AN EXPLORTATION OF THE USE OF TECHNOLOGY IN A KEY STAGE ONE CLASSROOM

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Abstract

The aim of this small-scale research study was to explore practitioner's perceptions on how educational technologies supported holistic development, which was support through three questions; how practitioners felt technology supported children's development, the issues that practitioners face with using technology, and the broader implications of using technology in a key stage one classroom.

This study adopted an interpretivist paradigm, which focused on qualitative research with a case study approach. Research was conducted in a primary school, were key stage one practitioner including the leading practitioners, teaching assistants, head teacher and technological coordinator were interviewed using semi-structured interviews. This study found that practitioners in key stage one felt that technology best supported the intellectual area of development. Educational technologies were perceived as an important aspect of education in the 21st century and an important part of the practitioner's role to facilitate learning in the curriculum through technology, providing children with the best experiences and skills for their future lives. The study also found that a lack of funding was the biggest barrier to technology integration, impacting the children's learning and development.

Keywords: Technology; Holistic Development; Key Stage One; Practitioners

Introduction

Technology is defined as the process by which nature has been modified to meet needs and wants, and is often viewed as a tool to adapt and control the environment (Selwyn, 2011, p6). In the 21st century, technology has become a key component of life, developing at a phenomenal rate it has also influenced the education system, and for life within the classroom to stay relevant and meaningful in the early years, a teacher of the 21st century should be preparing and embracing children for their futures (Beetham and Sharpe, 2007). The early years is the most crucial time for growth and development which is why it is important to investigate not only the effects of educational technology on children's holistic development, but how practitioners themselves perceive technology use in supporting development in the classroom (Couse and Chen, 2010, p76). Sugar *et al* (2004, p205) suggested these practitioner's beliefs are essential in considering how teachers teach, think and learn, and teacher's beliefs play an essential role with technology use and integration in the classroom. The increase in technological advances all around the world has affected digital usage within society, which is growing in the classroom and curriculum in England (Vulliamy, 2010, p4).

This study has researched how practitioners viewed the use of technology in the classroom to support children's holistic development. As a consequence of being at placement in a key stage one classroom, it was evident that there appeared to be an existential use of technology, where questions could be raised about the value of technology in supporting development. Practitioners who are were in the process of

learning the digital language struggled to teach a generation that would need the digital skills and knowledge to precede in future endeavours (Prensky, 2001). Teachers are put under pressure to use technologies in the classroom as part of the curriculum, the early years foundation stage encourages practitioners to support all areas of development and to also provide an understanding on the world through technology (DFE, 2018, p29-56). Baylor and Ritchie (2002) suggested that technology in the classroom is a rather new phenomenon and many practitioners who are in the profession are not technologically proficient which means there may be differing views towards the use of it. Technology and its role in education has been an ongoing debatable subject around the positive and negative impacts and implications that have affected children's social, emotional, cognitive and physical development. The other side of the debate has suggested that the open public nature of the internet means that there are many safeguarding risks with using technology in the classroom (Bond, 2014. p21)

The aim of this research was to critically investigate practitioner's perceptions of how technology supported holistic development in a key stage one classroom. The study adopted an interpretivist paradigm, which focused on qualitative research with a case study approach. Data was gathered through semi-structured interviews using a purposive sampling method to select willing participants to take part in the research. Data was collected in a primary school located in Dudley in the West Midlands, and six practitioners from the year two classrooms were separately interviewed.

The study provided a deeper understanding, on an area which had limited current research, of whether the use of technology in Key stage one should vastly change the future of the education sector, with technology already changing how people

communicate, socialise, eat and work. The following research question were explored in this study:

- How does technology support children's development?

- What are the issue practitioners face when using technology in the classroom?

- What are the broader implications of the use of technology in the classroom?

The following chapter will review literature from journal articles and books on the changing childhoods, the value of technology, barriers to technology integration, and Implications. The chapter will also critically examine current literature and studies that are available on practitioner's perception towards technology in the early years. Chapter 3 will explore the research methodology and chapter 4 will explore the raw data collected and analyse the findings of the study. lastly chapter 5 will present the studies concluded findings and limitations to the study.

Literature Review

Introduction

Through evaluating current literature available, this review will demonstrate a critical understanding of teacher's perceptions on development and technology in education. There are many areas that educational technologies cover, for the purpose of this study an in depth understanding of changing childhoods, the value of technology, the barriers to technology integration, and technology implications will be explored. Webster and Watson (2002, p13) stated that an effective literature review "creates a firm foundation for advancing knowledge" by producing a framework of previous findings to relate to new findings, establishing newer advances in research (Randolph, 2009, p2). Therefore, this review will demonstrate an understanding of educational technology in key stage one and look to locate gaps in this area of research.

Early childhood is an important period of life from birth through to 8 years (Copple and Bredekamp, 2009, p8), where growth and development is most rapid, and a time where many children have access to technology as a learning tool in the classroom environment (Couse and Chen, 2010, p76). Recent years have witnessed extreme changes in the world, from globalisation to vast technological advancements, complicating the context for child development (Kienig, 2017, p161). Globalisation is the process of increased world interconnectivity, driven by the liberalization of economies and the emergence of new technologies (Reddy, 2009, p2). The profound effects which globalisation is having on education across the

world has been from the influence of technology and its growing spread in the classroom and curriculum particularly in England (Vulliamy, 2010, p4). With the increase of digital usage in society and internationally, it is only expected that digital usage within the classroom will further increase to keep up with the demands of the future. Literature explored in this review will be from international research journals and studies, as educational technologies are a worldwide phenomenon.

Changing Childhoods

Childhood is a unique part of life in which individuals physically, intellectually, emotionally, and socially develop at an astonishing rate (Loreman, 2009, p5). The term childhood however cannot be limited to any one fixed definition, as Bond (2014, p9) stated that childhood is a social construct, changing with the influences of discourses, culture and politics. This means that the definition or idea of childhood will and has constantly changed over time, along with society. Hendrick (1997, p34) suggested that the societies which have emerged are what definitions of childhood have been dependant on, societies made up of adult's values and beliefs. It was not until the late twentieth century that childhood was established as an important distinct and separate stage of life (Clark, 2004, p10). Therefore, the concept of childhood is arguably relatively new, and according to Bond (2014, p9) during the middle ages this concept did not exist, and children were instead thought of as miniature adults.

The eighteenth century, also referred to as the new world (Hendrick, 1997, p35), first witnessed public debate on children, identifying childhood and considering how they should be thought of, nurtured, disciplined and even educated (Smidt, 2006,

p5). The emergence of two dominant discourses, the romantic and the puritan, created two competing perspectives on childhood. The puritan discourse viewed children as evil and wicked with inherently sinful natures which need to be regularly beaten (Clarke, 2004, p8). The romantic discourse however viewed children as pure and innocent beings, spiritually placed close to god and nature (Kehily, 2004, p5). Childhood in the 21st century has been greatly influenced by the romantic discourse, where adults are expected to protect children, who are viewed as innocent, vulnerable and dependant on adult protection to survive and thrive in life (Bond, 2014, p12).

The significant impact on children's experience of childhood was the result of changing norms, values and attitudes in society in relation to childhood and parenting (Bond, 2014, p12), and Buckingham (2007, p72) suggested that childhood in this digital era is defined to a certain extent by modern media such as televisions, computers and the internet. Modern childhood is substantially different to what and how childhood was for past generations with the emergence of technology and the discovery of the internet. This unprecedented rapid social change of technology in society has significantly changed the nature and expectations of childhood and childhood experiences for children in the 21st century (Bond, 2014, p9). A generation has emerged of children, greatly influenced by the romantic discourse, who are according to Tapscott (2009, p2) more comfortable, knowledgeable and literate for the first time in history than their parents, and it is this net-generation which will "develop and superimpose its culture on the rest of society". This generation of children will learn, play, communicate, work and create a different community, strong enough for social transformation (Tapscott, 2009, p2). It is this generation

which Prensky (2001, p1) states are part of a dated education system which was not designed to teach them.

Technology integration in school was first witnessed in the mid-1960s with the introduction of computers to increase learning outcomes of students, and have a positive impact of educational experiences (Culp *et al*, 1999, p1). Collins and Halverson (2010, p18) suggested that the world of education is undergoing a greater digital revolution, where more people are learning through newer technologies, transforming learning and schools. Russell *et al* (2003, p297) stated that teachers and students have had a sudden increase in the access, use, and expenditure on computer based technologies in the past decade. Technologies such as smartboard's, laptop's and iPads are already common teaching tools used by practitioners to help facilitate child development and learning in the early years. Studies suggest that 53% of 3-4-year olds go online 8 hours a week, 21% own their own tablet, and 1% own their own smartphone (Ofcom, 2017, p2). Schools which have not adopted modern media technology in the curriculum or school environment, do not reflect the lives of young children outside the school environment.

Holistic development suggests that all aspects of development, physical, intellectual, emotional, social and language are interrelated, this means that if one of these areas of development are affected by something, the affect will influence all areas (Smidt, 2006, p2). Young children's minds are increasing malleable to environmental influences such as technology, and concern arises when potential long term and irrevocable effects to a child's development from newer technologies are unproven (Healy, 1998, p17). Hutchby and Moran-Ellis (2013, p1) suggests that childhood

today is saturated by technology, and little account has been taken of the impact of these major technological advances and changes on children.

There has however been widespread moral panic and adult anxieties around the role of technology in the lives of children, from the growing pervasiveness of technology and the many claims that cognitive, emotional, physical, and social development are under threat (Plowman *et al*, 2010, p63). Children are more susceptible to the effects of the technical revolution because they are at the forefront of it and their brains are more malleable to experiences than that of adults (Bavelier *et al*, 2010, p694). According to Cordes and Miller (2000, p20) developmental delays in coordinating sensory impressions and movements, and delays in language, physical and learning developments are among some of the warnings from developmental experts in regard to the many digital technologies available to children. Plowman *et al* (2010, p66) suggested that many who argue against technology often suggested that social development was at risk because children play alone and only have second-hand experiences from the virtual world, intellectual development is at risk because children's imagination and linguistic development is inhibited, and child's general wellbeing is endangered because more time is spent being inactive indoors, increasing risks of obesity. However, Plowman *et al* (2010) study investigated young children and technology in the home environment, and not the school where there is a purpose for the use of technology, usually to facilitate learning and development (Rakes *et al*, 2006, p413).

The success of educational systems heavily relies on the teachers who Davis (2002, p254) suggests are "expected to lead the renewal of education with ICT (information and communication technologies)". Referring to Bronfenbrenner's (1992) ecological

systems theory, the practitioner is part of the child's immediate environment, the microsystem, suggesting that practitioners have an immediate influence on the holistic development of children. This further emphasises the impact teachers have on the success of education systems and their role in supporting development through successful technology integration in the classroom.

The ecological model however does not consider the roles of digital technologies, which also have a significant effect on children's development (Walker, 2015). Technologies are available to children within the home and school environment and McHale *et al* (2009, p1192) argues that it should therefore be a part of the child's microsystem as it is part of the child's immediate environment. Instead, Johnson and Puplampu (2008) proposed a dimension of the microsystem, the ecological techno-subsystem, which included non-living influences on development such as the internet, cell phone, computers and televisions, where it "mediates bidirectional interaction between the child and the microsystem". This emphasised that technology is part of the environment and has an impact upon a child's development, whether used as a tool for learning or for social deviance (Johnson and Puplampu, 2008). According to Walker (2015) however, Johnson's and Pulplampu's (2008) ecological techno-system does not consider the fact the digital technologies are available beyond just the home and school environment, and the internet provides a child with access across the wider digital world for example through social media cites. This suggest that the techno-system should extend from the microsystem to the macrosystem, instead of limiting it to the microsystem.

The Value of Technology

Parette *et al* (2009, p340) suggested educational professionals were not adequately recognising and integrating technology in early childhood settings, and not focusing on the importance of technology in the early years. A study by Ottenbreit-Leftwich *et al* (2010, p1327) however found that teachers valued technology, using it as an effective learning tool as they considered it important for student's future lives, motivating children and benefiting students high-level thinking. Sugar *et al* (2004, p205) and Palak and Walls (2009, p435) also found that Practitioners beliefs indicated that the reasons for adopting new technologies in the classroom was to prepare students for their future careers, acknowledging the role of technology in the future lives of children.

Bullard (2017, p2) stated that technology aided cognitive development through motivation and independence and by providing unique opportunities to children. Development is encouraged through interactions with the environment (Kaye, 2016, p5) and according to Brown *et al* (2012, p114) as technology is a key part of children's environment, it enables them to develop their cognitive skills, by allowing children to explore their interests, use their curiosity to explore and develop their imagination skills. Thus, technology allows children the opportunity to acquire, make sense of and produce a plethora of information through multimedia ways, and is considered a tool that provides possibilities and opportunities to develop skills such as problem-solving, technical, creative, and reasoning, as well as developing concepts of cause and effect (Papic and Mulligan, 2005, p226).

Summers *et al* (2013, p126) argued that technology enabled children to develop their physical development, for example children's fine motor skills were enabled to manipulate keyboard's and mouse's, additionally it encouraged concentration and self-confidence through their independent exploration of technology. However, Alliance for Children (2004, p1) argues that high-tech corporations are behind the promotion of these supposed benefits of the techno-revolution on child development, and independent research cannot solely be relied upon, as they have limited long-term evidence of gains.

Barriers to Technology Integration

Hew and Brush (2007, p232) stated that technology integration in early years education "is typically affected by teachers' technology skills, teachers' technology beliefs and teachers' perceived technology barriers". This suggests that practitioners who have a positive outlook on technology in the classroom, will most likely have a wider variety of technology available in the classroom to support development. Practitioners who perceive technology use in the classroom as an invaluable resource to facilitate learning and development and have little confidence, will be unable or unwilling to use them effectively with meaning and success (Nikolopiulou and Gialamas, 2013, p286). Positive perceptions of technology however do not necessarily mean or guarantee the use in classrooms. Even if teachers believe the technologies will have positive impacts upon child development, actual instructional use of technologies may be dismissed based upon other factors such as money, access and time (Shifflet and Weilbacher, 2015, p384). Ertmer (Ertmer *et al,* 2006, p55) argued that there are two primary categories of the perceived barriers to technology integration, these are the extrinsic barrier which include the lack of

funding, resources, time and support, and the intrinsic barriers which include the beliefs and lack of confidence of the practitioners who are leading the next generation of children into this digital age, as well as their visions of integration (Ertmer, 2005, p27).

Windschitl and Sahl (2016) found both positive and negative perceptions of practitioners on having laptops as a tool to learning and development in the classroom. Positive perceptions suggested that the technology enables a constructivist atmosphere were children become more independent and motivated, whereas negative perception suggested that the use of laptops in the classroom was unnecessary, and there was little to no confidence on how children could learn and develop basic skills such as problem solving from a laptop. According to Ertmer (2005) this creates an intrinsic barrier to the successful integration of technology in the early years.

Another perceived influence on technology integration is the generation gap. A generation gap separates students from their teachers based upon their age and competencies with technology use, causing concerns on whether practitioners can adequately prepare young children's educational needs by facilitating understanding and engagement with educational technologies (Guo *et al*, 2008, p236). Prensky (2001, p2) argued that a generation of digital immigrants, which he defined as individuals who have learned to adapt to the changing environment but speak an outdated language of the pre-digital age, struggle to help a generation of digital natives meet their learning and developing needs. Prensky (2001, p1) suggested that digital natives are a population born after 1980, that speak an entirely different language, described as a "digital language of computers, video games and the

internet". According to Uzunboylu and Tuncay (2010, p192) practitioners had lower "teacher performance in digital technologies" when they had low ICT skills because this meant that they lacked the e-learning skills needed to be successful. Having technology in the classroom allows practitioners to provide "rich learning experiences" because it keeps hold of the digital native's attention in the classroom, allowing teachers to meet the needs of the children (Hicks, 2011, p189).

A study by Russel *et al* (2003, p305) suggested that the newer the practitioner has entered the teaching profession the more confident that practitioner will be at using technology in the classroom, than those who have been teaching for 6 or more years. This generation gap can therefore create intrinsic barriers to technology integration, practitioners who identify as technology immigrants may be less confident in using the technology. Guo *et al* (2008, p251) however concluded that the effects of ICT literacy and age showed "no statistically significant differences" and that the differences between digital natives and digital immigrants were greatly exaggerated. This suggested that older generations were capable of teaching with technologies. The study was based upon self-evaluations instead of measurements of their actual capabilities with technology, which may have affected the studies validity.

Kopcha (2012, p1116) suggested that many practitioners believed technology was important for intellectual development, but time was one of the biggest negative perceptions of technology, in terms of being able to plan activities which involved technology, and frustration over the technical issues of internet connectivity, software updates and setting up successfully. However, another study found that funding and infrastructure was suggested as being the major barrier to integration

because technologies are not cheap and sustainable, and this suggests why some attitudes to technology are negative, and why some teachers may never fully agree to the benefits that technology may provide which were also suggested to be in terms of cognitive development (Shifflet and Weilbacher, 2015, p378). Although technology use has been suggested to encourage cognitive development, there are however major conflicting view's in regard to the effects on children's social and emotional development. According to Brown *et al* (2012, p114) many teachers believe social and emotional development are harmed and damaged by children's isolation whilst on mobile devices, and issues such as these are particularly important in key stage one, where young children's growth and development is at its most rapid.

Nikolopoulou and Gialamas (2013) found that there were several major extrinsic barriers identified which were preventing successful integration, these included a lack of funding, lack of technical support, outdated/incompatible/unreliable computers, lack of internet access, inadequate training opportunities, large number classroom sizes, and a lack of administrative support. Similarly, in other studies a lack of skills and funding were considered as one of the greatest barriers to integration. In terms of intrinsic barriers, teacher uncertainty of the usefulness of technology on development was a minor barrier in comparison to the extrinsic barriers (Nikolopoulou and Gialamas, 2013). Parette *et al* (2009, p340) however suggested that technology in early childhood education is important, and practitioners can no longer hide behind these extrinsic barriers of time and resources, which are challenges that can be overcome through "grant-writing, collaborations with local agencies, and donations of equipment".

Russel *et al* (2003, p305) found that practitioner's beliefs on the positive impacts of technology on learning did not differ between the older and young teachers, but beliefs on the negative impacts, such as laziness and low quality of writing, were much stronger with teachers who have had 5 or less years' experience in the profession. This would suggest that digital natives expressed a much stronger view on the negative impacts on learning and development than those who would have been classified as digital immigrants, in areas such as physical development. Russel *et al* (2003, p305) also speculated that this may have been because these teachers are much more confident and have more first-hand experience learning with the technology, that would have led them to feel as such.

Implications:

There are risks which arise with the introduction of technology and the internet in the classroom, it is the open public nature of it which creates an online world where the boundaries between public and private spheres of society are blurred (Bond, 2014, p21). Buckingham (2007, p75) states that technologies and the internet "present unique opportunities" for children, as well as dangers and risks. One argument suggests that exposure of technology to young children has caused the death of childhood. This argument suggests the boundaries between adulthood and childhood are being erased in the virtual worlds technology creates. The open nature of the internet therefore creates a variety of dangers, as it creates a space where children are exposed to adult content as well as subject to adult contact online (DFE, 2016). It is in this space that adults may pose as children, and children may pose as adults, making children vulnerable to online grooming, bulling and sexual

exploitation consequently negatively affecting physical and social-emotional development (Wolak *et al*, 2008, p117; Valcke *et al*, 2011, p1295).

Schools adopt an approach to prevent such dangers and risks by introducing content filtering software and firewalls, which prevents access to certain websites dubbed inappropriate or risky. There are however a few limitations to this approach, firstly children who are more knowledgeable with technology can work their way around firewalls through the use of proxy servers which allow access to be gained to websites which are censored (Livingstone and Bober, 2006; Houghton-Jan, 2010). This emphasises the generation gap between two generation, as children appear to be more knowledgeable in terms of technology. Secondly Bryon (2008, p103) argues that the filtering software does make educational technologies safer, but does not teach children how to safely use the internet, or provide children with the understanding as to why the filtering is used (Shariff, 2008). Another point also suggest that the filtering approach does not allow children to fully be independent and they will not build up any resilience to be able to successfully manage the internet (Livingstone and Bober, 2006; DFE, 2012, p3).

Another argument suggests that technology has caused young children to become less smart and lazier than the generations before them (Tapscott, 2009, p3). Bauerlien and Walesh (2009) argues that technological advances and digital media are the reason behind falling literacy rates, because of the decrease in traditional teaching methods and value of knowledge. However, Shifflet and Weilbacher (2015, p375) suggested that some practitioner felt that in the classroom technology should be used to assist learning and not to replace learning that is taking place or the role of the teacher which is more essential and critical than the technology. Technology

develops cognitive development when used as a tool to aid learning, the way Vygotsky suggested the zone of proximal development operates where the there is a difference between what a learner can do independently, and what a learner can do with guidance or help (Maynard *et al*, 2011, p30).

Summary

Through evaluating current literature available, this review has demonstrated a critical understanding of teacher's perception on how technology supports holistic development in key stage one. Four key themes were explored, these include changing childhood which explored the change in discourses influencing childhood and the impacts that technology has had on childhood and education, and the influences technology has had on children's environment by analysing Bronfenbrenner's (1992) ecological systems theory. The second theme discussed was the value of technology in education, exploring the benefits on children's development, were practitioner suggested the importance of technology for children's futures Palak and Walls (2009, p435). Barriers to technology integration were also critically discussed which included intrinsic and extrinsic barriers to the successful integration of technology. Finally, the implications of educational technologies were explored which included the open public nature of the internet and the limitations of approaches to prevent risks in the classroom. This review demonstrated an in depth understand of education technologies, it was found that limited literature currently existed in terms of the perception of key stage one teachers, including teaching assistants on technology supporting holistic development.

Methodology

This chapter will outline and explore the studies research methodology, approach, paradigm and research methods providing a rational as to why these approaches were chosen, acknowledging the limitations and advantages. This chapter will also discuss the setting and the ethical considerations required for this research.

The Methodology section is vital in research, as it aids the researcher in finding the appropriate research methods and methodology that best fulfil the aim, which strengthens the validity and reliability of the research as well as justifying the researcher's choice (Blaxter *et al,* 2010, p57). The following research questions will help guide the methodology:

- How does technology support children's development?

- What are the issue practitioners face when using technology in the classroom?

- What are the broader implications of the use of technology in the classroom?

Research methodology:

This research is linked to the social science as it attempts to explore, understand and theorize the social behaviours that occur within society, in this case it looked to find meaning of the world through practitioner's perceptions of technology (ref).

Within the social sciences there are different research paradigms, paradigms are researcher's central system of beliefs about the world, suggesting how the researcher see's the world, whether it is subjectively or objectively, influences how they seek to understand It (Thomas, 2013, p106). This study used an interpretivist

paradigm, which focused on qualitative research with a case study approach. The interpretivist paradigm centres on understanding the complexity of how individuals make sense of their world (Antwi and Hamza, 2015). Snape and Spencer (2003, p3-4) state that the nature of the research involves "conducting naturalistic inquiry in real-world" situations, and aims to provide detailed and interpreted understandings of the social world of research through aspects such as experiences and perspectives. An interpretivist paradigm was adopted as it attempts to understand phenomena through meanings that individuals assign to them, and this studies purpose is to attempt to understand practitioner's views and experiences towards educational technologies in the classroom (Antwi and Hamza, 2015). Thus, exploring social phenomena to gain understanding and hence why the positivist paradigm was dismissed in this research, as it intends to gain knowledge through objective means without considering people's perceptions, which did not comply with this research's aims.

The interpretivist research paradigm meant that the data collected was qualitative, as it proposed close interactions with the participants. Qualitative data was collected in this study for an in-depth understanding of practitioner's perceptions, through the "verbal description of real-life situations" (Silverman, 2014, p4). As quantitative research is focused on collecting numerical data objectively without considering peoples thoughts, experiences and opinions, it was considered inappropriate for this research, which aims to understand practitioner's perceptions (Bryman, 2015, p375). Qualitative research places more emphasis on the perspective of an insider in the study, where the focus is on why and how people behave, meaning close

interactions with the participant to seek understanding (Lapen *et al*, 2012). This type of data has been defined as "long descriptive narratives" (Silverman, 2014, p20), but according to Trolley *et al* (2016, p35) this however means that qualitative data cannot follow a criterion which judges research quality and outcomes such as "validity, reliability, objectivity, precision and generalizability", which quantitative data can. This often questions a studies trustworthiness and credibility, even if data provides rich and detailed findings of a social phenomenon (Tuli, 2011, p101). However, as the research centres on the particular view of selected practitioners, the generalisability of the research is not an issue as this research does not aim to be generalised, nonetheless elements of this study may have some parallels with other settings.

Case studies, according to Burton and Bartlett (2009, p64), investigate and gain knowledge of a single case, which was relevant to this research as it investigated the case of technology usage in a single. A case study approach was adopted as it allowed small scale research to take place within a limited time scale, this also allows researchers to closely examine data (Gillham, 2007). The method selected a particular number of participants, which allowed the study to collect data in one setting successfully within the limited time and allowed a holistic interpretation of the case (Gillham, 2007). Hodkinson and Hodkinson (2001) suggested that case studies allow an in depth understanding of complex inter-relationships grounded in lived reality, which enable the exploration of the unpredicted and unusual, but can also mean difficulty in analysing and representing vast amounts of data.

Similar to Shifflet and Weilbacher (2015), who shared a similar aim, this research adopted semi-structures interviews to fulfil its aims. Shifflet and Weilbacher (2015, p371) suggested semi-structured interview were used to be able to "ask relevant follow-up questions"

The study used semi-structured interviews to collect data, which allowed the freedom to explore practitioner's attitudes towards technology. Semi-structured interviews are best suited for understanding the participants perceptions and experiences of technology in the classroom (Blandford, 2013, p23). This type of interview falls between structured and unstructured interviews and usually follows a set theme or focus which is planned before the interview, but allows the participant to follow up on "interesting and unexpected avenues that emerge" (Blandford, 2013, p23). According to Sharp (2009, p75) unstructured interviews were unsuitable as they lacked structure and open-ended questioning that could make the validity of the research questionable as the research aim may remain unanswered, this would therefore not collect precise enough data for this study to conclude any findings. Similarly, structured interviews were not adopted as they do not allow as much information to be collected due to the rigid nature of closed questioning (Gillham, 2010, p65). This suggests participants are strictly led to answer questions that the researcher has set, failing to acknowledge any potentially new knowledge, which was outside of the researcher's initial view, this could be seen as bias thus effecting the reliability and validity of the research (Sharp, 2009, p74). The combination of structured and unstructured questions within semi-structure removes the issues of bias, validity and reliability (Alshenqeeti, 2014).

The Setting:

This research began by contacting several primary and infant schools in the same geographical area to ensure ease of travel to collect data. The school's gatekeepers were contacted via email, and informed of the aims of the research and participant involvement. A primary school located in Dudley in the West Midlands responded and allowed the research to be conducted. The gatekeeper was further informed of what the research would involve and the participants that would be required, indicating that no children or parents would be involved.

The participants included the leading practitioners in the classroom and the teaching assistants, as these participants directly interacted with the children in the classroom and would be the ones who planned and taught the lessons, using technology as a tool to help facilitate learning and development. One of the technology coordinators in the school, as the participant would be directly working with technology and have an in-depth understanding of technology and the policies and procedure for practice on using technology in the classroom, and one of the head teachers who would have the power to make decision regarding technology usage in the school.

Sampling methods:

In able to retrieve reliable findings and also be able to collect data within the limited time set, 6 participants were interviewed. The study used a purposive sampling method, where sample is selected based on the participants ability and willingness to provide or share their knowledge or experience, therefore using a non-probability technique based on the researcher's knowledge of the study. The sample shared similar characteristics of the population that are participants working with children in a classroom (Tangco, 2007, p?). Sofaer (1999) states that sample methods which

are chosen purposively are used more often in case study research to meet the studies requirements. The sample which was selected in this study ensured that there was different perspective on the phenomenon, achieved through semi-structured interviews.

Ethical issues and considerations:

Ethical research proposes that research is not solely a matter of data collection, but also concerns matter such as "dignity, rights, safety and wellbeing" of all part takers in the research study to ensure participants are protected from harm (Stuart and Barnes, 2005, p3). Ethical consideration in social science involves the ethical values to which researchers make decisions on, as well as the ethical norms, codes and regulations which govern current research practices (Farrimond, 2013, p13). Before any data was collected, ethical approval was first sought and granted from Newman University Research Ethics Committee (see Ethics Certificate).

Connelly (2014, p54) stated that informed consent is essential to the research process, were consent should be voluntary and the participant should be competent and have full understanding of their role in the research. The participants were given an information sheet (appendix 1) which included information on the research aims, purpose and procedures. They were also informed that they had the right to withdraw at any time and did not have to provide answers to question asked. Stuart and Barnes (2005, p7) stated that informed consent refers to the individual's right to be involved in the research and the information sheet must include in very simple language and description of the study, how long the interview will take, what it will

involve from the participant and matters of confidentiality. Before interviews began, written permission was obtained from all the participants involved, a copy of the consent form is available in (appendix 2). This form indicated that the participant would remain anonymous throughout the research. The study maintained anonymity and ensured confidentiality for all involved, and participants were offered an opportunity for a debriefing before interviews began. Practitioner were informed however that in the event information was disclosed which may have affected the safety of a child or children, there would be a breach of confidentiality and the researcher would follow the safeguarding policy and procedures in the setting. To keep participants anonymous the study used Pseudonyms, referring to leading practitioners as Mrs A and Mrs B, teaching assistants as Mrs C and Mrs D, the technology coordinator as Mrs T and the head teacher as Mrs G.

The researcher and possibly the researcher's supervisor would only be granted access to the data. After the research was completed, hard copy data was locked away safely and recorded files were kept on a memory stick also locked away. After three years have passed, the data will be deleted or shredded to ensure participants confidentiality.

Findings and Analysis

The aim of this qualitative research study was to explore practitioner's views of how technology supported holistic development in a key stage one classroom through the following three subsidiary questions: How does technology support children's development? What are the issue practitioners face when using technology in the classroom? What are the broader implications of the use of technology in the classroom?

Through a case study approach, raw data was recorded and transcribed through semi-structured interviews (Appendix 3). Through a thematic approach, findings were then coded and analysed into four emerging themes, which included holistic development, confidence, barriers and implications, and importance.

Holistic Development

It was evident through the semi-structured interviews that the majority of the participants agreed that technology was beneficial in the classroom. The head teacher, Mrs G, stated that technology best supported children for their future needs, it supported holistic development by helping children "to embrace change and be open to new initiatives". One of the classroom teachers, Mrs A, described technology as an efficient tool in practice which would be difficult as a practitioner to "deliver the curriculum today without ICT". Ottenbreit-Leftwich *et al* (2010, p1327) also found that teachers valued technology as an effective tool in the classroom. This suggested that practitioners understood the importance of technology and therefore integrated technology into their classrooms, this finding opposed Praette *et al* (2009) beliefs. This may have been because the study was published in 2009 and

had gathered data from previous years before, the rate of technology development is constantly increasing, and Kienig (2017, p161) stated that recent years have witness the most rapid changes of technological advances, including educational technologies. The study also did not consider the extrinsic barriers that cannot be easily overcome, such as the funding to constantly update technologies (Ertmer, 2005, p27).

The study also found a common perception among most of the participants which suggested that technology in the classroom supported children's intellectual development. Mrs A indicated that technology supported development in key stage one through intellectual, social and emotional development, but had not "really considered" the other areas as much as "the academic" aspects of development. Mrs A also stated that online texts, video books, animations and e-books were used as a stimulus to help facilitate learning in English lessons, and in mathematics interactive maths programs were used to demonstrate "measuring and reading scales". Similarly, the teaching assistants suggested that children learn from the technologies more than they would from just the teachers. This supported what Kopcha (2012, p116), and Shifflet and Weilbacher (2015, p378) found, stating that practitioners believed that technologies had mostly benefited intellectual development. The technology coordinator, Mrs T, stated that in terms of intellectual development, the technology is used for research were children are independently exploring a topic encouraging their independence and making learning interesting. The children are not just verbally told information, they are being active in their own learning through the technology, which Bullard (2017, p2) suggested aided cognitive development. Ottenbreit-Leftwich *et al* (2010, p1328) also found that technology "motivated

students to become more actively involved" because the children were interested. Hicks (2011, p189) suggested that this was because practitioners can connect with students who are digital natives through technology, securing the attention of digital natives and allowing practitioners to provide rich learning experiences and meet the children's needs.

In contrast, one of the teachers, Mrs B, stated that technology was important for children to develop key skills, she also stated that technology could add to holistic development but in terms of intellectual development Mrs B felt that teacher led topics supported development more than technology. The participant stated that she did not feel technology was crucial for children's holistic development in key stage one. However, Mrs B appeared to be unsure of her opinions as she later supposed that computers could add to intellectual development, depending on what children are using the computers for.

It was also evident that a many of the participants also felt that there were also negative affects to intellectual development, which were reading, writing and problem solving. Mrs G stated that Language development and reading initial teaching should be through direct teaching". Similarly, Mrs C who had 19 years' experience working with children suggested that reading and writing were lost when children were constantly using technology. The technology coordinator, Mrs T, also suggested that the technology was hindering develop in terms of` problem solving skills because children relied too much on the technology. Both positive and negative perception were found towards technology, similar to Windschitl and Sahl (2016) who found that positive perception suggested technology provided independences

and motivation and negative perceptions suggested children lacked problem solving skills. Bauerlien (2009) also argued that technology was the reason for falling literacy rates, because practitioners focused less on traditional teaching methods. This study also found that practitioners, who suggested negative impacts to development had 5 years or more experience of teaching, which opposed Russel *et al* (2003, p305) findings which suggested that practitioner who had 5 or less years' experience had stronger negative perceptions. This may have been because the less confident practitioners preferred traditional methods to teaching and therefore were unintentionally biased against technology.

Mrs A indicated that in terms of social and emotional development, technology helped children "achieve success" and therefore boosted "self-esteem". An example was given of a child who may find writing difficult, but on the laptop, is able to produce a fantastic piece of work because of the "spell check" programme enabling the child to "achieve success". Mrs C did however feel that in terms of social development, technology had made children "tunnel visioned" because they do not wish to know their surroundings once they are given digital technologies. Plowman *et al* (2010, p66) and Blake (2012, p114) also found that social and emotional development was considered at risk because children used technologies in isolation. However, Plowman *et al* (2010) was investigating children in the home environment, were technology use is not purposeful in terms of facilitating learning and development. Mrs C may have also been speaking in terms of technology use outside of the classroom environment. Bullard (2017) suggested that in the classroom computers offered children a unique environment encouraging social interactions between children, who may be sharing the devices.

Mrs D suggested that in terms of physical development technology helped with hand-eye coordination, when children "learn to navigate the screen using the mouse". Summers *et al* (2013, p126) stated that physical development was encouraged, as children developed their fine motor skills when using the keyboard and mouse to navigate the computers.

Confidence

It was evident that a trend was present regarding the majority of the participants, and the relationship between their level of confidence with using technology and their age. The teaching assistants and head teacher were aged over 45 years, with 10 and above years' experience working with children. However, their confidence in using technology was less than that of the teachers who were aged below 30 years in the school.

Mrs C, one of the teaching assistants, stated that she was "not overconfident" and felt that she knew "the basics" but needed to learn "a little more knowledge" around technology, because she sometimes found herself in situations where the children in the classroom were more knowledgeable and were, therefore, teaching her how to work certain technologies in the classroom. This supports Tapscott (2009, p2) who suggested that this net-generation of children are more knowledgeable and ICT literate than adults. In this situation, the children are the ones who are teaching the teachers.

Similarly, the head teacher, Mrs G, who had 30 years' experience working with children also stated that her confidence level was "okay" when it came to using technology. Mrs D, who is also a teaching assistant, stated that she had no

confidence at all with working technology regardless of whether it was in the classroom or at home. When asked what technology she used with the children and how confident she was, the participant stated that she used "hardly any" because of her lack in ability of using "any of them" and that included "the white board" [referring to the interactive Smartboard]. The participant proved her lack of knowledge around technology through her responses during the interview. According to Etmer (2005) the participants identified as digital immigrants, who spoke an outdated digital language of the pre-digital age, hence why they had lower confidence in using technology, as they have had little to no experience with technology growing up. Ertmer (2005, p27) indicated that a lack of confidence created an intrinsic barrier to the successful integration of technology, were practitioner would be unable to use technologies effectively with meaning and success (Nikolopiulou and Gialamas, 2013). This therefore suggests that children would not reap the full benefits of technology, unable to successfully support holistic development.

In contrast to this Mrs B and Mrs T who were both aged in their 20's, felt that they were confident in their abilities with using technology in the classroom. Mrs B stated that she was "quite confident in using a computer" because she previously had experience at university with computing. Similarly, Mrs T stated that she was confident in her "own abilities". Both teachers had less than 5 years' experience and this trend of younger teachers being more confidant in using technology was also reflected in a similar study by Russel *et al* (2003, p305), who found that newer practitioners entering the profession where more confident than those who have had 6 or more years of teaching experience. According to Prensky (2001) both teachers

were classified as digital natives, who speak the digital language of technology, and this may explain why their confidence level with using technology was much higher than the teachers who were identified as digital immigrants. According to Ertmer (2005) this meant that practitioners who had just entered the profession, were able to integrate technology more successfully, providing richer learning experience and meeting children's developmental needs (Hicks, 2011, p305).

However, Mrs A did not wish to provide an answer when asked about her age, but did state that she had "over 16 years" experience of working with children. She therefore, did not follow the same trend, stating that she has "always felt confident with using ICT" and it was clear that the participant was knowledgeable in this area, stating the many educational technologies that she had used such as "eBooks" and "graphic programs". This would support Guo *et al* (2008, p251), who suggested that the relationship between age and ICT literacy was greatly exaggerated in studies, and that there are "no statistically significant differences" between the two. Reasons for why the teaching assistants were less confident may have been because as assistant teachers they felt that it was not a requirement or as necessary for them to be computer literate, as it is for classroom teachers. Mrs D stated that she had "no need to use it" referring to technology, because "teachers do all the computing". According to Ertmer (2005, p27) this lack of confidence creates an intrinsic barrier to successful integration of technology in teaching.

<center>**Barriers and implications**</center>

Intrinsic Barriers:

It was evident that one of the biggest barriers to technology integration was the lack of funding. When asked about the barriers to technology integration at the school, all the participants indicated that the school's lack of funding for technologies created the biggest barrier which prevented successful integration and use of technology. Mrs A stated that the "budget is quite restricted" which meant that less money was spend on ICT equipment because the school currently had "very low numbers of pupil premium children". Similar, Mrs B and Mrs T stated that they would have the technology "out every single week" in the classroom, if they had confidence in the technology working without complications. The Participants suggested that funding was a "major problem" and a barrier to technology integration in the classrooms, which impacted the "children's learning" and the practitioners teaching, particularly when the interactive smartboard have issues. The teaching assistants also agreed that the school did not have the funding, and the technology in school was outdated. This was because the technology required continuous updating which Mrs A suggested "only lasted 3 years" as all technologies have a "shelf life".

This study's findings were similar to Nikolpoulou and Gialamas (2013) who found several major extrinsic barriers which included a lack of funding, outdated and unreliable computers and large number classroom sizes. Ertmer (2005) and Shifflet and weilbacher (2015, p378) also found that a lack of funding created the biggest barrier to technology integration. This lack of funding prevents the ability for practitioners to use technology in the classroom with success, which impacts the

children's learning and development. if adequate technology is not accessible, then technology cannot support holistic development in the classroom. However, Parette *et al* (2009, p340) argued against this stating that practitioners often claim that a lack of funding prevents successful technology integration in the classroom, but this barrier can be overcome by working with local agencies, donation and grant-writing. Similarly, Rogers (2000, p464) suggested that a lack of funding in this area may be an individual choice, based on attitudes towards technology, and if technology is not first planned in terms of what technologies can best support educational goals, then this leads to inappropriately allocated funding.

Risks:

When practitioners were asked about the broader implications that using technology in the classroom have, most of the participants suggested that there were risks with using technology but this would only be tackled by building resilience and educating the parents. Mrs A stated that it was important that "children have exposure" and it is the responsibility of the school to educate children and parents "how to be safe online" by "working with parents and holding workshops" and making children aware of the risks. Mrs B and Mrs G also stated that its important for children and parents to understand the risks. Similarly, Bryon (2008, p103) suggested that teaching children about the risks associated with technology is safer than just relying on filtering software. The home environment does not always offer the same protection that the school environment does, this means that if children are not aware of the dangers that open public nature of internet creates, may result in exposure of risks to children with no resilience (Bond, 2014, p21).

Importance

It was evident that a common perception among the participants suggested that technology was an important part of the children's future in key stage one, and it was therefore an important part of the school curriculum. Five out of the six participants indicated that educational technologies were important for supporting development in key stage one, and all six participants indicated that it was important at that stage to prepare children for the future which will be growing in technological advances. Mrs G, Mrs A, Mrs B, Mrs D and Mrs T, all stated that using technology was an "important" part of education in key stage one. Mrs G stated that "children should be equipped to face the future" which according to the head teacher would be 'full of technology". The participant suggested it was therefore important to introduce technology to key stage one through the curriculum in the classroom to help them "embrace the change" and be open to the support technology provides. Mrs A stated that as teachers they must "move with the times" because the children will go onto "jobs of the future" where ICT will be inevitable. If the teachers are not preparing children for this than they not providing the children with the appropriate skills, and are therefore "letting them down". It was perceived as important for children in key stage one to have exposure and allow the children to explore the types of technology to equip them for the future, as long as the technology was purposeful and facilitated positive learning. Similarly, Mrs B stated that it was "important" for children to "learn the fundamental skills" of learning technologies, because they begin to "develop key skills" which are important for children as the "world is changing", with technology at its centre.

These findings were similar in a study by Palak and Walls (2009) who also found that participants acknowledged the importance of technology in the future lives of children from year two onwards. All participants had acknowledged that technology in the classroom was important because future jobs would involve the use of technology. This indicated that all the participants had recognised the rapid rate at which technology continues to move, which according to Reddy (2009, p3) is changing the way industrial activities and the global business environment is organised. This suggests that the practitioners understood that technology would be an influential part of the children's environment in their future lives, and the role of the practitioner is to prepare children for their future. This can be done by introducing learning technologies into the children's environment. Sugar *et al* (2004, p202) stated that "beliefs are essential in considering how a teacher teaches, thinks and learns". This reflects what Davis (2002, p254) stated, that the success of the education system greatly relies on the practitioners and their opinions on technology and education. If practitioners felt that technology use was important in key stage one, they would be more successful in supporting children's holistic development through the use of technology.

Mrs T, the technology coordinator, provided a stronger belief stating technology was "the way forward because it's the future" and felt that the school had not integrated enough technology into the curriculum. The participant believed writing should be done on word processers, as she herself does not hand write work as an adult. The participant also acknowledged that the curriculum "needs to be balanced" and the children need exposure to technology and given opportunities, but children also "need to play" and "socialise with each other and not over a screen". According to

Prensky (2001) the participant identified as a digital native which may have influenced her opinion. Her role as one of the technology coordinators indicated that the participant was affluent in technology and would therefore encourage the use of it in the classroom and have stronger positive beliefs towards it.

In contrast, Mrs C who identified as a teaching assistant indicated that it would be much more suitable to "wait till key stage two" because children should learn the basics of reading and writing the tradition way, to encourage holistic development. The participant suggested that she may have felt this way because of her "age", she considered herself the 'traditional practitioner' who was taught by "old blackboards and chalk". However, the participants did also state that technology was the "way forward" and the future will only have more technologies available in the classroom. Similarly, Mrs D who was also a teaching assistant, felt that education should include traditional learning and not solely computer based, as the teaching assistant suggested she was "not really into computers". In contrast however this participant encouraged technology, suggesting that is was an important part of education in key stage one because she considered it "the way forward" and that at a foundation level it was important for children to "navigate" the basics of technology and computers.

According to Prensky (2001) both participants identified as digital immigrants, this indicates that the participants are of the pre-digital age and would therefore struggle to assist children who are confident with using technologies. Mrs C had identified that this may have been why she felt a certain way about technology. Buabeng-Andoh (2012, p147) stated that "many teachers are hesitant to change existing programs" to programs that are not familiar. This may be the case for both teaching

assistants as they have previously suggested that they are not confident with using technology, hence will be hesitant to the change of "traditional" education to a more technology based curriculum, therefore influencing the successful integration of technology into key stage one. Both participants have stated that technology is "the way forward" suggesting that they acknowledge the benefits of technology for the children's futures, but according to Ertmer (2005, p27) this may indicate that the participants create intrinsic barriers in terms of their visions of integration and their lack in ability to use technology.

Conclusion

This chapter will summarise the main findings in this case study research, were raw data was analysed in four emerging themes, in response to the aim. The limitations of the study and suggestions on future development will also be addressed.

In conclusion, this case study research was aimed to explore practitioner's beliefs in key stage one towards educational technologies supporting children's holistic development, by exploring three key questions, how does technology support children's development? what are the issue practitioners face when using technology in the classroom? and what are the broader implications of the use of technology in the classroom?

The study found that practitioners understood the changing nature of childhood from the influences of changing values and developments in society, recognising the

impact that technology would have on children born in this digital age. Practitioners therefore agreed that to meet future needs, children must be introduced to technology and supported in the classroom through various technologies to support their holistic development. Utilising technology as a tool to facilitate learning and development. This first theme, holistic development, found that a common belief was shared among the participants that technology was beneficial in key stage one, but practitioner also believed that it was mostly supported through intellectual development, rather than all areas of development. The study found that some aspects of particular areas of development were also considered to be less supported such as reading and writing.

It was interesting to find that the teaching assistances had little confidence with technology compared to the leading practitioners, as they felt assisting teachers did not need to be as proficient. Nonetheless all practitioners indicated that the biggest barrier which was faced with technology integration was the lack in funding. In terms of broader implications, children's use of technology outside the classroom was best tackled through educating not only the children but the parents on the risks associated with technologies.

Limitations of the case study

The study was focused on technology usage in key stage one, however research was only conducted in year 2 classrooms. This may have affected the studies generalizability of research of key stage one practitioners. In terms of future developments, it would be interesting to explore a comparison of a range of opinions between year 1 and year 2 classrooms, to determine any similar or contrasting

opinions based on the difference in age group. The study could have also collected data from more than one key stage one setting to gather more reliable findings.

Difficulty with collecting data was an issue with the deputy head, who had a busy schedule and was therefore unable to provide detailed responses to questions. This could have been overcome if arrangements with the setting were made sooner, allowing practitioners to arrange the most suitable times for interviews.

Another limitation to the study was based on issues of validity as the study focused on practitioner self-evaluations on practitioner's abilities and confidence. For further development this study only investigated perceptions through semi-structured interview. This study could have also observed the use of technology in the classroom and therefore involve the children who are at the centre of this research.

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Participant Information Sheet

Title of research project: An exploration of the use of technology in a key stage one classroom

Research Question: "What are practitioner's perceptions on how technology supports holistic development in a key stage one classroom?"

The aim of this study is to explore how practitioners themselves feel about using technology as a tool to facilitate education and support development in key stage one. This study will focus on the relationship between technology and practitioner's perceptions of technology, and how it helps them to meet the needs of the children. Perceptions around technology may differ because of the digital divide between practitioners who embrace technology and those who do not. This study will provide a deeper understanding, on an area with limited research currently, of whether the use of technology in early years education should vastly change the future of the education sector, with technology already changing how people communicate, socialise, eat and work. Also, how beliefs may impact practice in the early years.

The study will require a specific number of participants, 6 to 8 participants will be interviewed in this case. The study will use a purposive sampling method, this is a sample selected by the researcher where participants are able and willing to provide or share their knowledge or experiencse. Data will be obtained through a semi-structured interview from the selected participants and every participant will be interviewed individually. Interviews will be recorded which will provide more accurate data to analyse.

The study will keep participants anonymous and confidential. However, confidentiality may need to be breached if information is shared which may jeopardise the welfare of any child. Ethical approval was granted for this research by the research Ethics Committee of Newman University, and the participant has the right to withdraw at any stage of the research.

If you have any further inquiries related to my research please contact the following:

NEWMAN UNIVERSITY

INFORMED CONSENT FORM

Name of investigator: Sayra Akhtar

Title of research project: An Exploration of the use of Technology in a Key Stage One Classroom

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Research Ethics Committee of Newman University.

I have read and understood the participant information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence.

I agree to participate in this study.

Name of participant

Signature of participant

Signature of investigator

Date

Dissertation Interview Questions

1. How long have you been teaching?
2. What year do you teach?
3. Age (of practitioner)?
4. What technologies do you use with the children in the classroom- ICT?
5. How confident are you with using technology in the classroom?
6. What are your thoughts on children using technology?
7. Do you think using technology is an important part of education in key stage 1?
8. How would you suggest technology supports children's holistic development?
9. Do you feel certain areas of development are more, or less supported through the use of technology?
10. Do you feel practitioners in the early years should have a certain degree of knowledge around being able to use technology effectively? (Be proficient)
11. What implications have you personally come across with using technology in the classroom?
12. Are there any broader implications that you may have come across when using technology with children? (using technology for school at home, responsibilities in terms of safeguarding, offering support to parents)
13. Do you feel that there are any barriers to technology integration in the classroom?
14. What role do you think technology should play in education in the future?
15. What are your thoughts on practitioners who may have opposite perceptions to your own towards using technology in the classroom?