? In a sense, it would give us a short cut and would save us a lot of expense. But I think it would be great to have a guideline.

L - The new media websites were very conducive in the learning environment. Some children, who we have often struggled with, were able to sit down for the full 20 minutes, watching the episode. Now, one can argue that they were watching a screen, but we noticed that they were also taking part in repeating the sounds of the alphabets and especially during game play when they had to 'know' the sounds of the alphabets to make a word. In contrary to what we see in our classroom settings. Often, these children are so difficult to engage and you see them trying to do other things during the more 'so called' learning sessions.

Do you think the children enjoyed themselves?

L – I think they did. They have spoken about it quite a bit. We have printed out the *Alphablocks* sheets and when they did some colouring the other day, some of the children, were actually sounding out the sounds that the *Alphablocks* make. So, the recognition is coming through. And they have asked for it again.

M - In all, I thought it was a very good experience for us and the children. For us as practitioners, we can see what we can do differently to encourage phonetic awareness – as you say. And for the children, it's another way for them to pick up their alphabets, in a fun way, without really knowing they are learning.

The Setting:

1. Organisational structure – Big groups vs. Small group

L: We had both big groups of 5/6 children and then smaller groups of 2 children. I found that in the bigger groups, which are not so big actually, our new projector was very good and clear. The children were fascinated with what they saw. And the lightening in the room was quite good too. I think in order to continue using *Alphablocks*; we would have to continue using our projector as our fizz books didn't work so well. It's a shame as we spend so much money on them.

But, on the other hand, using the laptop and connecting it to the projector was very much a health and safety issue as there were power cables everywhere. This is something we have to think about if I want to go down this route. Having big groups takes the pressure of the practitioner as she can get to all the children very quickly.

But, what I found in small groups is that by working with them directly, I was able to assess what they actually know and don't know and could work with their interests to push them further. It makes more sense to work with children in smaller groups but as you can see, we don't have a PC and our Fizz books don't work. We also found that in larger groups there is an age range from 3-5 years old and by getting two children in a similar age range, with a practitioner, there is more 'personalised' learning actually happening which I think is better for them.

2. Technical Issues – internet connection, pc vs. laptop vs. minibooks, keyboard, mouse, room, lighting, noise levels etc.

L - Yes, we had a lot of technical issues to start off. Sorry to harp on about it, but our fizz books could not deal with the media richness of the Cbeebies Website. And this is something that is quite crucial so we are not very happy about this. Also, it soon became apparent that most of the children, especially the young ones, need a mouse and a child friendly mouse.

But, on the bright side, we know the fizz books work to some extent in the sense that we can use the internal software/games so I think if anything, we should get them out more.

M - It has become very apparent that our use of computers and/or PC environment is poor and we need to do something about it especially as we want to go down the *Alphablocks* way.

The process:

1. Practitioner-led facilitation and child-led exploration

L: I quite liked the practitioner-led and child-led learning sessions. They both fit very well into the EYFS model. But I think they need to be blended more together. So, where the practitioner leads the session for the first ten minutes, that is a good thing but when the child is leading their own session for the last ten minutes, without any guidance, we saw that this can be quite a negative experience. I think some children felt quite alone in the whole process. So, I think there needs to be both of it in the session but a more blended version of it.

I also think I/we need to spend more time thinking about what we are going to do with the children in terms of familiarising ourselves with the software, thinking of the types of questions beforehand etc..But all this takes time, something we don't have much of.

M: The duration of 20min/30min is perfect. I don't think we can have it any longer for children at such a young age.

Practitioner Pedagogy

1. Discussion on pedagogic strategies used during research

L: I don't think I used any particular way of teaching. I think I used 'your' ways of teaching and just followed up on what the child was doing. But, it was so much fun doing using *Alphablocks*. In a way, it (the *Alphablocks* software) was almost doing it (the teaching) for you and I was supporting it. The dramaticness of going through the phonic sounds and the effort and the emphasis you put it on it for the children is not so different but by using *Alphablocks*, it was doing it for me. It was just so much easier. The panto came out of it for us and emphasis was on the screen. But, it's not to say that we were not reinforcing it. Because you saw that we were, but it was just less draining.

M: We looked to blend the traditional way of teaching with a new way of teaching. We all listened and we all did. We repeated together. We encouraged them to make the sounds together. We would really like to continue using *Alphablocks* in your way. We can demonstrate it again now that we have an idea of what is happening.

2. Can you describe what you think was 'my' way?

L: You were most defiantly asking more questions. Like I said, I took the cue from the software but when you did it, you asked more questions and as you mentioned, you looked to encourage more communication.

M: I don't think what you did is any different from what we normally do in our settings. But, I think you made more of a conscious effort to include the children when using the software. Sometimes, I think it's easy to let the software do the teaching and we can often rely on it as a form of teaching method but this is not necessarily the right thing to do. When you worked with the children, we could see that the children were not only involved but were also responding to you with stories of their own. One child even started telling you about one of their home experiences that did not even relate to *Alphablocks* or even the phonemes but it was important for the child to let you in on their world or how they see things. I think this is important.

This is something we must be conscious of when we start using *Alphablocks* or any type of software when we take this on.

New Technology Software

1. Internet and Cbeebies *Alphablocks*

M: The fact that our children were using ICT and extended it to the use of the Internet, in action, and that our fizz books have actually come out of their boxes is in itself a step forward. This in itself is great because we haven't used ICT in a long time. It was nice to see our children focus on something that is directly relevant to their learning.

L: It certainly is a good tool to use. It should be looked at as an object that facilitates learning, as anything really. It really is a resource. It's a BIG one. I can imagine some people to think that

ICT/new technology will dominate learning in the classroom and are worried that by introducing it into curriculum design; they could start becoming dependant on it. But, like anything, it's just a tool for means to an end.

We have not really used ICT to achieve any particular type of learning but this is a good way to start. It is defiantly important to know what we are trying to achieve and to go from there. Using new technology can achieve experiences and practices and development of the child in as much as encouraging learning of phonics and sounds.

2. In terms of appropriate software:

M - I particularly like combining ICT with communication, with the learning of sounds. It is a necessary topic to begin experimenting with and the fact that it is playful in nature helps it a long way. I find *Alphablocks* a particularly good software to work with in terms of the correctness of sounds it has – the accent is right, the visual aids is appealing to the young children and it is so much fun.

L: It is a very playful activity – definitely. The young ones were not as vocal as the older children but there were fascinated and engaged and you could see that in their body language. The majority of children did not know *Alphablocks* and yet they were really engrossed. Only one or two actually knew about *Alphablocks*.

The time that the actually program ran through was perfect for their attention. It wasn't too long and it was perfect for the children to focus. The children were deeply engaged. You could see it and the children asked to do it again and again. And when they played the games, they really wanted to go for it. For the children who are usually less confident, they actually came out of themselves and tried things out.

Appendix 12a – Stage 2: Pilot 2 Interview

Research Interview Questionnaire – New Learning Software in preschool

Definitions:

ICT – ICT (Information and Communications Technology – and new technologies) is an umbrella term that includes any communication device and fulfils information processing. This includes the use of Computers, Internet, TV/Video, Radio, Digital Camera's etc.

New Technology Learning Software – Websites such as Cbeebies *Alphablocks*, Nick Junior Learning Shapes, Barney Learning Colours etc accessed via the Internet.

Note: This interview will focus on the use of Cbeebies Website via the Internet

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Interview with T (Nursery Manager)

General Background:

1) **What types of activities do the children do in nursery?**

- Role Play
- Outdoor Games and Activities
- Construction Games
- Books, Comics etc..
- Drawing/Writing
- Musical Activities
- Soft Teddies and Soft Play
- Cars, Trains, Models
- Health and Safety
- ICT - TV/Video/DVD Player/CD Tape Player/ Mobile Phone/Camera/Digital Camera, Video Camera/Computer/Video Games/Robot Toys/Musical Keyboard

Answer: I will read through the list. They obviously have role play and help them to extend whatever game they are playing at that time. Outfits to put on, read through magazines and books. They do lots of outdoor games and activities. Also have lots of board games, trikes and bikes, throwing things those sorts of things. We have Lego and Duplo and big wooden blocks in terms of construction toys. They use this to develop their imagination. We even have a line of bricks that go from the nursery to the door which the children developed were their tracks. We have mosaics that children play with.

Obviously they have books and I do buy comics. I buy the Dora the Explorer comics but not all nurseries buy them. We have to know what the children are talking about and this way we get to know them better. It's also another way to encourage them to read. We also get Farmers Weekly. We also subscribed to Nursery World's Magazines. And after we have all read it, then we let the children get hold of it, to look at the pictures and become interested.

Drawing and writing there is lots of types of colours, pens, soft HB, crayons, glitter pens, chalks all labelled in drawers. We also have a whiteboard with big fat felt pens and it's really popular with the boys. They love it and have taken responsibility to tick as many children going out to the garden and coming in. We are looking into new research in that area so we can encourage boys to get more involved.

Music and Activity – recently we have new African Drum and there is one little girl who can make an amazing sound with it but have no idea how she does it. I have also recently employed a nursery staff member who is a jazz singer, of course not only for her skills, but she sings with the children. And it's beautiful. This is a severely neglected area of early child care and I want to push this forward. Other than children just banging out music equipment, we actually are making more out of it. So, it's really wonderful. Yes, we do musical activities and we are improving in this area.

Soft Teddies – Yes, we have soft teddies and soft play. They are the core of my life. But we don't just use teddies to hold and cuddle. When we read a story, sometimes, we use the teddies to play act so that it become more visual, rather than just auditory for the child. So for example, the owl baby story, it's a wonderful story for children who are missing their mum because the mummy own comes back. In this story, we have three owls and so we use our owls and tree bits to make it more visual for the child. We have also found that boys, who are so fidgety, get really absorbed. It's really good. It's very old fashioned story telling but we find it works so well. I don't really like 100 teddies just in my room. I like them to have a purpose.

Soft Play – We have lots of soft play mainly with babies. But we do take it out with toddlers as well so we can have slopes and bumps, dips and slides for them to use.

Yes, we have cars and trains which are very essential, in every room. I was in the babies' room and we were playing cars.

Health and Safety – children do take responsibility and they have to understand why we do things. It's a very big thing for Ofsted now and the inspectors ask the children, do you know why you are washing your hands? So, it's a very important thing now. And I go around in the nursery, asking the children do you know why you are washing your hands. Also, we do a garden check and I take the children with me and get them involved and ask them, do you know why we are doing the garden check? So that they become more involved in the health and safety standards for today and help to identify danger. We are too protective of children today and we are making children more aware of the types of danger out there. Of course this is mainly with the older children. We also had the local police come in and talk to them.

ICT – this is an area that we can really improve. We have a laptop for the toddlers to use and I know that it does not come out very often for the children to use. I have also recently bought another PC for the toddlers but it's still boxed up. So what we tend to do is if we find a toddler who has an interest in something that we can do on the computer, then we take the child to the administration room where he/she can get onto the computer, with an adult obviously, and then we can show them what they are interested in and what can be done. Then we get to print something from our BIG PRINTER. So, in the toddler room, all they have are programmable toys to play with. They also have decommissioned mobile phones, obviously not real ones, keyboards and keypads for them to pretend that they are on the computer and they do pretend. They do know how to use CD players and all that but it's very loose in that area. But really, we don't have much and with the ones we do have, we don't do much with it.

However, with the older children, in the upper schools, there are 2 children a PC terminal. We have a childlike keyboard and mouse. And the children love it. So, we don't have much in the lower school but have at least a PC in the upper school. We have the SO SIMPLE maths program. It was very expensive but it's very good. We got it from the Poole Borough Early Years Council that recommended it.

We also have the DIGIBLUE which is like a little video recorder. It's really simple so we can plug it into the computer. So the children can record themselves and see themselves on the computers. But, again, it's broken too. No TV. We have digital cameras too and the older children can use the digital camera themselves.

Robot Toys – we also have programmable toys. We have a ladybird. It's a real classic and we all have it. It's called a BeeBot. I think we have had it a couple of years and we should buy more to upgrade it to make it more modern. We can add bits to it to change its shape to a dinosaur or hero etc...

2) Do you use the computer in the nursery?

- If yes, (Go to question 2).

  Answer: Yes

- If no, why not? Evidence suggests that nurseries and preschools in the UK must abide by Early Years Foundation Stage (EYFS) standards. **END OF INTERVIEW**. **http://ictearlyyears.e2bn.org/planning.html**

3) What types of software (CD's/PC Games/PC related) do you use on the computer?

Answer: We use the computers with pre-school every day. Again, the children themselves in the upper school use the computer every day. If we go over now, we will find that someone is on it. My thinking is that we are a computer literate world and its part of their learning. I want them to be aware of the use of computers. Even in reception they use computers everyday so we are preparing them for what is to come. Even when the printer broke down, one of the children helped fix it. So, it was a real good thing to see.

ICT is a very big part of our curriculum and all early years have to abide by the statutory EYFS guidelines. But ICT is still a BIG definition and some nurseries would be happy to avoid the use of the computer/software/internet usage but I don't think it can happen for much longer now. And here is the information stating that ICT is part of the EYFS curriculum. It does not tell us what we have to have but it has a range of ICT out there and we have to have some of them, as part of the guidelines.

We use Art Attack and some sort of Corel Draw. I am not so sure but at present we are focusing on art and bringing out the creative side in our children. So they have been doing a lot of drawings, print it out and they know how to turn out the computer, do their drawing and print it out. Also, they are into their SIMPLE programs so we take it from there. Whatever the child is interested in at the moment. It tends to be a focused time with the staff member at that time. So maybe it's got to do with numbers and introducing concepts. And they have been making up stories there actually. They did it last week.

4) Do you use the internet in the nursery?

- If yes, how is it used currently? (go to question 5).
- If no, why not? Is this something you would like to do in the near future? (go to number)

Answer: No because we don't have the Internet on that computer. The children have been working on software that we have on CD's and or on the computer. But we are keen to introduce the Internet because most of the time the children come in asking to do something specific that they have done at home with their parents, like number charts or a math program which can be very beneficial but we are not able to carry this on with them. Also, I find that I have to keep buying new CD's and its becoming an additional expense. The children are not very good in 'housekeeping' but ofcourse and we often find the CD's are ruined.

Also, with the CD's the children are not always to get hold of someone to download the software and so have to go someplace else. I think we have to re-look at this environment and I think that by using the websites on the Internet and maybe the games may be a good place to start.

New Technology - Websites

5) What sorts of websites do you use (or did you use)?

- Cbeebies
- Nick Junior
- Other

Answer: None at present but I really would love to introduce the Internet into our environment. We should embrace this. Sadly in one way but if you look at it as an exciting thing, we now have two lives. It's part of our world and I believe it will be more part of our children's futures. I think we should embrace this and turn it more into a positive thing and guide our children to use it more sensibly and in a more healthy fashion than it is currently used today. Or at least that's what I think.

There needs to be a balance and I think it's going to be part of their life. We can't just not embrace it. We need to run with the times.

We hear the children talking about it all the time. Also, once when they were playing outside, a board on a tyre outside, and they were pretending to be a character on the Internet. It is Mister Dumblemore.

To be honest, I think half the class use the websites at home with their parents and/or their siblings.

6) **How often do the children use the internet in the early years settings?**

- Everyday
- Sometimes a week
- Once a week
- Once a month

Answer: Well, as you know we have never used the websites on the Internet so far. But we really want to. At present, the children use the computer software every day. Of course, with the Internet, we will need to make restrictions to what they can access and not but I think that's easily done!?

Interviewer – Yes, it is.

Answer: I know that some of the parents too don't mind this and are happy for us to take it on. I have spoken to them about this on many occasions. And I think the children would really welcome this but we need training and guidance on how this should be done, just has been done with everything else in the past.

When Digital Cameras came into our settings, we had them as an added ICT accessory until research was developed to show how we can take this further to help develop themes in the EYFS curriculum. In the same way, I think your work using the Internet and how we can use it to help develop phonetic ability with young children can be very useful too. I think the early years educators can do with some guidelines and best practices models.

7) **Does the child access the new learning websites on his/her own or with the Practitioner?**

- Always
- Sometimes
- Never

Answer: NA

8) **Do the children use the websites**

- Alone
- Usually use it alone but needs help from time to time
- Usually with a staff member

Answer: NA

9) **Do you think the children enjoy using these websites? Or Not?**

Answer: NA

New Technology in Learning

10) **Have you used any new learning websites to encourage learning within the early years curriculum?**

- If yes, go to question 11
- If no, is this something you would consider? (go to number 15)

Answer: No

11) **Can you please describe how you went about using new media 'to teach' the children?**

Answer: NA

12) **Did you see any improvements whilst using the technology?**

Answer: NA

13) **Did you face any problems whilst using the new media?**

Answer: NA

14) **Did the practitioners in the *early years* classroom settings apply a particular type of pedagogy practice when using new media software?**

- If yes, what are they?
- If no, why not?

Answer: NA

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15) Would you consider using Cbeebies *Alphablocks* (online Cbeebies website) in your nursery to encourage phoneme awareness and recognition with the young children?

Answer: Yes, it is something that we would like to take on in our nursery. I know of a lot of other nurseries that have introduced the Internet and Cbeebies into their classroom settings and it's worked really well for them. So, by you coming here, it's given me an excuse to move this along quicker.

Of course, I would need to get this approved. I wouldn't have thought that there would be any objections because this sort of thing has been going on for years. We have *had Letter Land*, then *Jolly Phonics* and now *Letters and Sounds*. But there are is no kind of games in ICT or software that can help encourage this and move it along. I am quite excited about this but will most definitely consider it.

Of course will have to study the software but the fact that it is on BBC and been regulated, I can't really see any objections.

16) If so, could I come back and conduct some research with you?

Answer: Yes. We have got the Internet connection here and we have a laptop that can connect to the connection. But the children's PC does not have the internet connection so this could be a problem. We haven't given the children PC's an internet connection because I don't know how to put the restrictions for health and safety standards.

17) Do you think there would be any benefits to using the Internet to encourage phonetic learning in nursery?

Answer: Yes, of course. If phonics is not thought in the correct and/or 'sensitive' way and it's not enjoyable, then children just shut down and they don't learn. They can sit in their seat and look at you but you know, as the practitioner, that the child is not really there and there is no understanding taking place. The children have to understand how a word is being formed. It's quite a big concept. So, if learning can happen in a 'sneaky' way, and I always term it sneaky, then that's really good.

If you find they have an interest, you can turn that interest into a learning experience, without them realising them. I think this is a very good idea. It's interesting and exciting and these are the images that children are bombarded with all the time and we should really be embracing this to make a difference.

18) Do you think there would be any disadvantages to using online learning software in nursery?

Answer: I can't see any disadvantage. Except for the fact that it does not turn the staff away from continuing to make an impact on the child. I don't want it to be a plug in and play job. Something as important as phonics is to be carefully done by both the practitioner and the child. I think it has to be part of focus learning. So, it has to be a two way thing.

I think it would compliment and I don't want it to replace us. I would like it alongside us where we can talk to the children, make funny sounds, talk about it where it can all go towards language and literacy and helping them to make words and learn to spell. It would be a very exciting addition to what we do.

Of course sharing will be a problem but we have a timer that can take care of this situation.

Current Phonetic Pedagogy Practices

19) For now, could you please describe your pedagogic practices of how you currently 'teach' the alphabets to the children in your classroom?

We have songs. We have it displayed in different ways. We have posters. We do the letters and sounds program now. We do storytelling as well.

How often do you do it?

We do it every day in one way or another. We do it continually. Language development is a bit part of the EYFS curriculum. It's a very important part of what we teach children.

20) Do you face any sorts of challenges (boredom, restlessness, engagement, involvement) when 'teaching' the sounds of the alphabets with the young children?

Answer: Again, the children do have to be engaged. So we have to almost be a market seller. We practically have to always entice them. Come and listen to my story – you won't believe what happens in the story. Then you start reading the book and do a lot of drama. And you have to be very active to engage the children. And again, we find this harder with the boys.

I tell my staff all the time, you have to sell it to them. And there is no point with phonics if you cannot engage your children. If you don't engage them, you have lost them.

And it's all about repetition. You do have to repeat the alphabets all the time. It's quite a hard concept if you have no concept about the sounds and letters that make up your name. The fact that it has little letters that make up your name. A lot of children can go 1, 2, 3, 4, 5 and if you ask them to get three dinosaurs, they have no idea what 3 is.

So, in the same way, playing with letters, alphabets, in all forms you have to get exciting. So, for instance I have recently purchased jelly letters and it feels quite weird in your fingers. And we put them in a sandpit, and the children discovered the letters as treasures. And they were so excited and we told them that we have this treasure in our names. And we have to do these kinds of exciting things now.

Because they are being bombarded with so much creative, imaginary things now, we have to go that one step further to keep them engaged and motivated to want to continue. We have to get them over the boredom bit and this is one of the most difficult things to do.

I would say the alphabet song is the most effective. Its musical and that is very effective. Music has a big impact with young children in their early years.

21) What are some ways you overcome these challenges?

We have to think of new things all the time especially with boys because they are so physical. It's wrong to make them sit for so long. So we tend to do physical things with boys. So, using bean bags in the garden and make them throw the bean bags into the monsters mouth whilst saying the sounds aloud. That is one way. But you do really have to think on your feet when they are getting restless and do other things.

Do you think that using new media websites may help overcome or make some positive effect in tackling these challenges?

Using *Alphablocks* seems very interactive and its very hands on so it sounds very good to me. I am sure the kids will embrace it but the very fact that it has song like images and the children know of the characters, it will make a big difference.

And boys tend to be gamers so that fact that they can sit down and learn through it will hopefully encourage them to want to continue. Its trickery but that's what it's all about but actually they will hopefully be learning something too.

It will be a wonderful complimentary resource along with all the other things we do. And we can do this on a one to one basis. It might be that the child wants to continue one a one to one basis and advance, and the staff can take this further because some children may not want to take part in a group. They may be shy or less confident.

There is still value in having one to one care. It can't happen all the time because the ratio is 1:8 but in a learning environment, it should be happening.

This all sounds good to me. It will be a wonderful resource.

22) Any other comments?

Answer: I am happy that you want our staff involved and want to know what they think. It's such an important part of research and we get so much software where the producers have really not thought about how the children will interact and actually take it in real life situations. We have had so many people donate software but it's all been, in one way or another, so useless. So, I am really happy you are open to all sorts of comments, both good and bad, that will come out of it.

The new *Letters and Sounds* curriculum is really not that exciting. There is no visual animation or excitement so I am hoping that this can add some energy back into our ways of teaching.

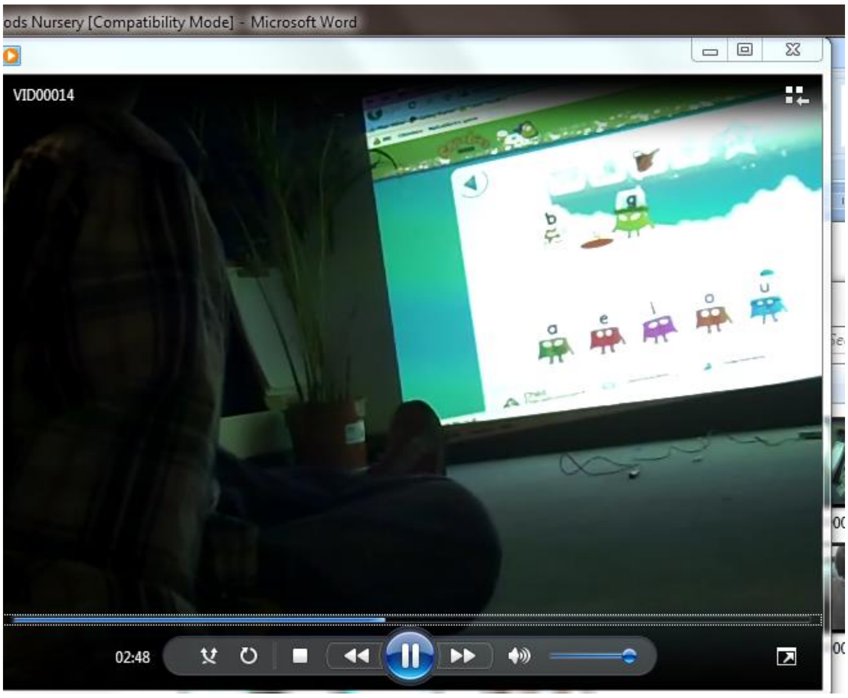
Thank you.

Appendix 12b – Stage 2: Pilot 2 Dialogue

Participants include:

Group Session – 7 children of boys and girls in the similar age range (rising 3- to rising 4 year olds)

Practitioner and Researcher



Note: A separate room was allocated for this group study. A projector screen was used. The picture was projected onto one of the side walls. The room was dark and the curtains were closed to keep the light out for the projection to be clear. More like a cinema setting rather than an early years classroom. At the back of the class were all the exposed cables and wiring. This could potentially be a major health and safety hazard with the young children. The practitioner was sitting among the children in the classroom.

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Introduction

Practitioner:	Would you like to sit here darling? And Ava, would you like to sit here too? Sit on the corner. Ok, Holly you sit here or on the chair. Up to you Darling. You don't have to watch it..its up to you. Ok, here James
Researcher:	Hello Children. Today we will be looking at *Alphablocks*. Have any of you seen *Alphablocks*?
Child:	Yes. Its on Cbeebies
Child:	No
Child:	Yes. I know what *Alphablocks* its. It's got Alphabets.
Note: Lots of noise. Lots of children. Had to repeat questions many times to get a clear response. Lots of responses. Very happy and excited children. Do we have too many?	

Researcher:	Does anyone else know *Alphablocks*? You have....(interrupted by the other children)
Child:	I watch it on TV
Researcher:	You do...and today you are going to see it on the computer.
Child:	Wow..It's a big one.
Practitioner:	Charlie, just said it's a big one. A big screen, he means.
Researcher:	Well noticed, Charlie. So now let me tell you a little story....
Practitioner:	Sssshhh....listen up children. Its very noisy. She is going to tell you a story....Are you ready?
Researcher:	There are 26 *Alphablocks* that fall out of the sky onto an empty, white world. They realise that each one of them can make a sound and when they hold hands with one another, they can make a word. They sing, dance and help each other to have fun.
Researcher:	Would you like to join in with their fun?
Child 1:	Yes
Child 2:	Yes
All the children:	YES

Note: On the side, another child does not want to join in and so the practitioner takes the child out of the room and hands her over to another staff member and returns.

....

Practitioner-led session (10 minutes)/Introductory episodes

1 to 5 minutes

Researcher:	(Starting *Alphablocks*)
Children:	All watching.
Child:	"...Cbeebies Show...repeats the narrative on the software
Child:	Sings *Alphablocks* song...shouts out *Alphablocks*!
Child:	Aaaaa......
Child:	He is stuck....Oooh....oh no, eeehhhh
Practitioner:	Gggggg.....
Children:	Hhhhhh.....
Practitioner:	This is nice, isn't it?
Child:	I like it....I love this programme
Researcher:	Do you?
Another	I play football too...that's may name...

child:	
Child:	Bbbbb.....What are teh yellow bits in tihs programme? The yellow bits..in there?..they yellow bits...
Child:	Wwwww....water...water
Child:	Super hero...xxxx...
Researcher:	And that's the end of the Alphablock sounds. Did you like that?
Children:	Yes. (Nodding)
Researcher:	Do you remember any of the sounds?
Children:	No....
Researcher:	Really?
Children:	I know it...
Researcher:	Can you tell me?
Child:	No, lets hold hands and hear it again.
Notes: Lots of chatting among the children. Lots of questions from the children. The practitioner and researcher are not able to answer all the questions simultaneously. Too much happening all at the same time).	

Introductory episode begins again – 2nd Time

At 5 minutes and 01 seconds

Researcher:	(Plays the Introductory episode again. The *Alphablocks* start singing on the screen introducing the sounds to each of the alphabets. The researcher has explained that all the children must try their best to join in and make the same sounds like the *Alphablocks*. All children have agreed to do so).
Children:	Sing to the song...'hold my hand'...'aaah....''...ready for *Alphablocks*'...
Researcher:	"bbbb...bbb" (Adult Modelling Technique)
Children:	'bbbb...bbb'
Children:	'kkk....dddd....ggg....eeehhhh....'
Researcher	Well done...this is great.
Children:	'hhh...iiiii....'

Researcher:	How about this one?
Child:	I like this...that's in my name...what is it?
Children:	'oooohhhhh...oohhh...oh..oh...oh'
Child:	What's that over there?
Children:	'qqq...uuuu...rrrr....'
Researcher with the children:	'ssss....tttt....ooohhh.....' (Adult Modelling Technique)
Children:	Superman....whooshh...'xxxx....'
Note: Where it would seem that the practitioner-led session was going well and that the children were repeating the sounds and enjoying themselves, on second glance at the video, it is found that only a handful of children are repeating the sounds aloud. Some of the other ones are just watching the *Alphablocks* on the screen. It would also seem that for those children who were asking questions, both the practitioner and researcher were unable to answer them, as they were busy keeping the others engaged and moving on with the programme.	

Practitioner-led session/Game play

At 10 minutes 09 seconds

Researcher:	We are going to play a game now. We are going to help the *Alphablocks* to put their letters together and make a sound. Is this OK? Can we work together to make the words?
Child:	Yeah....
Researcher:	(at the laptop starting up the new game. Let's watch....)
Note: *Alphablocks* on the screen. The children are watching a narrative before commencing the game. They need to rescue. They need to help make words to get 'T' off the mountain. Children are watching intently. Some looking around but most of them seemed to be quite involved in the story.	
Researcher:	Ok, are we ready to play. What letter would you like to put into the middle?
Child:	I don't know......
Practitioner	Charlie, what letter would you like to put in the middle?
Charlie:	"aaahhh..."
Practitioner:	OK, what colour is the A?

Practioner:	Repeats herself....what colour is the ‘A’?
Charlie:	Dunno...
Researcher:	(uses the mouse and asks Charlie) Is it this one Charlie?
Charlie:	Yes
Software:	B – A – G = BAG
Researcher:	Well, done, you made a word.
Researcher:	Should we try to make another word?
Practitioner:	Do you want to choose one Jamie?
Jamie:	Ummm...bbbb?
Practitioner:	What colour is that?
Practitioner:	Blue one or Purple One?
Software:	B – U –G = BUG
Researcher:	Well done, you made another BUG.
Practitioner:	What about you?
Child:	The stripy, orange one.
Practitioner:	The stripty one. Do ou know which that one is? Do you know the sound
Software:	B –O –G = BOG
Researcher:	You made a word. Well done.
Child:	Have I?
Practitioner:	Yes, Bog means muddy water.
Researcher:	Would anyone else like to make a word?
Child:	Yes, ‘I’....
Practitioner:	What colour is it?
Child:	Purple...
Practitioner:	Well done, Holly.
New Media:	B – I –G = BIG. Waheeey....we can now become big and rescue T from the mountain!

<table>
<tr><td>Researcher:</td><td>Well done, we all did it. We rescued ‘T’ from the mountain.</td></tr>
<tr><td colspan="2">Note: This was the end of the practitioner-led session. Stopped at 15 minutes. Some children wanted to leave and the practitioner had to take them out of the classroom. She also insisted that the rest of the children follow with her. The session ended a bit early.

Some other children wanted to do some colouring. One girl said she wanted a ‘Hhhhh....’ . Another one wanted to colour ‘Ppp...’ and another one wanted a ‘Nnnn....’.

Some of the children were attracted to the wires and cables at the back of the room and started playing on the laptop. The practitioner had to take them by their hand and out of the room as it was not the safest environment.</td></tr>
</table>

Observations

This transcription is of a practitioner-led group session. The group session was set up in a separate room of the early years classroom setting. There was a laptop, projector and where the room did not have the space to set up a stand, the furniture in the room was put to one side, and the white wall was used to make the projection. Unfortunately, this is not a set up that can be used again. The room is used for the younger preschool children, for those who still require a nap after lunchtime. The preschool was happy to make accommodation for this research.

Additionally, the set up using the projector, bulb, curtains and lighting was not deemed appropriate for the young children especially from a health and safety point of view. Again, the preschool was happy to continue with the research process as long as both the researcher and the practitioner kept the children to one side of the room and only in the room for the period of the ‘teaching/learning’ session.

In the group session, there were 7/8 children, irrespective of gender. Both the practitioner and researcher felt that it was too big of a group and there were lots of different personalities clashing with each other. Some children were very confident. Others were quite shy and were happy to drift off into the background.

Some children asked questions that could not always be answered. There were lots of talking, noise and the practitioner was busy keeping the class under control so that the researcher was able to conduct the ‘learning’ session.

It would seem that by the researcher ‘taking over’ the session, there was some form of structure in place, in which a lesson plan was followed. However, where some children were ‘brains-on’ and involved, they were at the disadvantage of not being ‘hands-on’. It was discussed that it would be better if the children could have been hands on and made the selection via the laptop by them, when they were playing the game.

Overall, it was found that the children really did enjoy themselves and were fascinated by what they saw. They wanted to continue to use *Alphablocks* at a later time (the next day). Upon leaving the room, one child went over to the drawing table and drew an image of an Alphablock with the letter next to it. He then presented it to the researcher and made the sound attached to it. The practitioner was highly impressed.

The practitioner felt that there were some really good things that came out of it but it would be worth pursuing this research using a smaller group of children where more focus could be directed towards the children. When asked if the practitioner would be happy to present the Practitioner sessions, she said

"But who would then take care of the children?" It would seem that there are limitations with the staff and children ratio. This is definitely something to consider in the next stage.

Appendix 12c – Stage 2: Pilot 2 Follow Up Interview

First, thank you for taking the time to do my research with me.

Just a few reflective questions:

1) **Having conducted some *Alphablocks* sessions with the young children, what did you think of this experience?**

   Answer: I think it's fantastic. It really works and works as a complimentary tool. The children were really engaged for the full 20 minutes and I don't think it's because it's a brand new experience. *Alphablocks* has so many different things happening at the same time. Some children picked up on the bright images. Some other children were really into the music. And the others were just happy that they could do something with their hands rather than just sitting idle. So, I think it worked for most of our children. It was really quite fascinating.

   Do you think the children enjoyed themselves?

   Answer: Most certainly. Most of them were smiling and happy. For the other children who had never seen *Alphablocks*, they were just fascinated. Also, I have seen the children and I know the children have understood it because they come away and during activity time, one girl was able to say that this is an 'A' and was able to make the sounds attached to it.

   Some of the other children would go back to the screen whilst the other children were on it, listen and come back playing making the sounds that the *Alphablocks* had made. It is very fast learning – and I don't want to say it but it's faster than most of our traditional ways. And this was only done twice in our nursery. That says something.

   One another child found it so funny. She kept laughing and when we asked her what was so funny, she made the sounds and tried to make the connection with the letter. Whatever it may have been, she was able to make the connection and this is the most difficult bit with learning the alphabets and the sounds attached to them.

The setting:

1) **Organisational structure – big groups vs. Small group**

   Answer: Well, we had use of both big groups and small groups. Let's start with the big groups first. As you saw, we had about 7/8 children in our big group with a range of personalities. Some of the boys were very boisterous and often were louder than the other children. So, I suspect that in trying to control them, we lost out some 'teaching' time and some of the other children were pretty intimidated.

   In the smaller groups, which consisted of two children, we were able to keep a handle of things better. For starters, we were able to pair children up better according to age and ability, regardless of gender. And they seemed to get so much out of it. They were more hands on as well whereas, in the larger groups, it was you who was using the mouse and making the selections. I think children like to be more hands on and as they were not in the larger groups, they had to do something with themselves and therefore, started jumping up and down etc…as you saw.

2) **Technical Issues – internet connection, pc vs. laptop vs. minibooks, keyboard, mouse, room, lighting, noise levels etc.**

Answer: Yes, there were many technical issues, wasn't there. First, I know you had to talk to Bournemouth University to give you permission to use their Internet connection because ours was just not connecting to your laptop. And also, you could not use our laptop because it was so slow. I suspect it's because it's so old and it was donated by the Poole Council a while ago.

There were also so many wires and cables and setting up issues when doing a big group. The children were blinded by the projector bulb and I know you tried so many different ways of setting the room before you finally got it right. There is no way we can do all that. And also, because it's your research, we were able to allocate the separate room to you but it can't be done all the time so from this perspective, I just don't think it can work as a big group. Although its time saving, it's just not possible.

But, it seemed much easier as a small group with the two children at the laptop, using our keyboard and our child friendly mouse. I also found that you and I were able to pay attention to the children better and each child had a turn at the computer, which makes all the difference.

The process:

1) **Practitioner-led facilitation and child-led exploration**

Answer: I like the fact that it was not more than 20 minutes at a time and maybe 5 minutes more for some children who were nearly ending their session. Our timer is also set for 20 minutes so from that point of view, I find it very reassuring to know that you were not planning to continue for another 20 minutes or longer. We would have had to stop you.

Again, in the big group, the practitioner led session was very valuable. It was like you were showing them what the software was about and how to navigate through it. And you could see their brains processing this information. It was really quite interesting. But, when they were on their own, at the laptop, without much guidance from you and me, they were a bit lost, at times.

What was really interesting to see was that the older child in the group of two who knew what *Alphablocks* was all about was able to show the younger child and help the less able child to move along and continue. Maybe it was for selfish reasons, but it was all done in a very nice way and there was defiantly some peer learning taking place.

In the past, we have often showed the children what to do and let them get on with it. If they need help, they call out but today I observed that children don't always call out and try to make do or if they do call out, then I am not always available to help them and by the time I am ready to help, they have moved on and beyond the problem. I also observed that if we are not always there with them, they clicked on to different websites within CBeebies, and tried something else. So, they were not really completing one thing at a time and I am not sure how much they had understood to make the connection between the phonemes and the sounds attached to them.

I think we often looked at the computer/CD as just game play with the children, but there is so much more we can get out of it, if we decide to take it on as a learning session. I have seen that today.

Practitioner Pedagogy

1) **Discussion on pedagogic strategies used during research**

Answer: Well, this one is a bit complicated.

As we have never really used the computer in a learning sort of environment, I wasn't really sure what to do. But I think I did what we had discussed to do that is to take them through the introductory episodes and then through the games.

I did notice two things though. I think I paid more attention to their technical motor ability and how they used the mouse and what they could do and not do which used up most of our time at the computer. So they didn't get to finish off their games or move on. Second, as there were other children in the room with me, I often had to leave the children at the computer and see what the others were up to and what they needed. By the time I got back, the children had either moved on or clicked elsewhere on the website. So, that was a bit of a disadvantage.

But, then you could take over and carry on the sessions. I also think you were more 'natural' in your delivery. You seemed to know the software more and in a way more confident about the technology. You see, if something does not work for me, then it takes me a lot longer to fix it but you could do it very quickly and carry on. That takes a lot of experience and this is something we have to gain. And sometimes, the children know more than us which can be a bit daunting to be honest.

One thing is pretty apparent though. Children at this age range are natural learners with technology. They seem to pick it up so quickly and once you show them what to do, they can do it. But, as they are so young as yet, they still need an adult nearby to help lead the way and bring them back on tract if they get misled.

I think the software helped a lot and the fact that it had games was quite rewarding. I think the kids go for the rewards and the interesting bits and will try to get to it. They want to understand what they are doing so they can get their reward. It's the end product that they really want.

What I think the children are doing all the time is cherry picking the information they know is relevant to win the game. So, they skim through all the information that is there, and get to the bits that are interesting or the bits that they don't really know and figure it out to move along. So, in this way, the children are learning or re-associating themselves with the new information all the time and are actually learning all the way through. Actually, it's such a clever way of doing things. The makers of *Alphablocks* have built a very good thing here.

I do think we still need some ideas and guidelines possibly about what would be good and effective ways when using ICT, the computer and internet, to encourage development of the EYFS outcomes and goals. There is not much of this information about and your work in phonics can really move things along. Other than ICT stuff, or interactive stuff, what's best interested is that they can connect with what they are learning and they are interested in what they see and how they do it.

New Technology Learning Software

1) **Internet and CBeebies *Alphablocks***

   Answer: We have not used the Internet with the children in a so called learning environment. We have always been a bit cautious about introducing the Internet in the classroom environment in case the children get onto sites that they are not meant to be on. But, now that you have showed us how to put the most basic parental controls in place and even restrict further if we want to, there is no reason to continue using the Internet and the websites through it.

   I actually think it's a good idea to use these websites. The children are used to seeing it at home and if we can combine their interest with learning, then we are on our way to winning the battle.

   It helps that it is online and on CBeebies because the parents can also get involved and help the child to move along at home. We can keep it consistent and share information between both of us. At present the *Letters and Sounds* Curriculum is very EYFS centric so only we as practitioners know at what stage the child is at and how to assess them but I feel that by using *Alphablocks*, even the parents can have an idea at what stage their child is at and we can work together.

   In the more traditional methods, we cannot keep them engaged for so long but with *Alphablocks*, they were smiling, happy and really engrossed in what they say. They were even happy to carry on.

   Some children don't even want to learn their phonics. But, we do everything in a very interactive way and *Alphablocks*, even if it is screen based, works to be so interactive. The children were so active and you could see their 'brains on' all the time.

2) **In terms of appropriate software:**

   Answer: I really like the software. It's very important to choose appropriate software for the children. There are so many different types of sellers who want us to buy software that has the wrong accents and sometimes the whole CD and the process is so dull.

   But *Alphablocks* is different. There are different levels of difficulty which is good because for those children who have a better understanding of the phonemes, they have a chance to progress at a faster rate.

   I think *Alphablocks* is very interactive and it stimulates the whole child through visual, physical and auditory means. I think this is a very important aspect of learning to take into consideration because children are different and learn in different ways and if anything, *Alphablocks* has been designed with this in mind.

The other good thing about *Alphablocks* is that it has a story attached to it and we all know that children love stories. There is a problem that has to be resolved and the children become involved in it. The game bit attached to it is also so effective because there is no right and wrong way and in a way the children are putting sounds together are making words – whether it makes sense or not. They think they are just playing but the good thing is that they are learning from it.

Other comments?

I will definitely look through it again and see what I can do with it.

Thank you for showing me what we can do with it.

Appendix 13 – Stage 3: Preschool 1 Dialogue

Participants include:

Child 1 – 4 year old girl

Child 2 – 4 year old girl

Facilitator – Researcher

Practitioner - Observer

This is a child minding preschool learning environment. It was conducted in the child minder's house with two children who were one year away from school. It was noted that both girls use the computer both at home and at times in the childminder's home settings.

There was good technical infrastructure in place with a strong modem connection.

Introduction

Notes: Child 1 is very nervous and shy. Would not sit with us but only on the childminder's lap. This is OK. Child 2 is keen to use the computer but not really sure what to do. Begins to play with the mouse and starts clicking on buttons on the website.	
Researcher:	Hello children. Do you know what *Alphablocks* is?
Child 1:	No
Child 2:	(Still very quiet. The childminder tells me that the little girl plays with *Alphablocks* all the time at home with her mother. The child's mother mentioned this to the childminder when permission was being sought. So, the child is very well aware of *Alphablocks* and knows how to use with it).
Researcher:	Well, *Alphablocks* are about some blocks that fall from the sky onto a big, white world. They don't know where they are but they do know that they each make a special sound and when they join hands, they can actually make words. They are here to share their sounds. Do you want to hear what they have to say and join them?
Child 2:	Yes. (Fingers on the keyboard ready to start).
Child 1:	(Only watching at the moment)

Researcher-led Session (10 minutes)/Introductory episodes

1 to 5 minutes

Researcher:	Starting *Alphablocks*

<table>
<tr><td>Child 1:</td><td>(Watching intently but holding onto her childminder’s lap).</td></tr>
<tr><td>Child 2:</td><td>(Watching and smiling at the same time).</td></tr>
<tr><td>Researcher:</td><td>Do you know what this letter is...”Jjjj...Jjj...Jjj...”?</td></tr>
<tr><td>Child 1 and 2:</td><td>(No response).</td></tr>
<tr><td>Researcher:</td><td>(Tries again) Do you know what this letter is...”mmmm....mmmm”.</td></tr>
<tr><td colspan="2">Notes: The children are watching the episode. Would seem that they did not even hear me. They were completely engrossed in the introductory episode of Alphablocks).

Question – Did I give them clear instructions? Do the children know what they are supposed to do? Have I assumed that the software will tell them what to do? Am I interrupting the dialogue on the software?</td></tr>
<tr><td>Child 2:</td><td>(Comes to sit down next to child 1. She takes hold of her friends hand in her lap).</td></tr>
<tr><td>Child 1:</td><td>(whispers) “pppp...ppp...ppp...”</td></tr>
<tr><td>Child 2:</td><td>“XXx....XXxx....” like a super hero.</td></tr>
<tr><td>Researcher:</td><td>So tell me, did you enjoy watching the Alphablocks?</td></tr>
<tr><td>Child 1:</td><td>(looks down and holds her childminder’s hand tighter)</td></tr>
<tr><td>Child 2:</td><td>(Nods) Yes.</td></tr>
<tr><td>Researcher:</td><td>Do you remember any of the sounds of the letters from the Alphablocks?</td></tr>
<tr><td>Child 1:</td><td>(Quiet)</td></tr>
<tr><td>Child 2:</td><td>No. Can we watch it again?</td></tr>
<tr><td>Researcher:</td><td>Would you like to watch it again?</td></tr>
<tr><td>Child 1:</td><td>(Whispers) Yes.</td></tr>
<tr><td>Child 2:</td><td>Yes.</td></tr>
<tr><td>Researcher:</td><td>Ok then, this time I want you to watch and listen to the Alphablocks very carefully. See if you can remember any of the sounds attached to them. OK?</td></tr>
<tr><td>Child 2:</td><td>Yes.</td></tr>
</table>

3 Minutes – Repeat of Introductory episode

Researcher:	Now, let's see if we can repeat the sounds together. (Re-plays *Alphablocks*) (This time trying 'Modelling' and joining in with the children so that they make more of an effort to watch and listen to the sounds of the alphabets)
Researcher:	"Aaaah.....your turn" – Modelling Responses
Child 1:	"aaahhh.."
Child 2:	"aaah...very quietly (but she said it)
Researcher:	"Bbbb...Bbb..." - Modelling Responses
Child 1:	"Bbb..bbbb..."
Child 2:	(Quiet)
Child 1:	"gggg....look the grass is growing"
Researcher:	"ggg…..gggg….Yes, because he drank some water.. Modelling
Researcher:	That is right. (Reciprocating his response)
Researcher:	"llll….llll"
Child 2:	"Iii....Ii...." (Quietly)
Child 1:	"L" – For Lizzie…that is me!
Child 1:	"mmmm….mmmmm….MILK"
Researcher:	Yes, that is correct. Well done.
Researcher:	"ppp….ppp…" like popping a balloon (Modelling)
Child 1:	"Oh…pppp..ppp…ppp (started jumping up and down).
Child 2:	(Watches her friend in amazement and then looks at me and looks back away).
Researcher:	That's right. Like a pppp….pppp…balloon (Reciprocating)
Child 1:	(Sits down) "tttt….teapot"
Child 2:	"ttt….tttt…" (Quietly)
Notes: And on it went until Xxx…but this time, I, as the facilitator took on more of an effort to 'model' what I wanted it out of them – for the children to take notice of what they were doing and make sounds. To try to associate what they are hearing to what they were seeing).	

At 8 minutes/Child-led sessions

Researcher:	Well done girls. You did some great sounds. Now, would you like to play a game and use those sounds?
Child 1:	Yes
Child 2:	SMILES – (it appears she already knows about these games).
Researcher:	Great. We are going to play a game to help the *Alphablocks*. Will you be their rescue team? For this to happen, we have to first listen to the story and then help them make some words. Are you ready? I will show you what to do first and then you can take control of the mouse and do it yourself. OK?
Child 1:	Yes
Child 2:	Smiles Again.
Researcher:	Child 2, you are smiling. Looks to me like you know about these games. Is this right? (Plays the 1st *Alphablocks* game – narrative begins)
Child 2:	Yes. (Tuning in – throughout the session, I have been observing Child 2, watching her actions, behaviour and have noticed when she has been scared and comfortable. She is now definitely in her comfort zone and has loosened up a bit).

At approximately 9 minutes

Researcher:	Ok, are you ready to help them? First, let me show you what needs to be done and then you, Child 1, can have a go. I am going to take this letter "A", (repeats the sound "aaaa...aaa...") and slot onto the red circle. Let's see what happens.
Software:	"B – A – G" = BAG!
Researcher:	I made BAG. Can a BAG help 'T' off the mountain?
Child 2:	(Responds for the first time) – No!
Researcher:	OK. So, now what should we do?
Child 1:	My turn now. What do I have to do? – (Needs Adult Guidance)
Researcher:	Right, child 1, its your turn to find a letter that you think when put together with the other letters, on the screen, will make a word to rescue "T" off the mountain. Is this clear? (Showing genuine interest – I have repeated myself again to make sure that Child 1 is aware of what is required out of her)
Child 2:	(Moving closer to the computer for her turn. She is coming out of her shell a bit

	more now. Maybe because of familiarity? She knows what to do?)
Researcher:	What letter do you want to use to help make a word and rescue ‘T’ from top of the mountain?
Child 1:	That one….(points to a letter on the screen and puts her hand on the mouse).
Researcher:	Which one? Can you give me the sound?
Child 1:	(Is quiet). No, I don’t know the sound.
Researcher:	Ok, let’s do it together. Which colour is it?
Child 1:	OK, I know that. The orange one.
Researcher:	Oh…”OOoo….OOOooo”
Child 1:	“Ooohhh….Oooh…” (repeats)
Researcher:	Can you click on it now and drag it to the top?
Child 1:	Ok (she struggles a bit with the mouse).
Researcher:	Can I help you with the mouse? (I show her what to do and where to click. Child 1 picks it up easily but then again she has used a mouse before) – Showing Genuine Interest
Software:	“B – O – G” BOG.
Child 1:	I made a word. BOG.
Researcher:	Can the word BOG help ‘T’ off the mountain?
Child 1:	What does BOG mean?
Researcher:	It’s a bit like a swampy lake.
Child 1:	Ohhhh….I don’t know.
Child 2:	No, it cannot. (She is ready for her turn and takes over the mouse. She is definitely more confident using the mouse).
Researcher:	What are you going to use?
Child 2:	(points to “I” on the computer with the mouse. Does not repeat the sound. Begins to drag the letter).
Researcher:	And what sound does that letter make?
Child 2:	“iiii….”
Researcher:	Well done. Do you think the letter ‘I’ help “T” off the mountain? – (Re-capping)

Software:	"B – I – G" = BIG. Oh, look we are BIG. Now we can rescue "T" off the mountain.
Researcher:	Well done. Have you played this before?
Child 2:	Yes.

14 minutes 34 seconds

Child 1:	Can we play it again?
Researcher:	Sure, we can play it again or a different game.
Child2:	A different game.
Child 1:	OK

15 minutes/Child-led Game 2

Researcher:	Would Child 2 like to start first as Child 1 started first before? And the mouse is over there too….?
Child 1:	Ok.
Child 2:	(Nods and takes the mouse)
Researcher	(Starts the next *Alphablocks* game). – Forgot to tell what to do or will they figure it out?
Software:	(Narrative playing) Game time…
Researcher:	So, now you have a 'S' and 'A' and I wonder what letter you will need to make a word out of it?
Child 2:	"D"
Researcher:	(I know it's the right answer). Why 'D'? If you put 'ddd…at the end of "S" and "A", what do you think you will get?
Child 2:	S – A – D = SAD.
Researcher:	Ok, let's have a little look.
Software:	S – A – D = SAD. (The letter X comes into play and starts dancing and singing. Child 1 starts moving her body and does a little dance. Child 2 is still but smiling).
Researcher:	Good girl. Well done.

Child 1:	My turn now (takes the mouse)
Researcher:	What letter would you like to drag up to the empty circle?
Child 1:	Not sure. The green one?
Researcher:	Ok, that would be …
Child 2:	I know, "Gggg….
Researcher:	Yes, that would be "gggg". It is the green alphabet. Now child 1, you say "gggg"
Child 1:	"gggggg…" for the grass to grow – She remembered the letter to the Alphablock character
Researcher:	Ok, I wonder what would happen if you drag it over to the other letters?
Child 1:	I need some help.
Researcher:	Of course (and together we drag the letter 'a' up to the other letters on the screen).
Software:	S – A – G = SAG
Researcher:	Well done, you made the word SAG.
Researcher:	I am sorry girls. Our time is up but you can always come back later and give it another go later on if you like.
Child 1:	Aaawwww….OK
Child 2:	(Gets up and leaves)

End 19 minutes 20 seconds

Observation Notes:

This study took place in the childminder's home environment. For stage 3, it was very important that the technical infrastructure was in place and there was a robust internet connection. There was also the use of a child friendly mouse which proved to be much easier for this study. As before, the study focused on introducing the alphabets first and then getting the children to repeat the sounds.

Child 1 – Child 1 is a little 4 year old girl, ready to start school September 2011. She has never seen *Alphablocks* on TV or the Computer. In fact, it would seem that child 1 does not have much exposure to ICT, although she has it at home.

Again, it would seem that child 1 was aware of the Alphabets and its sounds but had difficulty remembering the sound attached to the specific alphabet. In the ten minutes of the session, the child was able to keep up and remember some of the sounds to the alphabets. It would seem that she enjoyed playing the game and was able to associate the colour of the alphablock with the specific alphabet in mind. She was able to keep up with what was required from the game and with her partner, who has already played with *Alphablocks* before. The dialogue between me, as the facilitator, throughout the session seemed to be one sided and I wonder if there were too many closed questions.

Child 2 - Child 2, on the other hand, started off as a very shy little girl who was well aware of the uses of the computer and has used *Alphablocks* before. It would seem that her parent(s) spend time with her on the computer and have shown her how to use the computer and the mouse. Initially, child 2, sat on the childminders lap but, within 10 minutes, had started to engage (minimal) in repeating the sounds. She preferred to play the games and was able to attach the sounds to the letters. In the twenty minutes use of *Alphablocks*, child 2, had progressed onto level 3 word making; which involves two or more alphabets.

Overall, the childminder's study went pretty well and incorporated some of the Sustained Shared Thinking techniques. In red, there are some instances of where 'modelling' was very apparent and where I, as the facilitator, was 'tuning' into the child's environment and behaviour. There were also some instances of 'recapping' which was 'observed' by the practitioner (who was also taking notes).

However, in transcribing the interview sessions, it was noted that there were very few open questions and more closed questions involved where children tend to answer yes/no. Although I, as the facilitator, had good intention to include some open questioning, this is not apparent.

Re-consider what it means to include 'open questioning' with young children?! Are there different types of questions that we are not aware of which can help guide the whole pedagogic process?

Appendix 14 – Stage 3: Preschool 2 Dialogue

Participants include:

Child 1 – 4 year old boy

Child 2 – 4 year old girl

Facilitator – Researcher

Practitioner - Observer

This is a small preschool learning environment. It was conducted in the child minder's house with two children who were one year away from school. It was noted that both children use the computer both at home and at times in the childminder's home settings.

There was good technical infrastructure in place with a strong modem connection.

Introduction

Notes: Both children look very comfortable and are ready to give it a go. The little girl, child 2, is a bit more shy but still very confident in herself. She is kneeling upwards towards the computer and has the mouse in her hand so even though she looks shy, I think she will be fine. Both children are smiling and seem really happy in themselves.	
Researcher:	Hello children. Do you know what *Alphablocks* is?
Child 1:	(Raises his hand)
Researcher:	What is it, child 1?
Child 1:	It's when you have to make up words by listening to the video and then it makes you have to play a game. It has got to do with the alphabets. I play it with my mummy.
Researcher:	That's very nice. And child 2, do you know what it is?
Child 2:	(Shakes her head from side to side). I don't know.
Researcher:	Don't worry. It's a program on Cbeebies. Do you know what Cbeebies is?
Child 2:	Yes, I know
Researcher:	Well, *Alphablocks* is a program on Cbeebies and it works with our letters and the sounds of our alphabets. *Alphablocks* are about some blocks that fall from the sky onto a big, white world. They don't know where they are but they do know that they each make a special sound and when they join hands, they can actually make words. They are here to share their sounds. Do you want to hear what they have to say and join them?

Child 2:	OK.
Notes: I made a conscious effort to introduce *Alphablocks* to the children. Give them an introduction to what is going to come. From now on, the same definition/description of what *Alphablocks* is will be offered to every child. My intention is to provide for general information up front so that children are guided into the lesson and are not confused about what they are doing and why they are using it. This way, they can focus on the episodes to follow and on the questions that are asked during the session.	

Researcher-led Session (10 minutes)/Introductory episodes

1 to 5 minutes

Researcher:	Starting *Alphablocks*. Researcher makes observations. Child 1, the little boy, sits back and watches. Child 2, the little girl is sitting on her knees and watching.
Software:	2 minutes 59 seconds – starts narrative
Researcher:	(Talks whilst the narrative is on). Alright children (talking louder than the narrative on the computer to get the children's attention). Let's try to repeat the sounds if we can. Join in with the *Alphablocks*. Who can repeat this one?
Child 1:	Quiet and watching intently
Child 2:	Quiet
Researcher:	(Narrative continuing along the screen. The *Alphablocks* are on gggg...now). What about this one children? What about you child 2?
Child 2:	Gggg.... (…but not really interested. Really wants to watch what is happening on the screen).
Child 1:	Quiet and watching intently.
Researcher:	Hmmm... (..stop myself – the children are focused on watching and taking in all this new information. Allows the children to watch for the rest of the introductory session).
Child 1:	"oooo...." that reminds me of 'Ostrich'.
Researcher:	Really. That is interesting.

Child 2:	"ppp...." that reminds me of a puppy (and smiles at her partner)
Child 1:	"sss....." like a snake
Researcher:	Well done children. That was a lot of fun and I really like how you were coming up with new words for the sounds that the *Alphablocks* were making.

Notes: There were two different things happening here.

1) When I asked the children to make the sounds with me, they did not. In fact, it would seem that I was disrupting their focus. There was the narrative coming from *Alphablocks* and then there was me asking questions and asking them to repeat with me.

Was I giving the children too much information too quickly to handle?
How can they listen and understand two narratives at one time?

2) When I did take the pressure off a bit, the children begin to volunteer the information. These children started to make the sounds themselves and find other words that begin with those sounds. It would seem that these children are slightly older and so have a better grasp of the alphabets but even so, they are now ready to repeat the sounds and volunteer some information.

Do children need time to process information first, particularly new information, before they are able to respond to instruction and/or answer questions? Is the software supporting the narrative initially?

3 Minutes – Repeat of Introductory episode

Researcher:	Now, let's see if we can do it together but this time we repeat the sounds as well. What do you think? (Re-plays *Alphablocks*) (This time remember to use 'Modelling' and joining in with the children so that they make more of an effort to watch and listen to the sounds of the alphabets. This worked in one of the earlier sessions and was found to be quite effective).
Researcher:	"Aaaah.....your turn" – Modelling Responses
Child 1:	"aaahhh.."
Child 2:	"aaah..."
Researcher:	"Bbbb...Bbb..." - Modelling Responses
Child 1:	"Bbb..bbbb..."
Child 2:	(Quiet)
Researcher:	"gggg....look the grass is growing"

Child 1:	"gggg...look his hair is growing like grass"
Reseearcher:	That is right. He drank some water and now the grass is growing (Reciprocating)
Researcher:	Child 1, do you know what the next sound is?
Child 1:	(waiting for software narrative to start and then repeats) "H....hhhhh....hhhh"
Researcher:	Well done. And now you child 2, your turn next.
Child 2:	"iiii....iii..." it's a girl one. I don't like this sound.
Child 1:	I like it. It's pretty and pink.
Researcher:	Right, I wonder which sound comes next? (Open Questioning)
Child 2:	"jjjjj...."
Child 1:	"jjjj...."
Researcher:	Well done
Child 2:	"lllll....lllll" like a lion
Child 1:	"mmm...." milk and monkey
Child 2:	"rrrr....rrr..." the alphablock looks like a pirate
Child 1:	"tttt....teapot!" I like this one
Child 2:	"vvv....vvv..." Van
Child 1:	"zzzz....zzz..." like my daddy when he is sleeping!
Researcher:	Oh dear. Does your daddy snore? (Introducing genuine interest)
Child 1:	All the time and now I can tell him he is like an Alphablock!

Notes: This time, I, as the facilitator took on more of an effort to model what I wanted it out of them – for the children to take notice of what they were doing and make sounds. To try to associate what they are hearing with what they were seeing.

At 9 minutes/Child-led sessions

Researcher:	Right children, you did some great sounds there and had some very interesting things to tell me too. How about we play a little game. Is that something you would like to do?
Child 1:	Yes. I really like the games. It's really fun.......

Child 2:	Yes

9 minutes plus

Software:	(Begins narrative and introduces the story with a problem)
Researcher:	Just watching. This time does not interrupt the narrative flow. The children are watching intently. Right children, so this it. We have to rescue "T" from the mountain. Do you know what needs to be done?
Child 1:	Yes, we have to put the letters together and make a word.
Researcher:	That's correct. Well done. You really have played this game before.
Child 1:	Yes with my daddy and I know the word too (smiles).
Researcher:	So, should we let Child 2 have a go first so that you don't finish and win the game.
Child 1:	No, let me please. I want to show Child 1 how to do it (looks so eager). (Tuning In)
Researcher:	Ok, I guess you can show her what to do and then we will have to repeat this episode so child 2 can have a go. Is that ok?
Child 1:	Ok
Child 2:	(Smiles).
Child 1:	Picks up the mouse, clicks on the letter 'I' and drags it over to the letters B and G. He makes the word BIG.
Software:	B – I – G. (All the *Alphablocks* become big and area able to rescue T from the mountain). "Well done, you did it"
Child 1	(Smiles). I rescued "T" from the mountain.
Researcher:	Yes, you did. You dragged the pink letter "I" in between "B" and "G" to make the word BIG so that the *Alphablocks* could become big and rescue "T" from the mountain - (Recapping) But, I did not hear you say the sound of the letter. What sound does the letter "I" make? – (Showing Genuine Interest)
Child 1:	(Looks a bit lost) ummm...."iiii" its like the pink Alphablock and she is like a girl, so I think its "iii..." – (From simple question to a more difficult question)
Researcher:	Well done. That is correct. Should we let Child 2 have a go now?

Child 2:	Yes, my turn. I know what to do now.
Researcher:	(Plays the game again. This time I remind the children to sound out the letter and then drag it over to the letters) This time I would like you to sound out the letter before you drag it in between "B" and "G". OK? So, listen carefully to the *Alphablocks* story and to the sounds that each letter makes.
Software:	(Story narrative and game start again)
Researcher:	Ok, child 2, now it's your turn. We know that "I" finishes the game where all the *Alphablocks* become BIG and rescue "T" but look there are other alphabets with different sounds and they make different words. Should we try those ones out too?
Child 2:	Yes.
Researcher:	Ok, which letter would you like to drag? Don't forget I would like you to sound out letter too. (Prompting)
Child 2:	That one (and points to the screen).
Researcher:	Do you know the sound? (Probing)
Child 2:	No
Researcher:	Ok, can you describe it to me? What colour is it? (Showing Genuine Interest)
Child 2:	The orange one
Researcher:	Oh, you mean "oooo..oooo" Can you repeat that?
Child 2:	"ooohhhh....oohhhh" (puts hand on mouse)
Researcher:	Ok, are you ready to drag the letter over there?
Child 2:	Yes. (She takes the mouse and drags the letter O over to "B" and "G"
Software:	B – O – G = BOG. You made BOG (and the picture changes to the *Alphablocks* standing in a BOG).
Child 2:	Oh...what happened?
Researcher:	You made the word BOG. You made a word. B – O – G makes BOG.
Child 1:	What does BOG mean?
Researcher:	It's a bit like swampy water
Child 2:	Oh OK. (Smiles)

Child 1:	My turn (and takes the mouse and drags the letter "A" over to "B" "G"
Software:	B – A – G = BAG. You made BAG
Child 1:	A bag is not going to help "T" (and laughs)
Researcher:	That is very good child 1 but I didn't hear you say the sound of the letter (smiles). (Probing)
Child 1:	Oh yeah, I forgot. Is it "aaaaahhhh?"
Researcher:	Yes, that is good.
Child 1:	We have not done the star word yet. Should we show child 2 how to do the star word?
Researcher:	Ok, you show her.
Child 1 to Child 2:	Child 2, if you click on "i" (and makes the sound to the letter) then we make the word BIG and the *Alphablocks* grow big and can rescue "T" from the mountain. Should we do that? (Bit of peer learning)
Child 2:	Ok. How do we do that?
Child 1:	Take the mouse and move it to the letter 'I' (and makes the sound)
Child 2:	What colour is that one?
Child 1:	It's that one (and points to the screen).
Child 2:	OK. "I...iiiii". (makes the sound and drags it over to B and G)
Software:	B I G = BIG. Now we can rescue "T" from the mountain. Go on and get on top. What a terrific view.
Child 1:	You made the star word and now we have won the game.

Notes: This time I did not interrupt the children watching the software. I waited for the narrative to end and then asked them what needs to be done. I found that if the researcher/facilitator was not paying attention to the child, the child did not sound out the phoneme and could easily just play the game with no learning. It would seem that children, in these age years, really do need to have an adult nearby. I also introduced the element of simple vs. more difficult question. It seem to throw off the children a bit, but got them to start thinking too.

In the last few minutes, the researcher took a back seat and let child 1 lead child 2 to win the game. There was definitely peer learning taking place.

At approximately 12 minutes

Researcher:	Well done, are you ready to play it again or would you like to play another game?
Child2:	Play it again.
Child 1:	NO, another one. A harder one.
Researcher:	A harder one. Do you think you can do it?
Child 1 and 2:	Yes. We can do it.
Researcher:	OK. You are older children so let's go for it.

13 minutes/Child-led Game 2 (next level up)

Researcher:	Ok, let's start it again. Like before, have a listen to the story and listen carefully to the *Alphablocks* and the sounds attached to them. Then we can play the game. Now, let's sit back and listen, OK? (Moving from levels of simplicity to more difficult)
Child 1:	OK
Child 2:	Ok.
Software:	Begins game 2 with narrative unfolding (Party Game)
Researcher:	(Watching the children. Listening to the story intently). Ok, time to get the party started. What do we need to do to get the party started? Who would like to go first?
Child 1:	Me (and raises his hand)
Researcher:	Alright. Go for it.
Child 1:	Drags the letter "D" to the letters S and A
Researcher:	And what sound does "D" make?
Child 1:	Smiles and says "Dddd..."

Researcher:	That is right.
Child 1:	I finished the game again.
Researcher:	Again?!
Software:	S – A – D = SAD. All *Alphablocks* get sad and look for Alphablock X to re-start the band and get the party going. All the *Alphablocks* are happy again and the episode story and game ends.
Researcher:	Oh, child 1, you won the game again and child 2 never got a chance.
Child 1:	(Smiles)
Researcher:	Alright, let's go for it again so that child 2 can have a chance, OK?
Child 2:	Yes, my turn (and looks a bit sad)
Researcher:	Re-starts episode 2 for child 2 to have a turn.
Software:	(Begins the narrative again)
Researcher:	(Takes back seat and watches. This time the same narrative re-starts. I want to observe and see whether the children start getting fidgety and restless)
Child 2:	I want to do "B"
Child 1:	Ok, let me help you. No that is "D" not "B"
Child 2:	This one? (and begins to drag it to S and A on the screen)
Child 1:	Yes.
Researcher:	And what sound does that letter make?

Child 1 and 2:	“bbbb...”
Researcher:	What do you think will happen when you bring B over to S and A? (Open Questioning and Tuning In)
Child 1:	S - A – B = SAB
Researcher:	That is right. S – A – B
Software:	S – A – B = SAB (follows up what i just said at the right time to reinforce the word)
Child 1:	That is not a word. Is it?
Child 2:	Oh, yes, it’s not a word. Its SAB (and smiles)
Researcher:	That’s alright. SAB is not a word. What word do you think the *Alphablocks* need to make the party happen? (Open questioning) Let’s try again. What would you like to do next child 2?
Child 1:	(Thinking. Child really thinking about what letter could get the party started).
Child 2:	(Looking at the screen and eliminating the ones they have used)
Child 1:	It’s my turn.
Researcher:	You already had your turn and won so let child 2 have a turn and make a word and then you can have your turn. (Tuning in to the children trying to deduce what letter they can use to make the star word) (Child hands over the mouse). Thank you.
Child 2:	I want to use “A” so its S – A – G..(and sounds out all the letters)
Researcher:	So, I wonder which one that would be? (Tuning In)

Child 2:	(Quiet) – (Giving the time to think – after long 20 seconds or so) – It's the green one.
Researcher:	Could that be gggg...for the alphablock that has grass on it and grows. (Tuning In and prompting)
Child 2:	Yes, its "gggg...." (and drags the letter G over to S and A)
Software:	S – A – G = SAG. Well done. Now let's all sag.
Researcher:	Oh dear, the *Alphablocks* are sagging. Do you know what that means? (Modelling demonstration for the children)
Child 1:	(Repeats demonstration with his body).
Researcher:	That's right. But can you have a party if you Sag, can you? (Leading up for the next question. Probing and Tuning In)
Child 2:	No. We need another word. It is my turn now.
Researcher:	Alright. What should we do next? (Prompting)
Child 1:	"A"
Software:	Have you found the star word yet? S – A – T = SAT Let's all sit down for a cup of tea.
Researcher:	Can we have a cup of tea and have a party? – (Recapping dialogue from software and providing prompts for children to think about what next)
Child 2:	No.

Researcher:	Should we try another one?
Child 1:	"R" .... rrrrr
Software:	S – A – R
Researcher:	Is that a word – SAR – can we have a party now? (Showing genuine interest in the nonsensical word)
Child 1:	No.
Child 2:	There is no word SAR but this is fun. We can make all kinds of words.
Child 1:	Do "D" and then you will get superhero X to come and rescue the party.
Child 2:	OK (drags D over to make the word SAD)
Software:	All the *Alphablocks* become sad and Alphablock X comes to start up the party.
Researcher:	There you go. The both of you made S – A - D
Child 1:	Can we do it again?
Child 2:	Yes, can we
Researcher:	I am so sorry but we cannot. But you can always come back later with 'key worker' and do it together. (Children want to do more)
Child 1 and 2:	Ok.

End 18 minutes 40 seconds

Observation Notes:

This study took place in the childminder's home environment using the EYFS framework of curriculum. For stage 3, it was very important that the technical infrastructure was in place and there was a robust internet connection. There was also the use of a child friendly mouse which proved to be much easier for this study. As before, the study focused on introducing the alphabets first and then getting the children to repeat the sounds.

Child 1 – Child 1 is a little 4 year old boy who had previously used *Alphablocks* at home with his parents. It would also seem that he had a very good understanding of the alphabets and the sounds attached to them. In discussion he said "that the pictures help him remember the sound". He has good mouse control and computer skills.

Child 2 – Child 2 is a little 4 year old girl who had no exposure to *Alphablocks* previously. She had average mouse and computer control. Although she does not use much of the computer at home or even in school, she seemed to really enjoy playing with *Alphablocks* and by the end of the session, was able to guess the sound of the letter by the image of the Alphablock.

Things considered in this preschool environment (and that worked well):

1. Sustained Shared Thinking techniques of Open Questioning, Re-capping, Tuning In, adult Modelling, and showing Genuine Interest without leaving the child's side.

Extend these areas in the next preschool environment:

1. Introduce more open-ended questioning such as: What could we do if...? Can you find a way to.....? What do you notice about.....?

2. Give children time to develop their thinking and avoid answering for the child.

3. Introduce difficult levels of episodes for more advanced children moving from simple to more difficult questioning (more with older children).

4. The child can only understand one narrative at a time so make allowances for the new learning software. Allow for the software to make the introduction. Then stop and talk to the children about what they have just seen and what needs to be done. Next continue with the game play, then stop and discuss again what you did and what has happened, and then conclude – either you conclude or the software concludes. Allow for the software prompts as well. This must become a blended approach.

Appendix 15 – Stage 3: Preschool 3 Dialogue

Participants include:

Child 1 – 4 year old boy

Child 2 – 4 year old girl

Facilitator – Researcher

Practitioner – Observer

This is a child minding preschool learning environment. It was conducted in the child minder's house with two children who were one year away from school. There was good technical infrastructure in place with a strong modem connection.

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Introduction

Notes: Both children look very comfortable and are ready to give it a go. They both seem like very confident children and often use the computer in their home environment.	
Researcher:	Hello children. Do you know what *Alphablocks* is?
Child 1:	Yes
Child 2:	Staring at the screen.
Researcher:	Well, *Alphablocks* is a program on Cbeebies and it works with our letters and the sounds of our alphabets. *Alphablocks* are about some blocks that fall from the sky onto a big, white world. They don't know where they are but they do know that they each make a special sound and when they join hands, they can actually make words. They are here to share their sounds. Do you want to hear what they have to say and join them?
Child 2:	I know one. It's an X – (and makes the sound)
Researcher:	That is correct. That is so good. Ok, are we ready to have a look the *Alphablocks* and if you wish to repeat the sounds with them, then go ahead but if you want to just watch them for now, that is fine too, OK?
Child 1:	Nods
Child 2:	Nods
Notes: There are no interruptions or questions being prompted by the researcher at this time. The researcher has already provided for general information about what *Alphablocks* is and what is to follow. The next few minutes will be guided by the new media narrative.	

Practitioner-led session (10 minutes)/Introductory episodes

1 to 5 minutes

Researcher:	(Starting *Alphablocks*) Researcher makes observations. Both the children are focused on the screen of the computer. Occasionally, the little girl looks behind her to see if anyone of the other children is in the room. The boy is completely focused on the screen.
Software:	(Software starts narrative)
Child 1:	"bbbb....bbbb" I like this one
Child 2:	(giggling and laughing – dancing to the music).
Child 2:	"dddd.....ddd" (repeating the movement of the drum)
Researcher:	Thats right...well done.
Child 1:	"iii...." thats a pretty pink one
Child 2:	"jjjj...jjjj" (laughing away)
Researcher:	Yes, this is very good.
Software:	(Continues with the *Alphablocks* making sounds)
Child 1:	"mmmm..." its like milk!
Researcher:	Yes, that's right. I wonder what comes next?
Child 2:	"oooo .. OH"
Researcher:	That's right.
Child 1:	"OH, OH, OH"
Researcher:	How interesting. Let's look at the next one. I wonder what comes next.
Child 1:	"Quuu..."
Child 2:	And now "Tttt...."
Researcher:	Great stuff. This is going well.
Software:	"xxxx...."
Child 2:	My superhero.
Child 2:	That's my favourite one

Researcher:	Is it. And which one is your favourite one Child 1?
Child 1:	It's the one with milk.
Researcher:	Ok. What do you notice about the word milk? (open question)
Child 1:	"M"
Researcher:	Yes, and do you know the sound attached to it?
Child 2:	It's "mmmm..."
Researcher:	Well done. Is that right Child 1?
Child 1:	Yes, I like "mmmm..."

4 Minutes – Repeat of Introductory episode

Researcher:	Well, you did really well. Shall, we try to do it again and this time repeat the sounds with the *Alphablocks*? If you like we could take turns doing this as you were so good the last time. (Modelling each sound with the children)
Child 1:	Yes, I like that
Child 2:	I don't mind.
Researcher:	Great, let's go for it again then.
Software:	(Re-starts the *Alphablocks* introductory song)
Researcher:	"aaahhhh..." - Modelling
Child 1:	"aahhh..."
Researcher:	"bbbbb"
Child 2:	"bbbb..."
Child 1:	"bbbbb..."
Software:	"eeeh...ehhh"
Child 1:	"eee.hhhh..."
Software:	"ggg...."
Child 2:	That's not my favourite one.

Child 1:	"gggg...."
Researcher:	"hhhh..."
Child 1 and 2:	"hhhh...."
Software:	"llll...."
Child 1:	"llll..." that's a pretty pink one.
Child 2:	I don't like that one. It's like a girl.
Software:	"mmmm...."
Child 2:	"mmmm...."
Software:	"qqq...."
Researcher:	Whose turn is it? I wonder what comes next.
Child 1:	Mine... "qqqqq..."
Researcher:	Super
Software:	"sss...." - prompting
Software:	"ttt...T" - prompting
Child 2:	"ttt...." like a cup of tea. My mum likes to have tea. It's "ttttt"
Researcher:	(And so on....the children take turns alternatively).
Notes:	Modelling/Prompting/Open Questioning This went very well. There was 'mixed prompting' between both the researcher and the software. The children responded and repeated with the researcher and also had the help from the software. Sometimes, the children interacted with the software only and responded without having to be reminded by the Practitioner. Both children were very happy and were smiling throughout the process. (Child 2 – boy – looking a little bit restless. Glances at the door several times now)

At 7 minutes 13 seconds/Child-Led Sessions

Researcher:	Well done children. You did some brilliant sounds and you remembered some of them which is excellent. Now, would you like to play a game with the

	Alphablocks? (Child 2 looks at me and sits down very excited). Yes, it's now time to play a game. What we are going to do first is to listen to the *Alphablocks* first and then help them to rescue their friend. Is this ok?
Child 1:	Yes, actually I know how to play this game.
Child 2:	SMILES – (it appears he is ready to play and join in again)
Researcher:	Ok, let's start (plays the first game for the children).
Software:	(Begins the narrative)
Researcher:	(Both children are watching the screen intently. Not one of them has looked at me so far. The narrative prior to the game lasts for about one minute).
Child 2:	Wow...but that is too high. They are stuck
Child 2:	(giggles)
Software:	"T needs help. Vowels to the rescue. A, E, I, O, U vowel team knows what to do"
Child 2:	Laughs.
Child 1:	What do we have to do?
Researcher:	"T" needs help and is stuck up on the mountain. The vowels have come to rescue. Shall we help the *Alphablocks*? (Re-capping the situation)
Child 1:	OK, I will go first.
Researcher:	What letter would you like to use first Child 1?
Child 1:	The pink one.
Researcher:	Do you know what sound the pink letter is?
Child 1:	No.
Researcher:	Ok, what does it look like? Do you remember seeing it in the song?
Child 1:	Oh yes, it's the pretty pink one, "iiii..."
Researcher:	That's right. Well done. Just super. Are you ready to drag the letter up to B and G?
Child 1:	(drags I to B and G)
Software:	B – I – G = BIG (Brilliant. Go on. Get on top and rescue "T" from the mountain. What terrific view...)

Researcher:	Well done. You won and made the star word. Shall we let Child 2 make some other words?
Child 2:	Yeah. (Stands up and moves over to the mouse. Now that he has seen what to do he is ready to try it for himself. Looks at the researcher)
Researcher:	OK, child 2, what letter would you like to drag over to B and G?
Child 2:	I am going to use "A"
Researcher:	Great. I wonder what sound "A" makes.
Child 2:	"aaahhh..."
Researcher:	Great.
Software:	B – A – G = BAG
Child 2:	B - A – G = BAG. BAG. BAG
Researcher:	That is right. You made the word BAG.
Software:	(narrative - Oh, we have a BAG. Let's see what we can find inside)
Child 2:	A bag can't help T, can it?
Child 1:	No, it can't. I know what can be done.
Child 2:	No, I want to make a star word.
Child 1:	But, it's my turn
Researcher:	I have an idea. Shall we let Child 2 make the star word and then play another game and Child 1 can go first on that game. Is that ok? – Taking Genuine Interest to settle differences/Adult interaction required
Child 1:	OK
Child 2:	Can I use "eh" first. I want to see what word I can make with that one.
Researcher:	Of course.
Software:	B – E – G = BEG (narrative – please, please please....)
Child 2:	BEG. BEG. I made the word BEG.
Researcher:	That's right.
Child 2:	OK. I want to use "I" (and makes the sound attached to it)
Software	B – I – G = BIG (Brilliant. Go on. Get on top and rescue "T" from the mountain. What terrific view...)

Researcher:	Well done. Now you have made a star word too.
Notes: Re-capping/ Genuine Interest/Open Questioning/Adult Interaction and Guidance It would seem that for some awareness and recognition to take place of Letters and Sounds, whilst using the new media, adult participation is required and the following techniques of re-capping, providing for genuine interest, open questioning (using sustained shared strategies) and that with the use of both adult guidance and interaction, the children become more involved in the whole 'learning session'. Both generally seem to be generally well and happy throughout the playful experience. Q) Can we measure for well-being and involvement? Is this just my view or is this something that can be determined?	

At approximately 13 minutes 24 seconds

Researcher:	That was a lot of fun.
Child2:	Can we play it again. I like to make words
Child 1:	Yes
Researcher:	You can play it again or if you like you can try another game. What would you like to do?
Child 1:	Another game
Child 2:	Don't mind.
Researcher:	OK, as you both were so good, would you like to try a slightly harder one?
Child 2:	Yes
Child 1:	Ok.

14 minutes 40 seconds/Child-led Game 2

Researcher:	Ok, this is a slightly harder game but still lots of fun. Again, like the last time, we will hear the story and see how we can help the Alphalocks. This story is about the *Alphablocks* wanting to have a party and they need help to start the party. Are you ready to join in the fun?
Child 1:	Yes.
Child 2:	Yes
Researcher:	(Starts the *Alphablocks*, game 2).

Software:	(Begins the narrative) You guys going to the party. This is the party, you hearty...but its so sad. We need help...
Child 1:	(takes the mouse and skips to the end of the story)
Researcher:	Did you just skip the whole story?
Child 1:	Yes. I know this story
Researcher:	But, child 2 does not. How is he going to make words?
Child 1:	Its easy. Let me show you.
Researcher:	(Child 2 does not seem to mind and it would seem that Child 1 really does not want to listen to the story. I let it go).
Researcher:	Child 2 do you want to listen to the story?
Child 2:	I don't mind. It's fine.
Child 1:	Ok. (she clicks on the letter A and drags it to S and A)
Software:	S – A – A = SAA
Researcher:	SAA. I wonder what that means....is that a word? (no repeat of sound)
Child 1:	No (giggles) SAA
Researcher:	Ok, let's get Child 2 to have a turn now. Child 2, as you did not have a chance to listen to the story, it's about the *Alphablocks* who want to have a party and need to 'spice' it up a bit but they don't know how to but there is a star word here, that you can make, to help brighten up the party. Are you ready to try out some words?
Child 2:	Yes. (Clicks the letter Y and drags it over to S and A)
Researcher:	And what sound do you think that makes?
Child 2:	"yyy..." SAY
Software:	S – A – Y = SAY (say, I say, what made the chicken cross the road..."
Child 2:	(smiles) SAY is a word but not the star word.
Researcher:	That's right. I wonder what would happen if we used the other letters. (repeats the first two letters for the children S A ?)
Child 1:	"tttt.."
Software:	S – A – T = SAT (Now we have all sat down, how about a nice cup of tea)
Child 2:	S – A – T = SAT (putting the sounds together to make a word)

Researcher:	Well done. Another word. I wonder if SAT can help the party going?
Child 2:	No, not yet.
Researcher:	So, I wonder what other sounds these letters make
Child 2:	(points to the screen and says “D”) We haven’t used “D” yet.
Researcher:	That is right. S A ?
Child 2:	S – A – D = SAD (putting the sounds together to make a word)
Software:	S – A – D = SAD (We need someone to get this party going. Someone exciting. We need X. The exciting X. We are not alpha mortals. Lets fix this).
Child 1:	S – A –D = SAD (putting the sounds together to make a word)
Software:	(The music starts. This time the children get up to start dancing. I encourage it. They are so happy. They are dancing to the letter X and joining in with the party).
Researcher:	You made a star word. So, in order for the *Alphablocks* to have a super fun party, they had to make the word “D” to make the word SAD and then invite Alphablock X to come and join the party. Fantastic. (Re-capping)
Software:	(Ends)
Researcher:	Well done children and what super dancing. Well, children, this is the end of our little session today. Thank you so much for taking part. It was great fun. I hope you enjoyed yourselves too.
Child 1:	I like it. I am going to tell my mummy.
Child 2:	Can we do it again?
Researcher:	Not now, child 2. Some of the other children are waiting but you can always come back to it later on. Is that ok?
Child 2:	Yes.

Notes: Re-capping/Adult Interaction/Software Prompting (narrative)

It has become very visible that if the adult is not there to prompt for the sound of the letter, then the children are quite happy to let it go and just click and play, without much learning necessarily happening. However, as I am there making sure that they repeat the sounds (in most cases), it is working quite well. The software narrative, story and songs play a very big role in keeping the children involved. What is it? The Narrative/the images/the songs?

The children were also observed to get up and sing and dance in the session. This is not something i prompted them to do. They copied this from the story.

It is worth again mentioning that it may necessary to measure the child’s well-being in all cases

(and possibly involvement as a measure of success)?

End 19 minutes 20 seconds

Observation Notes:

This study took place in the childminders home. For stage 2, it was very important that the technical infrastructure was in place and there was a robust internet connection. There was also the use of a child friendly mouse which proved to be much easier for this study. As before, the study focused on introducing the alphabets first and then getting the children to repeat the sounds.

Both the children were quite confident in this session. Children include a boy and a girl. They have used *Alphablocks* in the past but often alone. They have also watched it on TV with their parents.

Overall, this session went pretty well. The children became very excited and wanted to do more. There are very good instances of modelling and where I was tuning in to the children's interests. The children were so happy, smiling and sometimes jumping up and down. To the extent, that one child started to dance away, singing along with the *Alphablocks*.

There are also instances of open questioning that work very well and instances of other pedagogical strategies that have helped move along the direction of the dialogue. These are working well.

It will be useful to see if we can measure well-being and involvement of the child. How content is the child? How do we know the child is actually involved?

Appendix 16 - Stage 3: Follow Up Interviews

(Extracts from the interview questions with the three preschools)

First, thank you for taking the time to do my research with me.

Just a few reflective questions:

1) **Having conducted some *Alphablocks* sessions with the young children, what did you think of this experience?**

   Preschool 1: I really liked it. It's not something we have done before although we have used the computer and the Internet in the past. I think I used it more with the intention to get the children familiar with what needs to be done on the computer so more of mouse control, clicking on buttons and just letting them play on it. But, I really like what you are doing here. It's like killing two birds with one stone – getting them to learn and become familiar with the computer. I think I will definitely introduce it again – maybe tomorrow.

   Preschool 2: I did enjoy this research. I have never seen *Alphablocks* before and it was very interesting. It was really amazing how someone could come up with such an interesting and playful way to introduce the alphabets to young children. I think I learned a lot from it as well.

   Preschool 3: We have used *Alphablocks* in the past and my children really like it. In fact, the little girl has probably learned most of her alphabets and the sounds in this way. I find using the Internet, and as you say, new learning websites very good for some of the children, particularly because they do not get bored and want to continue with it. Also, it takes the onuses off me, as the practitioner. I know the children enjoyed this experience and it was a bit different not because you were doing the 'talking' but I learned that you did different sorts of things: you asked more questions about the program and I really liked the fact that you tried to associate a particular alphablock with a particular event in her life. It got her them speak more. This is something I am going to try to keep in mind when I work with them in the future.

2) **Do you think the children enjoyed themselves?**

   Preschool 1: Yes, the children enjoyed the experience. It's very educational and the children would like to see it again. It really helps with the computer skills.

   Preschool 2: Yes, I think the children really did enjoy themselves and you could see this because they were so engrossed in what they were doing and were smiling throughout the whole session. It was long concentration and good 20 minute span. It was really good to see this. I don't always get this kind of response. I really have to work at it and it was so easy with using *Alphablocks*. It's amazing.

   Preschool 3: Yes, I think it is very good. They responded really well with what they were seeing. Really liked the instructions you were giving. Would definitely like to use it again and try to copy what you were doing.

3) Discussion on pedagogic strategies (their current practices and the research approach). What are your thoughts about the types of pedagogical practices applied in this study and what you do as well?

Preschool 1: Well, I have children of all ages here in my setting. My older child is happy to use it himself and for the little children, they tend to learn off the older children and become quite independent with it. But often, I sit with the younger ones and help them navigate through the pages. Also, as they are so small, I have to still show them how to use the mouse, the keyboard etc. As you can see, they pick it up so quickly. The children really like looking at CBeebies on the Internet. They like to make the connection between the TV at home and watching the same thing on the computer in my home...and we get some really interesting conversations out of it.

Preschool 2: We don't really use the computer very much. Especially with the young children but I know they want to do it again. After you left, they talked about it the whole day and the next time they came back to me, they asked to use it again. I need to spend some time thinking about how I am going to use it because it is not something that I do. But, please don't get me wrong, I think I am ready to start this as it just looks so much more exciting and less difficult.

Preschool 3: It was particularly interesting how you continued with one of the children when I would have given up and let her carry on with something else.

4) Researcher-led facilitation and child-led exploration – what do you make of these two types of learning settings?

Preschool 1: I certainly don't do so much practitioner-led work as you did. I think we tend to get onto the CBeebies website, choose our program and watch it. Then we do some games with it. Then I leave the children to continue on their own. Each child has a turn on the laptop if they want to. I think you had more of a goal in mind to get them to try to learn something out of it and this is something I can think about and use when I next get them onto CBeebies.

Preschool 2: I think it's good but it's a lot of work to put into it. I can see that you have really studied the software and thought of the questions before hand. I also don't really know how you are preparing your questions especially when you don't know the children. When I am working with them, I feel like I take over and do it for them – maybe I am very hands on so I much prefer that the children learn to explore and figure it out for themselves and when they get stuck, I am here to help them.

Preschool 3: Well, we have children of all ages so usually the younger ones don't get much access to the computer (by younger I mean 2 years and above), but the older children, preschoolers and above work together to make it happen. I really believe in peer learning where the older children teach the younger children. You see, that is how it was in the past. I don't remember my mother or father sitting down with me and teaching or telling me what to do all the time. So of course, I get it started for them, show them what it is all about and then just let them get on with it. I am a firm believer of exploring and learning from it.

Preschool 3 (supporting child-minder): I disagree a bit. Sorry, I also believe in exploring and learning from it but I think it depends on the child and the home environment. I don't really know much about computers and the Internet but I feel like I am learning with my children and I find it very useful to go through it together, step by step, and talk through it all. I usually tend to familiarise myself with the program the night before I actually show it to my children. And even then, I get stuck when we are working on it the next day. I think this says something about novice users and the skills we have. But, on the other hand, if we have people like you to come in and show us what you do, so quite 'naturally', it gives us a stepping stone to begin with. I like what you did today and can pick up a few bits when I work next with my children.

If you can, would you walk us through, in more detail, what exactly you were doing and why you were doing it that way, maybe later on?

Researcher: Yes, of course.

5) What did you make of the Internet and the use of CBeebies *Alphablocks*:

Preschool 1: Really helps with making the sounds and forming the words. It's another way of encouraging the children to learn their alphabets and what's really good is that it is so playful which is very important for our children under 5 years of age. It's full of life, it is animated, it's colourful and its made for the young children. So, I really like it and as it stands the *Letters and Sounds* is really quite bland for our liking so I am always trying to invent new way and using *Alphablocks* would fit in quite nicely.

I will definitely encourage it more in my setting.

I don't really have any concerns because I have all my parental controls in place and I am always around watching in one way or another.

Preschool 2: There were some really good things about using *Alphablocks*. The children were learning about their *Alphablocks* through so many different ways. It was visual, audio and they were also able to be hands on at the same time. I think that's really great. It keeps them motivated. It's normally so one way where the practitioner is there making the sounds and the children are repeating but this consisted of everything. It was like 3D.

I don't think I have any concerns with using the Internet. I don't think there are really any negative comments. Which is a very good thing......wow.

Preschool 3: I think one of my concerns is that I am very worried about child locks on the computer. I am not so computer literate and so I really need to understand how to work the parent locks. But, it doesn't seem to be such a big concern as I make it out to be and I am sure some of the children parents will just help me do it.

6) Any other comments?

Pre-School 2: The whole experience of using *Alphablocks* is so stimulating. It's so much better than opening a book and reading from it and just doing worksheets. I find it is so much more hands-on. They (the children) were using sight, they were using hearing, and they were using their minds. I think it was stimulating more than one sense for them.

I think it would be a very good idea to push this forward in learning environments with the early years or even primary years. I think the schools would benefit from this and the children would also benefit from this too. As long as it is implemented in the right way, taking into consideration the time, the teaching, the children's best interest, I can only see good things coming out of this.

Appendix 17 – Stage 4: Preschool 1 Experiment

Group 1:

Participants include:

Child 1 – 4 year old boy and English as second language. Prior to study, I was informed that "he pretends to know more than he is really does". So, would be interesting to find out what he really knows and how much he can take part.

Child 2 – 4 year old boy.

Practitioner – Preschool Practitioner

Observer – Researcher

This is an EYFS nursery preschool environment. The researcher first took on the role as the facilitator, demonstrated two sessions, shared findings of appropriate pedagogic practices and techniques to adopt, and encouraged the practitioners to conduct the sessions with the children. The researcher took on more of an observer role (sometimes working as an assistant alongside the practitioner, when required).

There was good technical infrastructure in place with a strong modem connection. In this particular instance, the preschool had a touch screen computer. It would seem that younger children, in the age range of 2-3 years of age, use the touch screen option more and the older children between the ages of 3-5 prefer to use a mouse. In this session, a mouse was used with the children.

....

Introduction : 1-2 minutes

Hello Boys. Today we will be looking at *Alphablocks* on the screen. Have either of you seen *Alphablocks* before – I know not here at the preschool – but at home with your parents?

Child 1 – Yes, I know...ummm...

Child 2 – (Quiet with finger in his mouth)

Practitioner – Ok. Have a look at the screen. What do you think it could be about?

Child 1 – The letters of Alphabets

Practitioner – That's right. Well done

(Child 2 – Still quiet but starting to look interested.)

Practitioner – Ok, so today, we will be looking at *Alphablocks*. Let's have a look at what it is....

(Practitioner looks at notes and looks at researcher for re-assurance. Researcher nods. Practitioner reads from notes...).

Practitioner – Well, *Alphablocks* is a program on Cbeebies and it works with our letters and the sounds of our alphabets. *Alphablocks* are about some blocks that fall from the sky onto a big, white world. They don't know where they are but they do know that they each make a special sound and when they join hands, they can actually make words. They are here to share their sounds.

Do you want to hear what they have to say and join them?

Child 1 – Yes

Child 2 – (Still quiet)

Practitioner – OK. Let's begin. Let's see where we click...hmmm...(looks at the researcher – researcher points to the screen). Ah, OK. (Clicks on the *Alphablocks* Introductory episode)

Software – Narrative Begins

....

3 – 6 Minutes

(Practitioner was informed to allow for software narrative to not be interrupted but to work along with the narrative if and when the child responds)

(The children watched the Introductory narrative with no interaction with the practitioner)

Practitioner – So, did you enjoy watching the *Alphablocks*?

Child 1 – yes, watch again?

Child 2 – yes, can we watch it?

Practitioner – Yes, we can. But this time we can do something different. How about we follow the *Alphablocks* and repeat the sounds with them.

Child 1 – OK.

Child 2 – (Quiet)

Practitioner – Let's have fun with the *Alphablocks* and make the same sounds as them. What do you think?

Child 1 – Yes

(Child 2 – Nods enthusiastically.)

………………….

7 - 9 minutes (Repeat of Introductory episode – introducing Modelling)

Software – "aaa...aaa..."

Practitioner – What sound is that children?

Child 1 – Quiet

Child 2 – Quiet

Software – “bbbb...bbbb....bbbb..”

Practitioner – Come on, what sound does ‘B’ make?

Child 1 – Quiet

Child 2 – Quiet

Software – “kkk....kkkk (for C)”

Child 1 – Quiet (staring at the screen)

Child 2 – (looking intently at the screen)

(Practitioner looks at Researcher. Researcher indicates for the Practitioner to *model* the sound)

Practitioner – “ddd....dddd....” Now you repeat.

Child 1 – “dddd...ddd”

Child 2 – Quiet

Practitioner – That’s great. What about the next one. Let’s see what sound we get.

Software – “eeee.....eeee....”

Practitioner – Lets try this one together. “eeee....eeee”

Child 1: “eee...eeee”

Child 2: “ee..”

Practitioner – That’s great.

Software: “ffff...fff”

Practitioner – “fff...”

Child 1 – “fff....fff...”

Child 2: “ffff....fff...”

Software: “ggg...gggg”

Practitioner: (laughs) “ggg..ggg... look at the green grass grow”

Child 1: “gggg.....grass”

Child 2: “ggg....”

Practitioner: What do you think comes next?

Software: “hhh...”

Child 1: “hhhh....hhhh....”

Practitioner: That’s super. And next again? Child 2?

Software: “iiii....iiii...”

Child 2: “iii”

Practitioner: That’s great. Let’s do it together now.

(And so on..........until the end of the Introductory episode)

11 – 12 minutes

Practitioner - Well that was fun. Did you enjoy it?

Child 1 – Yes.

Child 2 – Yes. Again.

Practitioner – Again? (Looks at researcher)

Child 1 – (Looks around the classroom – looking slightly distracted)

Child 2 – Yes.

(Researcher indicates to play the game – challenge the children a bit)

Practitioner – Well, how about if we play a game instead.

Child 1 – Game....Yes.

Child 2 – OK

Practitioner – Great. We are going to play an *Alphablocks* game. (looks down at notes). We will first listen to a story and then play a game with the *Alphablocks*. How do you feel about that?

Child 1 – Yes, play a game (*pulls his chair closer to the screen)*.

Child 2 – OK (*watching intently and then puts fingers in his mouth. Eyes opening wide at the game play screen)*

………………..

Game Time

14 – 18 minutes

(Practitioner clicks on Game 1)

Software – Narrative Begins

Software – “.....T is stuck on the mountain. Vowels to the rescue A, E, I, O, U. Vowel team knows what to do”

Practitioner – Ok, let me show the first example so you know what to do. We are going to rescue the team. This is how you do it (chooses letter ‘A’ and drags it to B and G)

Software – B A G = BAG

Practitioner: Oh, a BAG can’t really help. Now, you have a turn. (She looks at child 1).

Child 1 – I don’t know.

Practitioner: You don’t know what letter to use?

Child 1 – I don’t understand.

Practitioner – Oh (looks at researcher)

Researcher – Why don’t we *re-cap* practitioner.

Practitioner – Oh Ok. The letter “T” is stuck on the mountain. The vowels can rescue ‘T’ but in order for that to happen, we have to help the *Alphablocks* make words. I made the first word by using A and made BAG. But a BAG cannot rescue ‘T’ from the mountain. So, now your turn.

Child 1 – OK. My turn.

Practitioner – OK. Right you need to put her hand over here, go up to the letter and drag the letter over between B and G.

Child 1 – I know (drags the letter to the space)

(Researcher reminds practitioner to ask the sound)

Practitioner – I wonder what the sound is for that letter?

Child 1 – Ummm....dunno

Practitioner – Maybe its “oohhh...oohhh” What do you think?

Child 1 – “ooohhh...oohhh..”

Practitioner – Yup, that’s right. Well done.

Software – B O G = BOG

Child 1 – I made BOG. What does BOG mean?

Practitioner – It is like a swampy lake. I wonder if BOG can help ‘T’ off the mountain?

Child 1 – No.

Child 2 – No.

Practitioner – Well, child 2, it’s now your turn.

Child 2 – I want that letter (and points to the screen)

Practitioner – Is it the “E” – Ehhh..

Child 2 – Yes.

Practitioner – Can you make that sound too Child 2.

Child 2 – “eeehhh....eeehhh” (and drags the letter ‘E’ to B and G)

Software – B E G = BEG Please..Please...*Alphablocks* begging.

Practitioner – Lets have a look. E makes “eh”. Now if we drag it up, we get “B” “E” “G” – makes BEG. Do you think the word “BEG” can help the Alphablock “T” that is stuck in the mountain?

Practitioner – So, now what letter do you think we need to use to help ‘T’ off the mountain. What have we used so far? “O” “E” and “A” – that three vowels – brilliant. What do you think we have left to use?

Child 1 – I know. Let’s try “I”.

Child 1 – Approaching the mouse and drags the letter “I” making the word “B” “I” “G”

Software – This is brilliant. We are now BIG. We can now help T off the Mountain.

Practitioner – Wow! So what you do you think happened child 1?

Child 1 – The *Alphablocks* have become BIG and are carrying T off the mountain. They are SO BIG. I helped the Alphablock.

Practitioner – Yes, that is correct. You made B I G = BIG

Child 2 – You did it.

Practitioner – Well done children

Child 1 – can we do more?

Practitioner – Not today. Maybe after lunch?

Child 1 – Yes.

Child 2 – Ok

Session ends at 18 minutes 32 seconds

Notes:

Pedagogy Practices with Practitioner

The practitioner used the various techniques outlined in stage 2 findings such as, ‘working alongside the software narrative/images/sounds, use of Open Questions, Prompting and Modelling.’ In some instances, the practitioner needed guidance and re-assurance from the researcher. But none of the interactions between the practitioner and researcher were intrusive to the design of the session.

It would seem that the appropriate pedagogical strategies, including the SST techniques, served to be useful in engaging and motivating the children along the way. Where there was little genuine interest and adult involvement early on, this becomes more apparent as the session carried on. It would seem that the practitioner, herself, was becoming more involved in the learning between her and the child.

This teaching experiment is one of the earlier ones conducted by the practitioner with the children. Further five followed in which the practitioner's style of 'interview' and 'instruction' was further refined and by the end of the session, she was using all techniques of the outlined appropriate pedagogical strategies.

Laever's Scales of Involvement and Well-Being

Child 1 – It would seem that Child 1, with English as his second language, is familiar with *Alphablocks*. He has seen it before on TV with his parents. To start off, he was both excited and nervous but seemed like a confident child. He was very good at turn taking and understood all that was being instructed to him by both the practitioner.

Child 1 found this fun and wanted to play it again. Throughout the session, he seemed to be engaged and take part in repeating the sounds and playing the game. Child 1 was observed every two minutes and measured along Laever's Scale. He was found to be smiling, watching the screen intently and seemed to be comfortable. Only once did he look away in which the practitioner initiated game play to re-engage him into the activity. He accepted this easily. He was at ease whilst using the computer and was able to use the mouse comfortably and confidently.

Overall, I would say that his wellbeing and involvement score, on average, is exceptionally high (5).This is on the top of the range. More details of this score can be found in Appendix 24.

Child 2 – Where initially it would have seemed that Child 2 was quite an extrovert and keen to take part, his actions and gestures (of fingers in his mouth) would seem otherwise. He had never seen *Alphablocks* so to him it was new software with new functionality. He preferred to listen to the storyline twice before taking any action.

Child 2 came across quite shy but actually he was only taking it all in. His later actions and emotions were hardly negative. Like child 1, he was scanned every two minutes and in each case, he came across comfortable and happy with the environment. It would seem that his attention was quite focused throughout the entire session as he hardly ever looked away in the full 20 minutes.

In the latter part of the session where the practitioner had more active involvement and took genuine interest, it would seem that child 2 began to interact further more. He did not cry, seem anxious or leave the session at all.

Overall, I would say that his well-being and involvement score, on average, is high (4). More details of this score can be found in Appendix 24.

Appendix 18 – Stage 4: Preschool 2 Experiment

Child 1 – 3 year old boy

Child 2 – 3 year old boy.

Practioner – Preschool Practitioner

Observer - Researcher

"…………..

1-4 minutes

Practitioner – Do you know what we will be doing today?

(Child 1 – Quiet)

Child 2 – yes.

Practitioner – Then, what do you think we are going to be doing today?

Child 2 – Lettr's…

Practitioner – That's right. Well done. Have you ever seen *Alphablocks* before?

Child 2 – Oh yes….*(fully animated).*

Child 1 – yes *(imitating child 1)*

Practitioner – Great. Today we will have a look at *Alphablocks*. They are like little letters that fall down from the sky and make special sounds. Would you like to have a listen to their sounds?

Child 1 – Yes (waiting for it to start)

Child 2 – Yes (waiting for it to start….staring at the screen….)

Practitioner – Ok. Well let's have a listen first and if you wish to repeat the sounds with them, then do so but if you just want to have a look and listen to what they say, then that is fine too. Ok?

Child 1- Nods

Child 2 – Nods (enthusiastically)

…………..

(Practitioner begins software)

Software – "aaaahhhhh...." "bbb...bbb...bbbb"

Child 1 – "Bbbb….Bb…." – "Bbb…." (clapping his hands in happiness).

Child 2 – "Ddd….Dd….Ddd…" – like drums. (Clapping and laughing loudly).

Practitioner – (Picking up on the children's enthusiasm – Showing Genuine Interest) And what do you think the next one is?

Child 1 and 2 – "Eehhh…" for E.

Practitioner – Well done.

Child 2 – "Jjjj….Jjj…." this is my favourite one. J for Jimmy. "Looks, its flying….."

(Child 1 – Very happy and smiling…."lll….for my mummy")

Child 2 – "OOOO…is in Oliver's name).

Child 1 – "XXX….for superhero"

Practitioner – It seems like the both of you have done this before. Have you seen this at home?

Child 1 – Yes, with my mummy

Child 2 – I have seen it on TV

Practitioner – Ah, so that is why you know the sounds and the actions with it.

Child 1 – Yes (smiles)

Child 2 – (laughs)

Practitioner – Well, should we go ahead and play a game then?

Child 1 – Yes

Child 2 – I like the games.

………………….

4 – 6 minutes

Practitioner – Ok, now to play the game, we first have to listen to the *Alphablocks* and then we can tune in with them and help them. Ok?

Child 1 – (nods)

Child 2 – (nods)

(Practitioner begins software – *Alphablocks* Game 1 narrative starts)

(Children are watching the short story. They are repeating the sounds along with the Alphablocks and making sense of what they are seeing. Child 2 repeats the vowels with the Alphablocks. Eyes open wide at suspense – where T is stuck on top of the mountain.)

Practitioner – Are you ready to help?

Child 1 – FIRE UP.

7 – 10 minutes

Practitioner – Alright, do you know what to do?

Child 1 – Not sure

Practitioner – Ok, let me show you what to do first.

Practitioner – I am going to drag a letter up to the red circle and see what word we make. What have I made? (Prompting)

Child 1 – dunno

Child 2 – dunno.

Practitioner – What sound does this letter make? (Probing)

Child 2 – (shrugs shoulders)

Practitioner - "Aaa...Aa…" (modelling)

Child 1 and 2 – repeats "Aaa…Aaa.."

Software - B A G = BAG

Practitioner – I wonder whether a bag can help them? (working alongside software/Open Questioning)

(Child 1 and 2 nod but soon realise through the actions of the Alphablocks that "a bag" cannot rescue "T" off the mountain).

Child 2 – No way!

Child 1 – A bag cannot help them!

Practitioner – Ok, Liam, what letter would you like to put up there (Showing Genuine Interest)?

Child 1 – FIRE UP!

Practitioner – Right then, what letter would you like to drag up there? (Repeating and Reciprocating)

Child 1 – "the orange one"

Practitioner – Do you know what sound the orange Alphablock can make (Probing)?

Child 1 – dunno

Practitioner – Could it be "uuuu" (prompting)

Child 2 - Yes

Software – “B” “U” “G” – BUG. Brilliant.

Practitioner – So, do you think a BUG can save T from the top of the mountain? (Open Questioning)

(Child 1 – Nods YES)

(Child 2 – Thinking about it.)

Practitioner – Oh dear, the BUG flew away….(Showing Genuine Interest and working alongside Software)

Child 1 – Oh dear..

Child 2 – My turn now.

Child 2 – “OOOO”…”OOOO”

Practitioner – Well done. That is correct.

Software – B O G = BOG

Practitioner and Child 1 + 2 – “B O G” – You made BOG.

Child 2 – But, a BOG cannot help T. Let’s try another one. (Approaches the screen).

Child 1 – “E”…”BEG”.

Practitioner – I wonder if Child 1 knows the sound of “E” (Probing)

Child 1 – I know. Its “eeeehhhh”

Practitioner – Super. That is great.

Software – B E G = BEG please please...please

Practitioner – Can “BEG” help T?

Child 1 – No. I know…”I” makes “BIG”.

Child 2 – OK, let’s use “I” to make BIG.

Software – B I G = BIG. Now we are BIG to rescue T from the mountain. Well done, you did it.

Practitioner – What just happened?

Child 2 – the *Alphablocks* have become BIG. They carry T down (starts clapping his hand).

Practitioner – That is correct. You both have helped rescue T from the mountain. What super sounds you have made. Well Done.

....

10-20 minutes

Practitioner – As the pair of you have been so good, would you like to have a GO at another game. A slightly harder one but still lots of fun?

Child 1 – Yes

Child 2 – Oh yes (jumps up and down).

(Practitioner begins *Alphablocks* game 2)

(Child 1 and 2 – concentrating on the screen)

Child 2 – laughs out loudly.

Child 1 - whoa.

(End of story for game. The practitioner is waiting for children to take initiative but they are watching and waiting for the practitioner to take lead)

Practitioner – Alright then, who is going to go first?

Child 2 – (Drags the letter onto the screen)

Practitioner – And what sound do you think the Alphablock makes? (Prompting)

Child 2 – "aaaa...." "aaaa..."

Practitioner – That is good.

Software – S A A = SAA

Practitioner – SAA. I wonder what that could mean. (Open Questioning and Reciprocation)

Child 2 – It is not a word.

Practitioner – I think you are right there child 2.

Child 2 - Now, it's your turn (to child 1).

Child 1 – tries but is unable to use the touch screen to drag the letter above (not his fault, the screen is sticky).

Child 2 – try again L. (Peer learning taking place)

Child 1 – I did it.

Practitioner – That is really good. What sound do you think the Alphablock makes? (Probing)

Computer – "S A T" = SAT. "Let's all sit down for a nice cup of tea"

Child 2 – repeats SAT.

Child 1 – repeats “aaaahhh..”

Child 1 – watching and observing what will happen next.

Child 2 – we already did that one. But that is good, now we know. Ok, my turn.

Practitioner – “repeats the instructions to hear the sounds of the letters”

Child 2 – “wwww...”

Child 1 and 2 – “S A W” saw...saw....

Practitioner – Yes, that is SAW...SAW (repetition) Well done.

Child 2 – laughs out loud.

Child 1 - takes his turn.

Child 1 – takes the letter D and drags it upwards. No problem with sticky screen anymore.

Practitioner – I didn’t hear the sound?! Did you child 2? (Prompting and Probing)

Child 1 – “dddd....”

Practitioner – Well done.

Child 2 – “S A D” makes SAD.

Practitioner – Great. But what will happen now. The *Alphablocks* are so SAD

Child 1 – SAD.

Software – “We need to get rid of SAD. I know let us get X, the superhero. He will make us happy”

Both children are smiling and enjoying watching *Alphablocks*. Child 2 loves X and gets very excited. Child 1 is concentrating very hard.

The song and dance start. Child 2 starts dancing and laughing.

Looking for re-assurance from child 1 but child 1 is still concentrating on the screen.

End of Game 2.

....

16 minutes

Practitioner – Well that was interesting. Do any of you know what happened?

Child 1 – They became so SAD and X saved the day.

Child 2 – Superhero X made us sing and dance and now we are happy.

Practitioner – That is right.

Child 2 – decides to start clicking on icons on the screen and not sure what to do next.

Child 2 to practitioner – I want to play another game.

Practitioner – Ok. To get to another game, we have to choose one of these with a little star. Do you want to repeat the same game or play another game?

Child 1 - the band game again!

Child 2 - Yes. Clapping his hands.

Practitioner – OK. Click on this one then.

Child 1 – rubbing his eyes and yawning (the game is getting harder). Nearly 16 minutes.

Child 2 – still very engaged.

Child 2 – makes the word “B A B”

Software - B A B = BAB

Practitioner – I wonder what BAB means to the *Alphablocks*.

Child 2 – not sure, but it sounds nice.

Practitioner – It sure does. But I do not think BAB is a word

Child 1 – “jjjjj.....” J A B

Software – JAB

(Child 1 starts moving to the beat of the music).

Child 2 –Can I have a turn?

Practitioner – yes you can.

Child 1 – I will help you.

Child 2 – I know, the pirate one....rrrrr..

Software – J A R

Practitioner – What do you think? Is that a word?

Child 2 – I don’t think so...lets try..L?

Child 1 – “lllll” – L

Software – L A B makes LAB.

Child 2 – what’s a lab?

Practitioner – It is a place where scientist do their experiments.

Child 2 – OH, ok.

Child 2 – Let's try "ffff...."

Software - F A B

Child 2 – FAB!

More dancing and singing. Child 2 starts dancing and moving around. Child 1 is still sitting and concentrating.

Practitioner – You did it. Well done.

Child 1 – I did IT!

End session at 20 minutes 40 seconds.

Appendix 19 – Stage 4: Preschool 3 Experiment

Group 1:

Participants include:

Child 1 – 4 year old boy

Child 2 – nearly 4 years old girl

4 year old boy.

Practitioner – Preschool Practitioner

Observer – Researcher

This is an EYFS nursery preschool environment. The researcher first took on the role as the facilitator, demonstrated two sessions, shared findings of appropriate pedagogical strategies, including SST techniques to adopt, and encouraged the practitioner to conduct the sessions with the children. The researcher took on more of an observer role (sometimes working as an assistant alongside the practitioner).

There was good technical infrastructure in place with a strong modem connection. This preschool, as well, had a touch screen computer. It would seem that younger children, in the age range of 2-3 years of age, use the touch screen option more and the older children between the ages of 3-5 prefer to use a mouse. In this session, a mouse was also used with the children.

....

Introduction - 1 minute 24 seconds

Practitioner: Hello Child 1 and Child 2. Like the lady here has said today, we will be looking at Alphablocks. This is not something we see everyday although I think some of you have used it at home. Is that right?

Child 1 – I ... I ...I use it at home with my sister....(looks at his hands) ... and my mum plays it at home with me.

Child 2 – My name is Child 2 and I also use it at home.

Child 1 – We are both 4 years old

Child 2 – I am nearly 4. Not yet.

Practitioner: That’s right. You both are such big children and today you are going to do something that only older children can do here at the preschool. Would you like to see what it is?

Child 1 – yes

Child 2 – (nods in agreement)

Practitioner- Alright, today we are looking at *Alphablocks*. (looks at notes) *Alphablocks* is a website on the Internet that shows us letters and sounds in a creative, magical way. It is about blocks that fall from the sky onto a big white world and they find that each one of them can make a special sound. They are here to share sounds.

Child 1 – (Smiles)

Child 2 – (Smiles)

Practitioner – So, what we are going to do is I want you to have a look at the screen with me. Let's listen to the *Alphablocks* and see what sounds they make and if you want you can join in with them. If not, have a look for now, listen and we can repeat them together, at the next time. (Makes a point to works alongside the software narrative)

Are you happy with this?
(Important: honing in on children's well-being)

Child 1 – (Nods and gives a big smile)

Child 2 – (Smiling and nods away)

Practitioner – Ok. Great Stuff.

....

1 minute 30 seconds

Software begins

Child 2 – aaaa....aaaa

Practitioner – aaa... (Reciprocating the sound for the child)

Child 1 – bbbb....bbbb...

Practitioner – That is correct. The letter B makes bbbbb....bbbbb

Child 2 – kkkkk....kkkkk...

Child 1 – kkkk...kkkkk....

Software – "kkkk...(for C)...Kkkkk..."

Practitioner – (nods in agreement) (important – working alongside narrative again – not interrupting the narrative).

Practitioner – What is that a picture of? (Practitioner using the image of the alphablock)

Child 1 – Kick a ball.........

Practitioner – Nods in agreement

Practitioner – How about the next one? (Probing and tuning in to child's initiative in producing sounds)

Child 1 – looks at screen...(thinking)

Software – dddd.....dddd

Child 1 and 2 – dddd....dddd...

Child 1 - Just like a drum...dddd...drum.

Practitioner – That is right. Well done. Just like the sound of a drum..ddd...ddd. (Note: Practitioner uses the sound of dddd to represent the image of a drum)

Software – "eee....eeee"

Software – "ffff...fff"

Child 2 – Like Fraser.

Practitioner – Wow! Fraser. That's F like in Fraser. We must tell Fraser when we are done here (Practitioner showing Genuine Interest)

Sofware – kkkkk...kkkk

Child 1 – copies the action of Alphablock K – (like kicking a ball)

Practitioner – You have seen this before.

Child 1 – Yes, I am Alphablock K. I can kick a ball too.

Practitioner – (smiling) now, don't forget that. Try to remember the Alphablock kicking the ball (Note: Practitioner used the representation of the image of the alphablock to encourage child to remember the letter)

Software – "mmm....mmmm..."

Child 2 – Mummy.

Practitioner – Yes, that is like mmm...in mummy!

Software – "ppp....pppp"

Practitioner – I wonder what letter that could be? (Open questioning)

Child 2 – P

Practitioner – That is correct. Super.

Child 1 – ppp...ppp...ppp

Practitioner – And do either of you know words that begin with P? (Taking it one stage higher – she is after all the practitioner and knows the level of knowledge each child has)

Child 1 – I know. Piggy.

Practitioner – That is great.

Software – “tttt....tttt”

Child 2 – ttt....ttt...teapot...that is T

Practitioner – Well done. Good thinking.

Child 2 – and W for willow

Practitioner - That is correct.

Child 1 – (still animated and copying the *Alphablocks* but throughout the session making the sounds with the Practitioner, software and Child 2).

Child 2 – zzz.....zzzz ... I don’t go to sleep. I come to crèche every morning and I cannot sleep here.

Practitioner – That is interesting. But I am sure you can make some great zzz...zzz....sound when you go to bed tonight. Do you think you will be able to remember the sound?

Child 2 – zzzzz....zzzzz.... (and pretending to sleep)

lots of laughter

....

5 minutes 10 seconds

Practitioner - Well that was fun, isn’t it?

Child 1 – Nods

Child 2 – Nods

Practitioner – And you did some really good sounds with the *Alphablocks*. Now, I wonder whether you would like to do it again and this time, we can take turns with each other. Like a mini game with the *Alphablocks*. Would you like to take part in that with me?

Child 1 – Yes. Let us watch again.

Child 2 – Nods (Listening very intently)

Practitioner – And tell you what, I wonder if you can remember which is your favourite one at the end of it. Do you think you will be able to remember some of the sounds and the letters attached to them?

Child 1 – Yes, I can.

Child 2 – Yes, I can do that too.

Practitioner – OK. Then let us watch it again.

Begins Introductory episode again.

....

6 minutes 10 seconds

Child 2 – (looking outside the window watching the children play...) Look, there are other children there.

Practitioner – yes, they are and they will soon have their turn next.

Software – “...have fun with the *Alphablocks*....”

Practitioner – Right, so whose turn is it first, child 1?

Child 1 – Yes.

Software – “aaa....”

Child 1 – aaaa....aaaa

Child 2 – bbbb....bbbbb... like a Bunny Rabbit

Practitioner – That is correct.

Software – “kkkk....dddd.....eeee...”

Practitioner – Hmm...I think child 1 missed his turn. Why don’t you go next?

Software – “fff....fff”

Child 1 – “ffff....fff”

Practitioner – and child 2, I wonder what will come next? (Prompting)

Child 2 – “ggg....gggg...”

Practitioner – Well done.

Software – “gg....gggg....”

Practitioner – And next? (Probing)

Child 1 – hhhh..hhhh

Child 2 – iiii....iiii....

Practitioner – And that one, would you know?

Child 1 – quiet

Child 2 – jjjjj...jjjjj....

Software - jjjj....jjjjj...

Practitioner – (Nods in agreement – working alongside the software)

And so on until M.....

Practitioner – What about the next one? Who knows?

Child 1 – Quiet

Child 2 – Quiet

Practitioner – Alright, what does the Alphablock look like? (Tuning in and showing Genuine Interest to help the child find the answer for him/herself)

Child 2 – MILK

Practitioner – So that would be (putting lips together to make the sound M) (Prompting)

Child 2 – Mmmmmm.....like mmmmmm in milk. I like Milk.

Practitioner – That is correct. Super. I also like Milk.

Software – oooo...oooo

Practitioner – Ooooo...ooo (modelling)

Child 1 – oooo...

Child 2 – oooo....

Software – “ppp....”

Child 2 – Like peas....and pots..and pans.

Practitioner – Wow. You really do know your words so well.

Child 2 – It’s easy. You can see the shape and colour of the alphablock (this says something very important about the visual images)

Sofware – “qqquuuuu..qqquuu..”

Child 1 – look they are friends. They are together.

Practitioner – Yes, that is correct. Q never leaves her friend alone. She is always seen with U which makes qqqquuuu... Good observation Child 1 (Tuning in)

Child 2 – ppp....pppp Pirates

Child 1 – I am like Alphablock Pirate. Look at me.

Practitioner – Now you can pretend to be Alphablock P!

Child 2 – Violet....

Software – “vvv.v...vvv...”

Practitioner – Super. Well done.

 (Child 2 looks out of the window at the other children playing. The practitioner quickly introduces game play to help keep her engaged). The child wishes to leave and play in the garden as the sun is shining and all the other children are outside. The practitioner let's her go.

Child 2 is still with the practitioner.

....

8 minutes 18 seconds

Child 2 – Yes, game game.

Practitioner – Yes, it's time to play the game.

Child 1 – I don't know how to....

Practitioner – Don't worry, I will show you and I am also here to help you when you need me.

(The practitioner plays a short game with child 2. Then child 2 asks if she can go out and play in the garden too).

....

End of session at 13 minutes 43 seconds.

Appendix 20 – Stage 4: Preschool 1 Follow Up Interview

Firstly, thank you so much for taking the time to conduct these studies with me. I have only a few after questions if that is OK with you.

Sure. Ok.

Q) Having used some the outlined appropriate pedagogy and pedagogical strategies for phoneme recognition with young children, what did you think of the experience?

A) You know I really appreciate it. Our children already use *Alphablocks* and I told you that in the past I have used it with them but what you showed me today is so valuable. And you are right, it really is so self-explanatory but it just never came to light that maybe we need to focus on particular strategies to get some results rather than just to aim to have 'free flow conversation'. I am totally grateful for this.

Q) Do you feel you were prepared enough for the session?

A) Of course, in the beginning I was not really sure what I was doing. I know we discussed this and you showed me how *Alphablocks* worked but I don't think I spend enough time playing around with it and see what it can do. In the end I picked it up but to be honest, I think I could have put more time into studying it initially. I definitely see the relevance of doing this.

Q) Do you think the children enjoyed this particular experience with your direct involvement?

A) Most definitely. You saw that each and every one wanted to come to me. And even the other children from over the corner wanted to come and join us. But, the noise levels here are a problem. I think it was initially OK to have as a computer in free play but if we are going to go down the more learning route, which I will definitely put forward, then we need to re-jig this room. But yes, the children, both young and older children, enjoyed this experience.

Q) In the past when did you allow the children to use the computer? During free form play?

A) Our children are allowed to use the computer at any time. They use it also at free form play. But we have had children who use it for too long periods of time. As we don't have a timer, we can't keep a constant time on them. This is something we must invest in. I think we always have an eye on them but it's not always the case.

Q) What good things did you see?

A) Well, the children were occupied for the whole time. I was a bit worried as 20 minutes is a long time and first with you as a stranger. But it worked all the same. And I actually liked doing it with them.

The other thing is that the children really enjoyed themselves. Some of them didn't want to come off the computer when their time was up. They were also so engaged all the time and that is half the battle won for us.

Some others were able to spot the letters in the end and some of them remembered the sounds of the alphabets.

I saw many good things come out of this experience and so did some of the others.

Q) What negative things did you see?

A) None really. But just the level of noise in the room when trying to use the software as a learning tool.

Q) How is teaching the alphabets your way different from the way you have demonstrated it today?

A) Today was fun and exciting. I was doing the sounds and the software was there to guide me as well. It was like there was extra support and it was good to have that. The children had so much to do – see, listen and do and that is so important.

Any other comments?

Thank you very much for sharing your work with us.

Appendix 21 – Stage 4: Preschool 2 Follow Up Interview

Firstly, thank you so much for taking the time to conduct these studies with me. I have only a few after questions if that is OK with you.

Q) Having used some the outlined appropriate pedagogy and pedagogical strategies for phoneme recognition with young children, what did you think of the experience?

A) It extended our ICT practice. It certainly was beneficial. The children were really responding to us. The children also really do seem to be interested in the computers again now. Which I was not really expecting but I see they have been asking to go to the computers more today. I see that they need to be supported more through the various means you have shown us and I think we are very lucky to have been involved at this stage in your research.

I see that they need to be supported more and have spoken to our supervisor. She has been more proactive now. She has her work cut out for her but the children are more motivated. Their motivation has come back again. We need to help them to use the computers more.

I teach them to read and write and do their phonetics with them. I think I will spend more time on the computer now and use your practices to enhance our phonetic sessions. But of course I need to spend some time to get used to the software.

Q) Do you feel you were prepared enough for the session?

A) I think it would be better if one of us could spend some time learning the software beforehand because we will not always have you with us. In the past, we just let the children get on with it and showed them the basics but now, just like any of our other learning activity, we must understand it better.

Q) Do you think the children enjoyed this particular experience with your direct involvement?

A) Yes, I think they did and very much so. They were so much more communicative and we realised a few things about our technology as well. The touch screen is fantastic and we found that the older children love using the computer. The younger children are better off using the touch screen though.

The only thing I really did notice about our surroundings is that it is so noisy. There were several times I had to increase the volume on the computer. There were also other activities taking place in the room which did not help our noise levels.

But this makes it all very interesting because it shows that although our technology is good, the way it is set up, for teaching and learning with technology, is not to our advantage. Maybe we can use some headphones. My husband actually uses his headphones when he is on the computer so that I can watch TV or so that it does not get in the way.

But, again, this can be so isolating. But, we can use the other room. There is another computer in the other room and that way we can reduce some of the noise levels. I just have to get my son in to do this for us. You know how difficult it gets.

Maybe this is something we need to look at. The environment is always changing so this is definitely I will look at again.

Q) In the past when did you allow the children to use the computer? During free form play?

A) It is very much free form play and maybe we have to put in some teaching practice more. There is no time restriction. The children can come in and play when they want to. Obviously, we put the hardware in so they have no access online. They are only using what software is available but I agree with you, there really needs to be some practitioner intervention sometime in the day. This seems to be more of an effective way of doing things. I agree with you we need someone there to sit with them and watch them and have an idea of how they are doing.

I now realise that it is no good for someone just to be at the other end of the room and let the children get on with. We think we are taking it all in but actually the children are struggling and can do with adult interaction, as was demonstrated today. We don't want someone just floating around and assuming facts. But, I think it's the time. We don't have the time and I also think its finding someone with the right skills to make it work – you know technically.

What I could do, couple times of week, is work with the computers and get the children that I teach phonetics to work through with the computer, in a similar fashion to what I did today with your help and guidance.

Q) What good things did you see?

A) The fact that they are going lots more to the computer. When you came, they were just not that interested but now they are all of a sudden interested again.

Q) What negative things did you see?

A) Our lack of interaction with the children when they are on there before. It's such a time restriction and the adults not being completely literate with what they are delivering. This is perhaps where we have to look at training and do things like this so we can be educated to deliver the best for our children.

We are all learning. It's a new thing and new things are happening all the time and we have to keep up so that we are taking care of our children. Maybe they will not have books in ten years time and again; we will just have to work with that too.

Q) How is teaching the alphabets your way different from the way you have demonstrated it today?

A) In a way, it's similar. It's more fun on the computer. It's drier the way I use it. But I noticed that they have really progressed so quickly and the more they do it on the computer, they will just progress faster. The stuff we did it today was so imaginative and fun for the children and we could see that they were motivated to want to continue.

The children really liked the *Alphablocks* and the singing and movement. The *Alphablocks* itself were so imaginative for the children. I like how the *Alphablocks* make the sound and movement together. I think this really helps in remembering a sound. This type of learning applies to all types of children.

In the more traditional ways, it is not so exciting. But with the use of computers, it's more fun, its more excitement. Anything that holds their interest will engage them and it will benefit them. And the time that you gave them is really good. It develops their inquiring mind.

Q) Did you find some children more involved or less involved? Gender specific?

A) No, I just think it is depends on the children. More on the children's learning styles. We have also made other observations and there is lots of data on boys that struggle with reading. But as you could see today that the boys are really keen on using the computer and if we could technology to engage them, then that is great.

Q) Do you think you will need more support or guidance again in the future?

A) I will sit with S and probably need help with the technical side of things.

Appendix 22 – Stage 4: Preschool 3 Follow Up Interview

Firstly, thank you so much for taking the time to conduct these studies with me. I have only a few after questions if that is OK with you.

Q) Having used some the outlined appropriate pedagogy and pedagogical strategies for phoneme recognition with young children, what did you think of the experience?

A) It was a very interesting experience. I found the first few sessions of observation very interesting...the way the children were interacting with me when I was using some of your more effective pedagogic practices. Then when I used them more often, I found it actually quite easy and it all makes so much more sense. Actually, its common sense but we don't have the time, like you have, to make these connections.

Q) Do you feel you were prepared enough for the session?

A) I think I was. I had spent some time looking at *Alphablocks* last night and knew what to do and where to go. I don't think I confused the children too much (laughs).

Q) Do you think the children enjoyed this particular experience with your direct involvement?

A) Yes, mostly all the children enjoyed them. Of course there were some that are so small and with the weather being so good, they did not want to sit indoors. So, I cannot say all the children enjoyed it but mostly all of them.

Q) In the past when did you allow the children to use the computer? During free form play?

A) Yes, our children are on the computer during free play but they also have the option to use it when they come into school, in the morning or later in the evening. The computer is used at the child's pace and instigation. Peer learning happens as well as adult help. There is time restriction in place and we use a timer for this.

Q) What good things did you see?

A) I was very happy to see that most of the children's interest was sustained for the full 20 minutes of the session. They were completely engaged for this period of time. It was very interesting to see.

This is obviously playful learning which is key. It is also so visual and auditory and this is so important when we are trying to teach the alphabets to the children. We find visual images very helpful in making the children remember the sounds.

It was good to see how both the practitioner and child could explore together, to make it both exploratory and independent learning at the same time for the child.

Also, this type of learning managed some of the preschool challenges such as engagement, motivation and boredom.

Q) What negative things did you see?

A) Some children were not interested to get involved due to their young age. Some children were only just 3 years old. Also, initially some of the children were very shy with you but that is OK because as soon as I got on board, then the children were back to normal.

Q) How is teaching the alphabets your way different from the way you have demonstrated it today?

A) Using ICT is different from using other forms of activities. The use of the educational websites is of interest to some children more than our traditional methods of teaching.

Q) Did you find some children more involved or less involved? Gender specific?

A) Not really. I think the range of involvement appeared to be dependent on age and on how much a child uses ICT at home and in our school. But it would seem that the 4 year olds were more hands on than the three year olds.

Any other comments?

Most of our children have already accessed *Alphablocks* and use the computer on a daily basis so this may be one reason why they were so good at it.

Appendix 23 – Stage 4: Laever’s Average Scores

Stage 3 – Laever’s Average Scores

Well Being (Average Scores)

	Well Being	Well Being	Well-Being
	Preschool 1	Preschool 2	Preschool 3
Child 1	3.80	3.89	3.57
Child 2	4.30	4.22	3.88
Child 3	4.40	4.60	4.38
Child 4	3.44	3.70	4.00
Child 5	3.50	3.80	4.88
Child 6	4.60	3.90	4.13
Child 7	3.80	4.80	3.71
Child 8	4.60	4.70	2.86
Child 9	4.56	4.10	3.30
Child 10	4.13	4.60	4.40
Average	**3.43**	**3.53**	**3.26**
Average	**3.403582451**		

Involvement (Average Scores)

	Involvement	Involvement	Involvement
	Preschool 1	Preschool 2	Preschool 3
Child 1	3.80	4.00	3.57
Child 2	4.20	4.11	3.88
Child 3	4.40	4.60	4.38
Child 4	2.78	3.70	4.00
Child 5	3.60	3.70	4.88
Child 6	5.00	3.80	4.13
Child 7	3.90	4.80	3.29
Child 8	4.60	4.70	3.00
Child 9	4.56	4.00	3.50
Child 10	4.30	4.50	4.40
Average	**4.11**	**4.19**	**3.90**
Average	**4.068386243**		

Appendix 24 – Stage 4: Preschool 1 Scores

Stage 4: 10 children (5 sets)

Adapted from the Sics (Zico) Manual: "Well-Being and Involvement in Care – A Process-oriented Self Evaluation Instrument for Care Settings."

The Scale for Well Being

Level	Well-Being	Signals
1	Extremely Low	*The child clearly shows signals of discomfort*: is angry, cries, screams, looks sad or frightened, hurts him/herself or others, doesn't respond to the environment and avoids contact.
2	Low	*The posture, facial expression and actions indicate that the child does not feel at ease*. However, the signals are less explicit than under level 1 or the sense of discomfort is not expressed the whole time.
3	Moderate	*The child has a neutral posture. Facial expression and posture show little or no emotion*. There are no signals indicating sadness or pleasure, comfort or discomfort
4	High	*The child shows obvious signs of satisfaction* (as listed under level 5). However, these signals are not constantly present with the same intensity.
5	Extremely High	*During the observation episode, the child enjoys, in fact it feels great*: looks happy and smiles, is spontaneous and expressive, talks to him/herself and sings, is relaxed and open, engaging with the environment and is lively and expresses self-confidence and self-assurance.

The Scale for Involvement

Level	Involvement	Examples
1	Extremely Low	*The child hardly shows any activity*: no concentration, daydreams, has an absent/passive attitude, displays no signs of exploration or interests, doesn't partake in goal-oriented activity and doesn't seem to be taking anything in.
2	Low	*The child shows some degree of activity but which is often interrupted*: limited concentration, often looking away during activities and dreaming, is easily distracted and action only leads to limited results.
3	Moderate	*The child is busy the whole time, but without real concentration*: attention is superficial, doesn't become absorbed in activities and these activities are short lived, limited motivation, does not feel challenged and the child does not use his/her capabilities or imagination to the full extent
4	High	*There are clear signs of involvement, but these are not always present to their full extent*: engaged in activities without interruption, displays real concentration although sometimes the attention can be more superficial, the child feels challenged and motivated, the activities engage the child's capabilities and imagination to a certain extent.
5	Extremely	*During the episode of observation the child is continuously engaged in the activity*

	High	*and completely absorbed in it*: completely focused and concentrating on the activity without interruption, highly motivated and perseveres, is alert and shows precision and intense mental activity, not easily distracted, even by strong stimuli, the child addresses his/her full capabilities/imagination and enjoys being engrossed in the activity.

1. Child 1 – 4 yrs (11:42 am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	Child seems very interested but there is no obvious expression on his face. He is also involved but it is still early in the session.
4 minutes	**4**	**4**	Game play starts. The child has seen this before and is repeating the sounds with the *Alphablocks*. The child is very involved now and is anticipating the next stage.
6 minutes	**5**	**5**	The child is now telling 'us' how he uses *Alphablocks* at home. He is very comfortable in his environment and smiling. He is talking to himself out loud. He wants to know what is coming next.
8 minutes	**3**	**4**	Suddenly he hears about playing a game and he becomes worried. He is not unhappy or crying but is a bit worried as he cannot use a mouse. The practitioner is spending more time teaching him how to use the mouse. Once past the use of mouse, he is now more involved in the game.
10 minutes	**4**	**4**	The little boy is more confident with the mouse and is busy working along with his partner in making words.
12 minutes	**4**	**4**	Now on game 2. The child has progressed to playing game 2. He is wary about playing game 2 but there is expression of interest and motivation to continue.
14 minutes	**4**	**4**	Game starts. The child is now showing signs of satisfaction. He has continuous activity with intense moments.
16 minutes	**4**	**4**	The child looks relaxed and there is continuous activity of taking turns and putting sounds together to make a word.
18 minutes	**4**	**4**	**End of game and end of session.**
Average	**3.8**	**4**	

2. Child 2 – 4 Yrs (11:42am) (English as second language)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**3**	The child is really keen to get involved in the learning session on the computer and Internet. He is chatting away happily. He is staring at the screen. No sign of disappointment.
4 minutes	**4**	**4**	The child is happy and smiling away. The child is also repeating the sounds along with the software.
6 minutes	**4**	**4**	Repeat of *Alphablocks* Introductory session. The child is still working alongside the software. He is still very smiley and making conversation with the practitioner. He is repeating the sounds and guessing the ones to follow.
8 minutes	**4**	**3**	The child is starting to look around. Bored of making sounds now. He is still quite happy but bit restless
10 minutes	**4**	**5**	The child hears ‘game play’ and comes back instantly.
12 minutes	**5**	**5**	The child is very engrossed in the activity on hand. He is open to his environment and moving along smoothly from one dialogue to another.
14 minutes	**5**	**5**	No signs of stress. The child is very energetic throughout game play and wants to take over and show his friend.
16 minutes	**4**	**4**	End of game now. The child asks to play again. His partner does not want to. The child starts to look around. Times up.
18 minutes	**4**	**4**	**End of Game and end of session.**
Average	**4.2**	**4.1**	

3. Child 3 – 4 yrs (11:16am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child resists at first. Not so much resistance as much as fear of something new. The child soon becomes involved in repeating the phonemes with the Practitioner

4 minutes	**4**	**4**	The child is now happier and involved in making the sounds with *Alphablocks.*
6 minutes	**5**	**5**	Big change. The child is so satisfied and motivated to want to continue to the next sound.
8 minutes	**5**	**5**	The children ask to play the *Alphablocks* introductory session again.
10 minutes	**5**	**5**	The child knows this game and so is very relaxed. She is also concentrating very intensly.
12 minutes	**4**	**4**	Now game 1. The child is now playing a new game. She is a bit nervous but keen to continue.
14 minutes	**5**	**5**	The child is still very engrossed and smiling along with her partner.
16 minutes	**5**	**5**	The child expresses self-confidence and assertiveness. The child shows greatest involvement.
18 minutes	**5**	**5**	Peer-learning with partner. Works with fellow partner to win the game.
20 minutes	**5**	**5**	**Session Ended**
Average	**4.6**	**4.6**	

4. Child 4 – 3 yrs (11:16)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child resists at first but there is no sign of discomfort. The child is repeating sounds with the Practitioner
4 minutes	**4**	**4**	The child continues to repeat alongside with the Practitioner. The child is happy.
6 minutes	**4**	**4**	Same as above

8 minutes	**4**	**4**	Same as above
10 minutes	**3**	**3**	Game play starts. The child gets a bit anxious and worried. Cannot use a computer confidently.
12 minutes	**3**	**3**	The child is worried. Needs help with the computer. The practitioner is helping the child. Attention has moved away from task.
14 minutes	**4**	**4**	Child is now becoming engrossed again. The child enjoys dragging the letter over to make a word.
16 minutes	**4**	**4**	The child is being helped by the partner. She is quite happy again and asserting some confidence.
18 minutes	**4**	**4**	The child's turn has ended.
20 minutes	**4**	**4**	**End of Session.**
Average	**3.7**	**3.7**	

5) Child 5 – 4 yrs (10:36)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child is relaxed and watching the screen. The child is repeating the sounds with the alphablock software
4 minutes	**4**	**4**	The child is now more engrossed. Associating sounds with names and objects. She is more involved now.
6 minutes	**4**	**4**	The child uses the touch screen. Needs a bit of help but very content and smiling. The child is actively taking part.
8 minutes	**4**	**4**	The girls are repeating the sounds of the alphabets with the Practitioner. They are laughing away and perched on the edge of the seat. They are concentrating too.
10 minutes	**5**	**5**	Game 1. Both girls are keen to play. They are motivated to want to continue

12 minutes	**4**	**4**	The child is a little anxious but still high on the score of well-being. The touch screen is a bit faulty so difficult to keep engaged.
14 minutes	**4**	**3**	Game 2. The child is still very content and comfortable. The child is staring intently at the screen but not sure what to do next.
16 minutes	**4**	**4**	The child is engaged and finds it difficult but happy to give it a try.
18 minutes	**3**	**3**	Both the girls need help now. They are a bit lost.
20 minutes	**3**	**3**	End of session
Average	**3.8**	**3.7**	

6) Child 6 – 3yrs (10:36am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**3**	The child has played *Alphablocks* in the past. She is very comfortable to take it on. At the moment, she is watching the motions on the screen.
4 minutes	**5**	**5**	The child is repeating the sounds with the practitioner and software. Associates sounds with people and things. She is very happy and dancing slightly on her chair.
6 minutes	**5**	**5**	The child stands up to touch the screen. She is singing with the *Alphablocks*. She is highly involved.
8 minutes	**5**	**5**	The episode is partly repeated. The girls are enjoying it. The child is having continuous activity.
10 minutes	**4**	**4**	Game 1. The child is still very interested and happy within herself. She really wants to take over but the technology is failing her. Interruption of concentration.
12 minutes	**4**	**4**	Same.
14 minutes	**3**	**3**	Game 2. The child is a bit worried now. The touch screen is not working. She needs help. Looking for guidance from the Practitioner.

16 minutes	**3**	**3**	The child is expressionless – not happy or sad. She is fidgeting around and starts imitating her friend. Her involvement levels are disrupted – mainly because of the technology.
18 minutes	**3**	**3**	Both children need a bit help now.
20 minutes	**3**	**3**	End of session
Average	**3.9**	**3.8**	

7) Child 7 – 4 yrs (10:09am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**4**	The child is drumming and singing away. The child is very involved.
4 minutes	**5**	**5**	The child is now up and dancing. The child is looking forward to the next bit of information.
6 minutes	**5**	**5**	The child is now smiling and giggling. The child is repeating the sounds with the Practitioner and the *Alphablocks*.
8 minutes	**5**	**5**	Game play 1. The child is really interested.
10 minutes	**5**	**5**	The child is very good at the computer. The child likes the letter X and is laughing. The child wants to watch it again.
12 minutes	**5**	**5**	Game 2. The child begins to dance with the letter X. The child shows his greatest levels of involvement.
14 minutes	**5**	**5**	Same as above.
16 minutes	**5**	**5**	The child expresses he wants to play Game 3. He is highly competent and is highly motivated to want to continue
18 minutes	**5**	**5**	This is a much harder game but the child does not give up. He is trying to figure it out.

20 minutes	**4**	**4**	**End of session. Game 3 is much too hard for the children to complete.**
Average	**4.8**	**4.8**	

8) Child 8 – 4 yrs (10:09am)

Time	Score (Well-Being)	Score (Involvement)	Notes
2 minutes	**4**	**4**	The child is also drumming and singing along with his partner.
4 minutes	**5**	**5**	The child is smiling and giggling with his partner. Highly involved.
6 minutes	**5**	**5**	The child is laughing away with the Practitioner. Really listening and watching.
8 minutes	**5**	**5**	Game 1. The child is really interested. Same as above
10 minutes	**5**	**5**	The child is smiling. The child is good with the computer. The child is repeating the sounds.
12 minutes	**5**	**5**	Game 2. The child is playing with his friend. They are both excited. The child is engrossed and watching intensely.
14 minutes	**5**	**5**	Same. The child understands the Alphabets.
16 minutes	**5**	**5**	Game 3. The child is really enjoying the third episode and wants to play more.
18 minutes	**4**	**4**	The child finds it hard to play game 4. Still watching but also a little bit nervous. The child looks at me and the Practitioner.
20 minutes	**4**	**4**	**The session ends. Game 3 is too hard to play.**
Average	**4.7**	**4.7**	

9) Child 9 – 3 yrs (9:40am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**2**	The child is expressionless. Not very keen to get onto *Alphablocks.*
4 minutes	**3**	**3**	The child is watching the screen and looks between Practitioner and researcher
6 minutes	**4**	**4**	The child is getting excited by his partner. Enthusiasm is wearing off onto him. He is becoming involved.
8 minutes	**4**	**4**	Game 1. The child is playing game 1. He likes it and expresses it.
10 minutes	**4**	**4**	Same
12 minutes	**4**	**4**	Still engrossed. The child is enjoying the game and engrossed. There is a continuous level of activity without him looking away.
14 minutes	**5**	**5**	The child is now dancing. The child is looking forward to making words.
16 minutes	**4**	**4**	The child is satisfied but has started to look around.
18 minutes	**5**	**5**	The child is playing the game again. He starts to dance again. He knows how to play again – shows self-confidence.
20 minutes	**5**	**5**	**End of session.**
Average	**4.1**	**4**	

10) Child 10 – 3 yrs (9:40am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**3**	The child is aware of *Alphablocks.* The child is engaged and ready to take part.

4 minutes	**4**	**4**	The child is very absorbed and engaged. The child is listening to the sounds on the software.
6 minutes	**4**	**4**	The child is ready to play Game 1. He is looking forward to it.
8 minutes	**4**	**4**	Game 1. Same as above.
10 minutes	**5**	**5**	The child is happy and giggling. The child starts jumping and up and down.
12 minutes	**5**	**5**	The child is playing with his partner. He is absorbed.
14 minutes	**5**	**5**	Game 2. The child is playing game 2. He is now dancing along with the *Alphablocks* on the software.
16 minutes	**5**	**5**	The child wants to play game 2 again. He is motivated to want to continue.
18 minutes	**5**	**5**	The child is watching his friend play. Watching intently. He is swinging around on his seat. Wants to play again but time is up.
20 minutes	**5**	**5**	**Session ended. On a good note.**
Average	**4.6**	**4.5**	

Appendix 25 – Stage 4: Preschool 2 Scores

Stage 4: 10 children (5 sets)

Adapted from the Sics (Zico) Manual: "Well-Being and Involvement in Care – A Process-oriented Self Evaluation Instrument for Care Settings."

The Scale for Well Being

Level	Well-Being	Signals
1	Extremely Low	*The child clearly shows signals of discomfort*: is angry, cries, screams, looks sad or frightened, hurts him/herself or others, doesn't respond to the environment and avoids contact.
2	Low	*The posture, facial expression and actions indicate that the child does not feel at ease.* However, the signals are less explicit than under level 1 or the sense of discomfort is not expressed the whole time.
3	Moderate	*The child has a neutral posture. Facial expression and posture show little or no emotion*. There are no signals indicating sadness or pleasure, comfort or discomfort
4	High	*The child shows obvious signs of satisfaction* (as listed under level 5). However, these signals are not constantly present with the same intensity.
5	Extremely High	*During the observation episode, the child enjoys, in fact it feels great*: looks happy and smiles, is spontaneous and expressive, talks to him/herself and sings, is relaxed and open, engaging with the environment and is lively and expresses self-confidence and self-assurance.

The Scale for Involvement

Level	Involvement	Examples
1	Extremely Low	*The child hardly shows any activity*: no concentration, daydreams, has an absent/passive attitude, displays no signs of exploration or interests, doesn't partake in goal-oriented activity and doesn't seem to be taking anything in.
2	Low	*The child shows some degree of activity but which is often interrupted*: limited concentration, often looking away during activities and dreaming, is easily distracted and action only leads to limited results.
3	Moderate	*The child is busy the whole time, but without real concentration*: attention is superficial, doesn't become absorbed in activities and these activities are short lived, limited motivation, does not feel challenged and the child does not use his/her capabilities or imagination to the full extent
4	High	*There are clear signs of involvement, but these are not always present to their full extent*: engaged in activities without interruption, displays real concentration although sometimes the attention can be more superficial, the child feels challenged and motivated, the activities engage the child's capabilities and imagination to a certain extent.
5	Extremely High	*During the episode of observation the child is continuously engaged in the activity and completely absorbed in it*: completely focused and concentrating on the activity

		without interruption, highly motivated and perseveres, is alert and shows precision and intense mental activity, not easily distracted, even by strong stimuli, the child addresses his/her full capabilities/imagination and enjoys being engrossed in the activity.

1. Child 1 - 4 years (11:01 am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child is not keen to get onto the computer but willing to give it a go.
4 minutes	**4**	**4**	The child is starting to smile. It is obvious this is not what she expected. More involved now.
6 minutes	**4**	**4**	The child is giggling. She points to the screen and repeats the letter "P" and its sound.
8 minutes	**3**	**3**	The child is not sure about the game but gives it a go anyway.
10 minutes	**4**	**4**	The child likes this and finds it amusing how the sounds can work together to make a word. She is joining in with her friend.
12 minutes	**3**	**3**	Now onto game 2.The child is again unsure but expression and involvement are back to neutral
14 minutes	**4**	**4**	There is an immediate change. The child is now giggling and dancing. She has become more involved at the activity on hand.
16 minutes	**4**	**4**	Game 2. The child finds it easier to use the touch screen. Needs guidance from the practitioner to move along. Easily distracted otherwise.
18 minutes	**5**	**5**	The child is heavily involved and concentrating. She is talking more and repeating the sounds to see what is happening.
20 minutes	**4**	**4**	End of session. The child has asked to play again.
Average	**3.8**	**3.8**	

2. Child 2 – 4 yrs (11:01am)

Time	Score (Well-Being)	Score (Involvement)	Notes
2 minutes	**4**	**4**	The child is very, very keen to start *Alphablocks*. The child likes using the computer.
4 minutes	**5**	**4**	The child is interacting with the first episode and shouting at the screen. He is very much involved but a bit LOUD.
6 minutes	**4**	**4**	Game 1. The child is watching the *Alphablocks* intently.
8 minutes	**5**	**4**	The child is giggling and repeating the sounds with the practitioner. He is a bit too loud and would be easily distracted, hence no 5.
10 minutes	**4**	**4**	Similar to above but on a lower scale of well-being. I think the child is naturally super hyper.
12 minutes	**4**	**4**	The child is playing a game. He is struggling with the mouse control and prefers the touch screen but its very hard to keep him calm. He is excited and involved.
14 minutes	**4**	**4**	The child is dancing and bouncing up and down his chair. He is able to keep up with his friend.
16 minutes	**4**	**5**	Suddenly the child quietens downs. This game is a bit more challenging and he is absorbed into the story. The first time I have seen him concentrate so much.
18 minutes	**5**	**5**	The child is quiet but focussed. He finds "fff..." for "F" and makes a word. The child smiles. He has made a word. Look of Triumph!
20 minutes	**4**	**4**	End of session.
Average	**4.3**	**4.2**	

3. Child 3 – 3 yrs (10:30 am)

Time	Score (Well-Being)	Score (Involvement)	Notes
2 minutes	**3**	**3**	The child has seen *Alphablocks* in the past. She is smiling and ready to take part in this session.
4 minutes	**4**	**4**	The child is singing along with *Alphablocks*. She is repeating the sounds.
6 minutes	**5**	**5**	The child is enjoying this very much and concentrating hard.
8 minutes	**4**	**4**	The child is ready for game 1. The child feels at east with the Practitioner and looks to her for guidance. The child is actively taking part.
10 minutes	**4**	**4**	The child is very interested and still smiling along.
12 minutes	**4**	**4**	The child enjoyed this session very much. Expresses it "I like this" and ready for the next game.
14 minutes	**5**	**5**	The child is dancing in game 2.
16 minutes	**5**	**5**	Same
18 minutes	**5**	**5**	The child is finding it a bit difficult but still very interested and not easily distracted. The practitioner works with her to help her progress.
20 minutes	**5**	**5**	End of session.
Average	**4.4**	**4.4**	

4. Child 4 - 3 yrs (10:38am)

Time	Score (Well-Being)	Score (Involvement)	Notes
2 minutes	**3**	**3**	English is a second language for this child. He has never seen *Alphablocks.* At present the child is neutral.
4 minutes	**4**	**3**	The child is clearly happy. He is already moving along to the music but still doubtful how much he is taking in.
6 minutes	**4**	**4**	The child looks content. The child is not repeating the sounds but is staring at the screen – has not shifted gaze.
8 minutes	**3**	**3**	The child has started the game. He is happy but does not repeat the sounds with the Practitioner or software. The Practitioner is encouraging for this to happen.
10 minutes	**4**	**4**	With lots of adult interaction, the child has begun to repeat the sounds now and is clearly enjoying himself.
12 minutes	**4**	**2**	The child is now restless. He is crazily happy so on the well-being scale, he would be considered happy but I wonder if this is because of using *Alphablocks*?
14 minutes	**3**	**2**	The child is clearly distracted. Finding game 2 hard.
16 minutes	**3**	**2**	Same
18 minutes	**3**	**2**	The child has asked to leave the session. End of session.
Average	**3.4**	**2.7**	

5. Child 5 – 4 yrs (10:10am)

Time	Score (Well-Being)	Score (Involvement)	Notes
2 minutes	**3**	**3**	The child is not really aware of *Alphablocks.* Neutral

4 minutes	**3**	**3**	The child is the same but is starting to recognise the letters of his name.
6 minutes	**3**	**4**	The child is repeating some sounds now. "H..sounds like a doggy". Imitating drums.
8 minutes	**4**	**4**	The child is displaying more positive expressions now. Also more into the session.
10 minutes	**3**	**3**	Into Game 1. The child is distracted by the noise in the room now. The Practitioner has to repeat instructions. The child is looking around.
12 minutes	**4**	**4**	The child is playing game 1. He is smiling and recognises more letters now. He is able to use the mouse to start the game independently.
14 minutes	**4**	**4**	Same as above
16 minutes	**3**	**3**	End of the game. The child is looking around now. Start of game 2.
18 minutes	**4**	**4**	The child starts dancing and giggling. He is interested in making some words.
20 minutes	**4**	**4**	The child remembers that he has played this at home with his parents. End of session.
Average	**3.5**	**3.6**	

6. Child 6 – 3 yrs (10:10am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**4**	The child has seen *Alphablocks* before and is already laughing away. Explaining it to his partner
4 minutes	**5**	**4**	The child is smiling and pointing at the screen. Still not completely involved in activity.
6 minutes	**5**	**5**	The child is now making "rrr...." pirate sounds.

8 minutes	**5**	**5**	The child is imitating the *Alphablocks* and associating the sounds with the toys in the room. Great transfer of knowledge.
10 minutes	**3**	**3**	Into Game 1. The child is distracted by the noise in the room now. The Practitioner has to repeat instructions. The child is looking around.
12 minutes	**5**	**5**	The child is interacting with the software – following the narrative instructions. He is keen to start making words.
14 minutes	**5**	**5**	The child is ecstatic. He has made a word and it is the correct answer.
16 minutes	**4**	**4**	The child wants to continue to play.
18 minutes	**5**	**5**	Same as above but more involvement. The child helps his partner – peer learning taking place.
20 minutes	**5**	**5**	End of session. Ends on a high note.
Average	**4.6**	**5**	

7. Child 7 – 4 yrs (9:46am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child has played this at home with his parents.
4 minutes	**4**	**4**	The child is smiling. He is watching the *Alphablocks* intently.
6 minutes	**3**	**4**	The child is repeating the sounds with the practitioner. Neutral expression.
8 minutes	**3**	**3**	Game 1. The child is interested. The touch screen is not working properly so child is becoming frustrated.
10 minutes	**4**	**4**	Changed computers and screen. Things are better again. The child is really engrossed and happy.

12 minutes	**3**	**4**	Game 2. The child is a bit anxious of the new game but wanting to continue.
14 minutes	**4**	**4**	The child is smiling and laughing away. Helping his partner to make words by pointing to the screen.
16 minutes	**5**	**4**	The child is dancing. The child is easily distracted and so the Practitioner is keeping him on track.
18 minutes	**5**	**5**	The child is so excited – jumping up and down. The child needs the Practitioner to keep him motivated all the way.
20 minutes	**4**	**4**	Ended on a good note but the child is sad to leave. Snack time.
Average	**3.8**	**3.9**	

8. Child 8 - 4 yrs (9:46am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**4**	**4**	The child has played this at home with his parents. The child is completely animated when he sits down with us.
4 minutes	**5**	**5**	In the first few minutes the child is completely absorbed.
6 minutes	**5**	**5**	The child is smiling and repeating the sounds with the Practitioner and associating the letters with the images.
8 minutes	**5**	**5**	The child loves game 1 and says "this is fun". He knows what to do and how to make words.
10 minutes	**4**	**4**	Changed computers and screen. Things are better again. The child is again engrossed and happy.
12 minutes	**5**	**5**	The child is giggling at game 2. He really wants to start making some new words again. He touches the screen and starts dragging the letter to make a word.
14 minutes	**4**	**4**	The child is struggling to make a word. His partner helps him.

16 minutes	**5**	**5**	The child is dancing with his partner. It is his turn and his partner helps him to make a word. They are working together.
18 minutes	**4**	**4**	The child is watching his friend makes some letters. He is involved and suggesting a few letters. Unconsciously he picks up the mouse to drag a letter but his friend uses the touch screen.
20 minutes	**5**	**5**	The child is happy and wants to play again but its end of the session. The child is going to tell his mommy about *Alphablocks* in school.
Average	**4.6**	**4.6**	

9. Child 9 – 4 yrs (9:10am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	The child is neutral. She has seen *Alphablocks* in the past with her parents.
4 minutes	**4**	**4**	Almost immediately the child is smiling and repeating the sounds with the software
6 minutes	**5**	**5**	She has taken to the game immediately and has already won the first game. She lets the other girl have a chance
8 minutes	**5**	**5**	She is really happy and chatting away. She is showing her partner what needs to be done. Pointing and dragging as well.
10 minutes	**4**	**4**	Game 2. The child is ready to take on game 2. She has also played this game too.
12 minutes	**5**	**5**	The little girl is tapping her foot to the music. Sharing laughter with her friend. She is listening to the narrative intently.
14 minutes	**5**	**5**	Same expressions but heightened. This is a much more challenging game but she is enjoying it and trying her best.
16 minutes	**5**	**5**	End of Game 2. The children want to hear the Alphablock song again. The practitioner says OK but this time to find and think of other things that begin with the letter sound.
18 minutes	**5**	**5**	The child is jumping up and down and coming up with all sorts of words. End of session. Ended on a high note.

Average	**4.5**	**4.5**	

10. Child 10 – 3.5 yrs (9:10am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	**3**	**3**	This child is the other girl's cousin. They are very close. Their emotions are very similar. She has also seen *Alphablocks* in the past.
4 minutes	**4**	**4**	Like her partner, she is already engrossed in the game and repeating sounds with her cousin and practitioner.
6 minutes	**5**	**5**	She has taken to the game too. She is very happy and giggling. She likes playing Game 1.
8 minutes	**5**	**5**	The little girl is concentrating very hard, using her finger to drag a letter on the screen. She is happy she has made a word.
10 minutes	**3**	**4**	Game 2. The child is a bit anxious. She has never played the game before but happy to give it a go.
12 minutes	**5**	**5**	The little girl is swaying on her chair. She is dancing along with her partner and taking in the whole story.
14 minutes	**4**	**4**	The girl finds it a bit challenging and looks for some adult help but all the same, she is motivated to want to continue and make a word.
16 minutes	**4**	**4**	End of Game 2. She is listening to the first episode – Introduction. The little child really does like finding words that are made of the *Alphablocks* letters.
18 minutes	**5**	**5**	The children are very happy and smiling. They want to do more but have to get on with other activities in the classroom.
Average	**4.125**	**4.3**	

Appendix 26 – Stage 4: Preschool 3 Scores

Stage 4: 10 children (5 sets)

Adapted from the Sics (Zico) Manual: "Well-Being and Involvement in Care – A Process-oriented Self Evaluation Instrument for Care Settings."

The Scale for Well Being

Level	Well-Being	Signals
1	Extremely Low	*The child clearly shows signals of discomfort*: is angry, cries, screams, looks sad or frightened, hurts him/herself or others, doesn't respond to the environment and avoids contact.
2	Low	*The posture, facial expression and actions indicate that the child does not feel at ease*. However, the signals are less explicit than under level 1 or the sense of discomfort is not expressed the whole time.
3	Moderate	*The child has a neutral posture. Facial expression and posture show little or no emotion*. There are no signals indicating sadness or pleasure, comfort or discomfort
4	High	*The child shows obvious signs of satisfaction* (as listed under level 5). However, these signals are not constantly present with the same intensity.
5	Extremely High	*During the observation episode, the child enjoys, in fact it feels great*: looks happy and smiles, is spontaneous and expressive, talks to him/herself and sings, is relaxed and open, engaging with the environment and is lively and expresses self-confidence and self-assurance.

The Scale for Involvement

Level	Involvement	Examples
1	Extremely Low	*The child hardly shows any activity*: no concentration, daydreams, has an absent/passive attitude, displays no signs of exploration or interests, doesn't partake in goal-oriented activity and doesn't seem to be taking anything in.
2	Low	*The child shows some degree of activity but which is often interrupted*: limited concentration, often looking away during activities and dreaming, is easily distracted and action only leads to limited results.
3	Moderate	*The child is busy the whole time, but without real concentration*: attention is superficial, doesn't become absorbed in activities and these activities are short lived, limited motivation, does not feel challenged and the child does not use his/her capabilities or imagination to the full extent
4	High	*There are clear signs of involvement, but these are not always present to their full extent*: engaged in activities without interruption, displays real concentration although sometimes the attention can be more superficial, the child feels challenged and motivated, the activities engage the child's capabilities and imagination to a certain extent.
5	Extremely	*During the episode of observation the child is continuously engaged in the activity*

	High	*and completely absorbed in it*: completely focused and concentrating on the activity without interruption, highly motivated and perseveres, is alert and shows precision and intense mental activity, not easily distracted, even by strong stimuli, the child addresses his/her full capabilities/imagination and enjoys being engrossed in the activity.

1. Child 1 – 3 yrs (10:56am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	4	Overall the boy is a happy child. He is smiling throughout the episode. He does not cry or show signs of restraints.
4 minutes	4	4	Again, the child is quite content and satisfied. He is actively engaged in watching *Alphablocks* on the screen.
6 minutes	4	4	At six minutes, the child is still quite content. There are clear signs of involvement.
8 minutes	4	3	The child is not keen on turn taking and loses his interest and involvement. He is starting to show signs of neutral comfort.
10 minutes	3	3	He does not really want to play the game but joins in with his partner. Fidgeting but still playing. He is clearly not too excited neither is he upset by the whole session. His facial expressions are moderate.
12 minutes	3	3	There is neither intense pleasure nor sorrow but rather moderate. He seems to be distracted.
14 minutes	3	4	The child is enjoying the game now. Smiling. He is paying attention but can also be easily distracted.
16 minutes	NA	NA	He left at 15 minutes. The children were playing bubbles outside in the garden and he really wanted to go out. He did say that he wanted to come back and play the game after the bubbles.
Average	**3.6**	**3.6**	

2. Child 2 - 4 yrs (10:56am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	4	This child has seen *Alphablocks* with her parents. She really enjoys watching *Alphablocks*. Highly satisfied.

4 minutes	4	4	The child is showing high levels of engagement. Repeating sounds. The child feels challenged and is motivated to want to continue.
6 minutes	5	5	The child is happy to take turns. The child is singing the Alphablock song. Very high well being. The child is completely absorbed in the activity and is continuing on her own.
8 minutes	4	4	Keen to play game 1. Staring at the screen intently. Still high on well-being. Lots of smiles and agreement. High on well-being as well. The child displays high levels of concentration.
10 minutes	4	4	Takes control of the game play. Shows more confidence and helps her partner along. She is staring intently at the screen, repeating sounds with the Practitioner and happy to continue. She looks well in herself.
12 minutes	4	4	Still showing high levels of well being and engagement. The child is enjoying listening to the narrative and is able to understand the story line.
14 minutes	3	3	Sudden drop in well being and involvement. Her partner has left the session. She is a bit disrupted.
16 minutes	3	3	She is not happy or distressed. She wishes to leave too. Leaves satisfied.
Average	**3.875**	**3.875**	

3. Child 3 – 4 yrs (10:05) – in partner with his brother Samuel

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	4	The child shows much pleasure in emotion and feel challenged by the activity.
4 minutes	4	4	The child takes the lead with his brother. The child feels in control and is keen to progress. The child is happy and smiling.
6 minutes	5	5	All emotions and involvement are heightened.
8 minutes	5	5	Repeated phoneme sounds and letters. Watching and repeating intently. But enjoying it all the same - smiling and laughing with his brother. Sharing his enthusiasm.
10 minutes	5	5	Asked to repeat the game again. Wished to understand what he was doing better. The child is extremely involved and wants to take responsibility for his choices. The child is also high on well-being

12 minutes	4	4	Game 2 begins. He is keen to start game 2. He has never played it before so he is deciding on his choice. He is making the decision but demonstrates confidence and understanding of what he is doing.
14 minutes	4	4	The child shows high level of emotion and is displaying real concentration.
16 minutes	4	4	Same as above
18 minutes	Session Ended	Session Ended	Session Ended
Average	**4.375**	**4.375**	

4. Child 4 – 3 yrs (10:05)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	3	3	The child shows no discomfort or levels of high engagement. The child is dependant on his brother for solace.
4 minutes	3	4	The child is still neither here or there. But he is becoming more involved with his brothers enthusiasm which is making a direct impact on his well-being.
6 minutes	4	4	Watching *Alphablocks* intently. Repeating the sounds to the letters. Repeating with his brother. Samuel is smiling and bouncing up and down on his seat
8 minutes	5	5	The child is now confident. We are repeating an episode. He knows what to do. He is highly confident and very pleased. He is now singing along too. The child feels highly motivated and knows what to do.
10 minutes	4	3	Game play. The child cannot use the mouse so there is a lack of involvement as his brother is helping him. But he is still interested and looking at the screen nevertheless.
12 minutes	4	4	The practitioner has shown him how to use the mouse and is there to help him along the way. He is back in the game now that a solution has been found. He is keen to work alongside his brother. This child is smiling and happy. His attention is also sustained but I am sure can be distracted.
14 minutes	4	4	Better use of mouse now and is making his own choices. He is concentrating very hard at his task at hand.

16 minutes	5	5	He is moving his legs ready to dance. He is swaying to the music and smiling. At the same time, he is taking in the story of the *Alphablocks* and has hold of the mouse for his turn. He is extremely involved in the learning session.
18 minutes	Session Ended	Session Ended	Session Ended
Average	**4**	**4**	

5. Child 5 - 4 yrs (9:07)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	5	5	“fff...fraser....mmm...mummy” the child is repeating the phonemes and laughing at the same time.
4 minutes	5	5	“ggg....ggg...” the child is totally absorbed in the activity and responding very well to the practitioner. The child is anticipating the next sound. Body language is very positive.
6 minutes	5	5	The child is responding very well to game play. The child is very confident with the mouse and is able to progress along. The child emotionally very involved i.e. happy and smiling
8 minutes	5	5	The child exclaims “T is stuck in the mountain” The child knows what to do and can create the sounds. The child needs to be reminded to make the sound to the letter but she makes good eye contact with the practitioner.
10 minutes	5	5	The child is relaxed and happy. The child is leading the session now and offering peer learning.
12 minutes	5	5	The child is jumping up and down shrieking. Dancing to *Alphablocks* BAND episode.
14 minutes	5	5	The child expresses to play the game again. The child wants to sing along with the *Alphablocks* this time. All very positive.
16 minutes	4	4	The child wishes to play game 2. Still quite high on well being and involvement but partly because a new game is introduced.
18 minutes	Session Ended	Session Ended	Session Ended (due to the Internet service hanging)
Average	**4.875**	**4.875**	

6. Child 6 - 4 yrs (9:07)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	4	The child has played *Alphablocks*. "www....car"
4 minutes	3	3	There is no facial expression - There is no indication though that the child is sad. The child is busy but a continuous level. There is no indication of excitement and increased engagement.
6 minutes	3	4	Again, neutral expression. However, the child knows that a game is due to come up. The child is looking forward to the activity.
8 minutes	4	4	Game Play 1. The child has played the game before so knows what to expect. The child looks happy and content. The child needs some help with the mouse but his partner is helping him. The child seems very interested.
10 minutes	5	5	The child is smiling and happy and interacting with his partner. The child is involved in the activity and making sounds with the practitioner. Highly motivated child.
12 minutes	5	5	The child is laughing and at ease. The child is jumping up and down – dancing to the music. The child is working alongside his partner. He is very involved.
14 minutes	5	4	The child is playing along with his partner. He is very comfortable in his zone of learning. There is still high intensity of involvement but I think the child can be easily distracted if not kept engaged by his partner.
16 minutes	4	4	The child has been told to calm down and watch the episode. The child makes the word S A T and gets very excited that he has made a new word. The child is looking forward to making other words.
18 minutes	Session Ended	Session Ended	Session Ended (due to the Internet Service hanging)
Average	**4.125**	**4.125**	

7. Child 7 - 4 yrs (9:37am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	3	The child is really excite to use the computer. He is very happy. The child stares intently at the screen. There is no obvious emotion

			on his face other than he is not upset.
4 minutes	4	4	The child becomes very enthusiastic with the episode. He is enjoying himself. He is actively taking part in repeating the phonemes with the practitioner.
6 minutes	4	3	The child is still quite happy. He looks cheerful and full of energy. The child is now losing interest and starts looking around.
8 minutes	4	4	The child expresses his desire to play a game. The child is focusing intently on the screen.
10 minutes	4	3	The child struggles with the mouse. Starts to lose interest. The practitioner has to help him. The child is still comfortable. No distress
12 minutes	3	3	The child is starting to lose interest. His partner is very scared and the practitioner is paying more attention to the partner. He has no one sided emotion and also not as involved as previously done so.
14 minutes	3	3	The game play is stop and start. The child starts to look around and can hear the other children in the garden. The child asks to play in the garden.
16 minutes	Session Ended	Session Ended	Child of to play in the garden.
Average	**3.7**	**3.3**	

8. Child 8 - 3 yrs (9:37am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	3	4	The child has never used a computer so there is no extreme emotion on her face or body language. But she is totally engaged and staring at the screen.
4 minutes	4	4	The child is repeating the sounds with the practitioner. She is smiling at the *Alphablocks*. She is watching and observing what the *Alphablocks* are doing. The child is having intense moments of engagement.
6 minutes	2	2	Start of game play. The child is very scared now. Looking at the practitioner in intimidation. The child looks unhappy. The child starts looking around.
8 minutes	3	3	The practitioner works with the child. The child is more reassured now. The child also has become more involved.

10 minutes	3	3	Emotions and well being are stable now.
12 minutes	2	2	The child is very scared. She is not sure what she is doing but she is not crying. The practitioner is reassuring her. The activity is frequently interrupted. She does not stare into space but is struggling.
14 minutes	3	3	Improvement. It was only a moment of panic. The practitioner brings the child back into her comfort zone. The child is smiling now and staring attentively to the screen. She has managed to drag the letter and make a sound. She is pleased with herself.
16 minutes	Session Ended	Session Ended	Child off to play in the garden with her partner.
Average	**2.9**	**3**	

9. Child 9 - 4 years (additional day - am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	3	3	The child has used *Alphablocks* in the past with his parents. At present, child is neither happy nor upset.
4 minutes	3	4	Child's face reveals nothing but clearly more involved. Staring at the screen.
6 minutes	4	4	Child is smiling and defiantly involved.
8 minutes	3	4	Child is expressionless again but repeating sounds with the practitioner.
10 minutes	3	3	Child is looking between practitioner and researcher. Bit of shit of focus
12 minutes	4	4	The child is obviously enjoying the game play.
14 minutes	4	4	The child is good at taking turn but is easily distracted if not taking his turn. The child is happy now. Smiling.
16 minutes	3	3	Moving on to game play again. The child is expressionless but there is no crying or no obvious signs he is unhappy.
18 minutes	3	3	The child is not sure of this game. But seems ok because his partner is happy.

20 minutes	3	3	The session ends.
Average	**3.3**	**3.5**	

10. Child 10 - 3.5 years (additional day – am)

Time	**Score (Well-Being)**	**Score (Involvement)**	**Notes**
2 minutes	4	4	The child is generally happy within himself. He has seen *Alphablocks* on TV and ready to start
4 minutes	4	4	The child's face is beaming. He is enjoying the images floating on the screen.
6 minutes	4	4	The child is happy and repeats the sounds with the practitioner and software
8 minutes	5	5	The child is ecstatic to repeat the sounds by himself or with his partner and/or practitioner. He is completely absorbed.
10 minutes	5	5	The child is ready to play. He has seen this done on TV and knows what to do.
12 minutes	5	5	The child is clapping his hands and helping his partner
14 minutes	5	5	The child is ready to move on to the next game.
16 minutes	4	4	It can be seen that the child is trying to follow the story but it would seem it is a bit more difficult. The child is still motivated though.
18 minutes	4	4	Although the 2nd game is hard, the child still seems very content and happy to continue. But the time has come to an end.
20 minutes	4	4	The session ends.
Average	**4.4**	**4.4**	

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