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Teachers' and Parents' Perspectives of Digital Technology in the Lives of Young Children

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ABSTRACT

The pervasiveness of technology in the 21st Century has meant that adults and children live in a society where digital devices are integral to their everyday lives and participation in society. How we communicate, learn, work, entertain ourselves, and even shop is influenced by technology. Therefore, before children begin school they are potentially exposed to a range of learning opportunities mediated by digital devices. These devices include microwaves, mobile phones, computers, and console games such as Playstations® and iPods®. In Queensland preparatory classrooms and in the homes of these children, teachers and parents support and scaffold young children's experiences, providing them with access to a range of tools that promote learning and provide entertainment. This paper examines teachers' and parents' perspectives and considers whether they are techno-optimists who advocate for and promote the inclusion of digital technology, or whether they are techno-pessimists, who prefer to exclude digital devices from young children's everyday experiences. An exploratory, single case study design was utilised to gather data from three teachers and ten parents of children in the preparatory year. Teacher data was collected through interviews and email correspondence. Parent data was collected from questionnaires and focus groups. All parents who responded to the research invitation were mothers. The results of data analysis identified a misalignment among adults' perspectives. Teachers were identified as techno-optimists and parents were identified as techno-pessimists with further emergent themes particular to each category being established. This is concerning because both teachers and mothers influence young children's experiences and numeracy knowledge, thus, a shared understanding and a common commitment to supporting young children's use of technology would be beneficial. Further research must investigate fathers' perspectives of digital devices and the beneficial and detrimental roles that a range of digital devices, tools, and entertainment gadgets play in 21st Century children's lives.

INTRODUCTION

The 21st Century is a distinctive era. Technological advancements have continued to rapidly expand, radically changing society. As a result, our way of living has fundamentally changed, which has affected the daily lives of not only adults, but also children (Tapscott, 1998). Young children born in the 21st Century are socialised into the digital world and often identified as "digital natives" (Prensky, 2001a; Zevenbergen & Logan, 2008). Digital devices are integral parts of many young children's lives and hence their early learning experiences (Yelland & Siraj-Blatchford, 2002). In prior-to-school settings, teachers and parents play significant roles in the lives of young children, often providing and supporting the experiences which influence everyday learning opportunities. Therefore, their perspectives about the inclusion of digital devices in young children's lives significantly influence children's access to and engagement with digital technology. However, little is known about adults' views of children's involvement with digital devices. Yet, their perspectives may determine the experiences that young children have with the digital devices that saturate their world.

Social commentators have created the terms, 'techno-optimists' and 'techno-pessimists' to describe people's perceptions of the inclusion of digital technology in everyday life (Westera, 2005). Techno-optimists consider technology from a positive perspective and deem its inclusion a *necessary and positive component* of contemporary life. They consider that technology has consistently improved our lives, and that it will continue to do so into the future. For example, medical technological achievements such as the x-ray machine potentially provide information that

can assist the medical profession to improve the quality of life of many individuals. Alternatively, techno-pessimists consider technology from a negative perspective and deem its inclusion as *problematic* in contemporary life. They are concerned about the impact that technology and digital devices have on society and consider that digital technology has created just as many problems as solutions. However, a search of literature did not find theoretical research reports that examine adults' views of children's use and exposure to the range of technology that currently exists in children's lives. Hence, this paper aims to examine perspectives of parents and teachers of young children to determine whether they are 'techno-optimists' or 'techno-pessimists' by investigating the research question: *What are teachers' and parents' perspectives of digital technology in the lives of children in the preparatory year?*

To address this contemporary question, the paper first provides a background to the three rudiments that underpin the research focus: young children in the prior-to-school year, digital devices, and teachers and parents. The 21st Century context where techno-optimists or techno-pessimists may exist is discussed and the theoretical structure described. The research design and framework of the study are then presented and this is followed by evidence that identifies teachers and parents as either techno-optimists or techno-pessimists. The paper concludes with suggestions for further research on the technological perspectives of adults who support young children's learning.

BACKGROUND

There is limited literature examining teachers' and parents' perspectives of the inclusion of digital devices in young children's lives, and no identified research exploring whether they are optimistic or pessimistic towards young children's technology use. However, the literature surrounding young children in the 21st Century, digital devices, and the role of adults in children's lives highlights the need to investigate adults' perspectives of young learners' use of and access to technology including digital devices. The term "*digital devices*" is used to describe the items that comprise contemporary technological innovations made possible through digitalisation (e.g., iPods®, microwaves and mobile phones) and "old" technologies (e.g., television), which have been transformed through digitisation (Marsh et. al., 2005).

The prior-to-school years are a critical period in young children's learning. Bredekamp and Copple (2009) recognise that these years are a "vitaly important period of human development in its [their] own right, not as a time to grow before 'real learning' begins at school" (p. 97). An increase in global scientific evidence establishes the undeniable importance of the early years in human cognitive development (Shonkoff & Phillips, 2000). Thus, internationally there is strong support for improving educational opportunities for young children as an important initial step towards a smarter and more adaptable workforce in the 21st Century and the importance of investing in human capital. The Organisation for Economic Co-operation and Development (OECD) has acknowledged through its ongoing country-wide assessments that access to early childhood education and care provides young children with a "good start in life" (OECD, 2006, p. 12). In tandem, the World Bank, in considering the most appropriate time to start investing in our children's future, concluded "It is never too early to become involved but it can easily be too late" (Young, 2002, p. vii). The experiences that young children have create foundations on which formal learning occurs. Therefore, the engagement that young children have with digital devices that are intrinsic to their 21st Century environment should contribute to their learning and developing knowledges.

The scope of technology and digital devices and their impact on the lives of 21st children is enormous. Many of today's young children have spent their whole lives surrounded by technology that has fundamentally changed what and how they learn. For example, surveys conducted by the Kaiser Family Foundation in the USA (Kaiser Family Foundation, 2004) revealed that 99% of families with children own televisions, 97% own video or DVD players, more than 80% own a video game system, and 86% own a computer. As a result of engagement in technological environments, social commentators suggest that children now think in unique ways (Howe & Strauss, 2000; Oblinger & Oblinger, 2005; Prensky, 2001b). For example, Prensky (2001b) suggests that "today's

students think and process information fundamentally differently to their predecessors” (p. 1). Therefore, the need to understand and be able to engage with digital devices in the 21st Century is *de rigueur* — fashionable or socially obligatory. However, currently little is known about how teachers and parents influence young children’s learning with and through technology.

Presently there is ongoing debate in both the literature and media around the idea of a new generation often termed “digital natives” (Prensky, 2001a). Prensky (2001a) identifies the ‘digital natives’ as “native speakers of technology, fluent in the digital language of computers, video games, and the internet” (p. 1). It has been claimed that technological advancements have changed the way young children interact and play in their everyday lives, bringing about new learning styles which impact on educational practices. However, other social commentators suggest that there is inadequate evidence to substantiate claims about generational change and that the debate has created ‘moral panic’ (Bennett, Maton, & Kervin, 2008). Empirical studies have begun to investigate students’ technology use and approaches to learning, and findings have supported claims about digital natives (Console et al., 2006; Ellison et al., 2007; Oblinger & Oblinger, 2005). Due to their engagement with technology, children develop new knowledge, skills and dispositions (Wang & Hoot, 2006). These new capabilities do not develop when children start school but are cultivated in the years prior-to-school. Thus, it is important to investigate the influences on children’s opportunities to learn with technology before formal schooling in order to best cater for the digital natives of the 21st Century.

Early childhood teachers and parents create and promote young children’s learning experiences and the *inclusion* or *exclusion* of digital devices in educational and home settings. In Queensland, the informal year that occurs just prior to school entry is the preparatory year. Children attending this non-compulsory program are generally 5 to 6 years of age. In these settings, teachers and parents support and scaffold young children’s learning experiences. Thus ideally, there should be a partnership between teachers and parents that is built on shared visions in order to have a positive impact on students’ learning outcomes. If teachers and parents view young children’s learning from similar perspectives, they can share a common goal; making sure that children receive enriching and engaging learning experiences.

CURRENT RESEARCH CONTEXT

In recent years, socio-cultural theory has become an increasingly popular theoretical explanation for learning in the early years because it highlights how children learn through culture and social interaction (Anning, Cullen, & Flear, 2004; Flear & Raban, 2005). According to Vygotsky (1978), the learning process is not a solitary exploration by a child but an interaction with more knowledgeable others who can support a child’s learning. A key component of Vygotsky’s learning theory is the ‘More Knowledgeable Other’ (MKO). In social interactions, a person such as a teacher or parent who has a more highly developed understanding of a particular task, process, or concept, scaffolds others’ learning. A second component of Vygotsky’s socio-cultural theory of learning is the incorporation of cultural tools that are used by members of a society in their everyday life (i.e., digital devices). As young children develop or refine their knowledge and understanding they do so with the assistance of MKOs and often use the cultural digital devices that are intertwined into their society.

Teachers as MKOs play a significant role in young children’s development in the early years. In Queensland, they are qualified specialists who have completed four-year degrees in early years’ education. Governments worldwide are feverishly adopting technological practices in endeavours to create productive participators in future society (Plowman & Stephan, 2007), thus impacting on policies advocating the inclusion of digital devices in classrooms. Teachers are encouraged to actively and proactively incorporate a range of technology devices in their programs. However, it has also been recognised that teachers may not have expertise or confidence with technology (Cuban, 2001).

Parents as MKOs also contribute to young children's early learning experiences including their engagement with digital devices (Van Tuill, Leseman & Rispens, 2001). Ebbek (1991) acknowledges that parents play an important support role: "research overseas and in Australia has highlighted the critical role that parents play in fostering children's development" (p. 9). In a large scale English project, Marsh et al. (2005) discovered that parents support their children's engagement with popular culture, media and digital technologies through the provision of resources and interactions with children. However, other views suggest that parents are not as comfortable about supporting young children and their engagement with digital devices and tools. Research conducted by Buckingham (2000) implies that adults' views are polarised when it comes to children and technology. Thus, while it is established that teachers and parents play critical roles in young children's experiences, little is known about their perspectives on the inclusion of digital devices in children's lives.

Both teachers and parents are in prime positions in prior-to-school contexts to provide meaningful experiences that involve digital devices. However, the type of prior-to-school learning experiences young children engage in and the tools that they engage with will be dependent on the perspectives that MKOs hold regarding digital devices. Therefore, the adults hold influential positions that often determine young children's experiences and the opportunities to engage with technology.

DESIGN AND METHODS

The research question *What are teachers' and parents' (More Knowledgeable Others) perspectives of digital technology in the lives of children in the preparatory year* is exploratory in nature. Hence, an exploratory, single-case, embedded design (Yin, 2009) was selected for this investigation.

The study required an environment that was rich in technology and digital devices and where children were in the preparatory year. Two specific criteria were used to purposefully select a research site to learn about the phenomena of digital technology in the lives of young children. First, the setting was purposefully selected to ensure that the preparatory children came from middle- to high-income households to maximise the possibility of digital technology being part of their environment (McLaren and Zappalà, 2002). Second, a setting was purposefully sought in which children who were enrolled in the preparatory year, the non-compulsory year in Queensland, which occurs before formal schooling. Albert Park State School (a pseudonym used to ensure anonymity of the site) was chosen because it met the above criteria. This research site was situated in an inner Brisbane suburb and hosted three preparatory classes.

There were two groups of participants in the study: *three preparatory teachers and ten parents of preparatory children*. The preparatory teachers are identified by the pseudonyms of Mrs Hughes, Miss Davis, and Mrs Lewis. All teachers had completed studies majoring in early childhood education. However, Mrs Hughes and Mrs Lewis had over 15 years teaching experience compared to Miss Davis who had taught for 4 years (see Table 1).

Table 1
Professional Profile of Preparatory Teachers

	Teaching Qualifications	Teaching experience	Teaching history
Mrs Hughes	Diploma of Teaching (Early Childhood) Bachelor of Education	27 years	Preschool to year 7 Preparatory year Roles have included: Reading recovery key teacher; Support-A-Reader facilitator; Teacher-In-charge of Preschool; Leading preparatory year teacher
Miss Davis	Bachelor of Teaching (Early Childhood)	4 years	International contract (childcare) Preparatory year
Mrs Lewis	Diploma of Teaching (Early Childhood) Bachelor of Education (Early Childhood)	17 years	Preschool Preparatory year

Information was also gathered from ten parents of preparatory children enrolled at Albert Park State School. Interestingly, both mothers and fathers were invited to participate in the study, however only mothers responded to the request (Abigail, Amy, Breanna, Ella, Frances, Mary, Paula, Prue, Tracey and Vivian). All except one were mothers of boys. The majority of mothers were within the thirty to thirty-nine years age bracket (60%) with a total of 80% of the mothers completing tertiary level studies (see Table 2).

Table 2
Demographics of Participating Preparatory Mothers

Mothers (n=10)		
Age range	Under 30 years	
	30 - 39	40%
	40 - 49	60%
	50 over	
Educational level	Year 10	
	Year 12	10%
	Trade/TAFE	10%
	University studies	50%
	Post grad studies	30%

A range of data collection methods was used to gather rich data about MKOs' perspectives of digital devices in the lives of preparatory children. Data were collected from teachers via the use of semi-structured interviews and email correspondence. Data were collected from the mothers using focus group discussions and questionnaires.

RESULTS AND DISCUSSION

A thematic analysis revealed two broad categories which were used to describe MKOs' perspectives of the inclusion of digital devices in young children's lives: *techno-optimists* and *techno-pessimists*. Recall, social commentators in mass media rather than the research literature typically use these terms. Interestingly, findings of this study indicate that teachers' and parents' perspectives of young children's engagement with technology are polarised. Teachers were identified as techno-optimists and parents were identified as techno-pessimists. Within each category, there were differences among the techno-optimists and the techno-pessimists. Findings

related to teachers' views of the role digital devices play in children's lives are reported first, which are followed by mothers' views.

Teachers

The three teachers were identified as techno-optimists because they indicated that technology should be a component of preparatory children's educational programs. They all agreed that technology was part of children's lives and thus it should be included in their everyday preparatory experiences. Mrs Lewis exemplified the teachers' views of digital devices in young children's lives.

Mrs Lewis: Actually I think it should a part of their lives **I think it should be an integral part of what they do** because some of them are really good and it will become more and more [a part of their lives]. (Emphasis added) (Interview excerpt)

Teachers' provision of digital devices in their programs for preparatory children is informed and influenced by policy directives from their employing authority (in this case Education Queensland) and as a result of their school policy (Albert Park State School). Whilst the inclusion of technology is a requirement of the system in which the teachers work, it is the teachers who must act on this requirement. Teachers indicated that children should have access to technology devices in the classroom but their commitment to technology usage varied. Three themes were detected that described teachers' perspectives related to technology: *proactive includers*, *reflective includers* and *apprehensive includers*.

Proactive Includers: A proactive includer actively includes and integrates digital devices into their preparatory program. Miss Davis was the only teacher to interweave digital technology into her program in a way that suggests that she was aware of the contribution that technology can make to learning experiences. She was proactive in providing children with the chance to engage with technology by integrating 12 forms of digital technology into her classroom environment including computers and the use of the internet. One way computers were used by children in her class was as a planning tool to choose their future activities or themes.

Miss Davis: Alright how could we find out information about the circus? **Let's go on www.ebay.com.au that is what Harry said...**Wow, we could try that. Alright so we hop on, "Do you think we can find information about the circus on this website?" (Emphasis added) (Interview excerpt)

Miss Davis also described an incident where the preparatory children were interested in finding out about superheroes. With her assistance, the children located a survey on the internet which helped them decide which superhero they would be.

Miss Davis: It is like a survey and it tells you if you were going to be a super hero this is what you would be. **So after you fill out the yes, no, maybe, sometimes sections on the computer, the website allows you to click enter.** It enters all your details and calculates. OK you will be the green lantern you are 89% matched up to the green lantern (super hero). Tom (student) wanted to be the green lantern. (Emphasis added) (Interview excerpt)

Thus, Miss Davis and the children were using computers and the Internet in the classroom to assist programming choices and to gather information.

Miss Davis' proactive inclusion of technology into the classroom is consistent with government goals to develop a technologically aware and proficient citizenship. But it is also reflective of her personal experience with and interest in technology. The advent of ICT has changed the environment in which students develop in ways that also impact on the way they learn in schools. Teachers, even in prior-to-school settings are encouraged to actively and proactively incorporate a range of technology devices in their programs. The importance of assisting teachers to learn to use and apply technology in the classroom cannot be underestimated (Shields & Behrman, 2000).

Reflective Includer: A reflective includer views the incorporation of digital devices critically, continually assessing the inclusion of the digital device and the knowledge and skills necessary. Both Miss Hughes and Miss Davis assumed the role of *reflective includers*. While she chose to incorporate technology in her classroom she also indicated that teachers need to be diligent in their portrayal of digital technology whilst providing children with the skills to be '*critical users*' of technology (Interview excerpt). She thought it was important that children be aware of the potentials and risks of technology, especially the internet.

Mrs Hughes: Actually I think it should a part of their lives; I think it **should be an integral part** of what they do because some of them are really good and it will become more and more and they need like everyone else to be **taught how to be selective about the internet and what you read: Is this correct? As a reader, as a user you have to be selective and to work you out what is the source, is it authentic and getting them to be critically aware of and critically access and it needs to start when they are little.** (Emphasis added) (Interview excerpt)

She also clearly stated that it is important prior-to-school to begin developing awareness of the potential and hazards of technological engagement.

Mrs Hughes: **See you already have the skill to be critical, but they don't have that yet; but that needs to start right back here.** (Emphasis added) (Interview excerpt)

Similar to Mrs Hughes, Miss Davis could be identified as a *reflective includer* of technology. She likewise expressed concern about the 'child-friendliness' and content of some technology devices. She indicated how easy it was for children to inadvertently be exposed to inappropriate material on Internet sites and acknowledged the importance of assisting children to be critical users of technology programs, games or Internet sites.

Miss Davis: We used to look at Google; they [sites] can be great for kids but not always. So we switched over to Ask Jeeves®, which is more kid friendly. **I do agree that a lot of this technology is great for kids however it has to be monitored...**Ninemsn came up the other day and there's Brittany Spears looking a bit raunchy in a bikini and it kind of surprised me. (Emphasis added) (Interview excerpt)

Both Miss Davis and Mrs Hughes incorporated technology into their programs and were conscious of developing children's awareness of the need to be judicious in their approaches to technology. Byron (2008) agrees with this view, stating that while young children are eager to engage with technology they are still developing critical evaluation skills and need assistance to make wise and informed decisions. As Mrs Hughes suggested, the teacher's role is critical in making certain that good decisions are made about which technology to use and in supporting children in their use of technology to ensure that potential benefits are achieved.

Apprehensive includers: Apprehensive includers use technology in their programs but do so apprehensively and without confidence. While Mrs Lewis indicated her willingness to let preparatory children engage with digital devices, she also expressed apprehension. Specifically she indicated her concern over children's reduced attention spans and blamed this on the use of technology.

Mrs Lewis: **Well in terms of the digital age I do believe that children's attention spans are much shorter.** Certainly one example, I think, children are just sat down much more to engage in Playstation® and games and all those PSPs® instead of looking out the windows at the cars. (Emphasis added) (Interview excerpt)

Mrs Lewis also suggested that the world is working at a much 'faster pace' and young children now do not wait to experience some things at school but are experiencing things earlier. This concern highlights an issue of access to technology. Mrs Lewis suggested that children have access to a

greater range of technology in their home environments than what they do in the school environment.

Mrs Lewis: I was also going to say everything is at a much **faster pace; much faster pace** and where we used to wait for things until we got to school, children are now so much immersed in it now. So much so that particularly in this area, in this context, **some of the technology we have at school is not as up to date as what they have at home**, even though what we do have is fabulous. But they have the whole fax system going and they fax letters! (Emphasis added) (Interview excerpt)

Clearly, Mrs Lewis was concerned about the influence technology has on children's attention spans and the range of technology children have access to. Whilst there is growing research evidence that indicates the advantages of technology use (Gutierrez & Boero, 2006), there has also been discussion within the literature about the negative impacts of technology on young children's growth (Cuban, 2001). Thus, the concern expressed by Mrs Lewis was shared by others. Mrs Lewis was apprehensive about the changes that technology has brought to preparatory children's lives yet she maintained the school policy and included digital devices in her classroom for children to use.

In summary, all three teachers stated that they included technology in their daily preparatory programs, which is in accordance with their employing body and school-based policies. However, there were variations in their techno-optimists' views. Miss Davis had the most optimistic view of technology inclusion. Possibly her own personal understanding and experience with technology as a younger teacher contributed to her ability to integrate technology into preparatory children's everyday experiences. Mrs Hughes demonstrated a willingness to include technology however, was more concerned with the underlying knowledge and skills children required in order to productively and effectively engage with these devices and information sources. In contrast to the other teachers, Mrs Lewis, although supportive of technology, also articulated some concerns about the impact of digital devices (e.g., equitable access to technology). However, overall, each teacher was considered a 'techno-optimist' because they articulated positive views about the inclusion of digital devices in young children's lives and stated they provided children with access to digital devices.

Mothers

The ten mothers in this study were identified as *techno-pessimists* because their perspectives of technology were overwhelmingly negative. Many mothers did acknowledge that technology was a part of children's lives, and therefore, some exposure to technology was appropriate and inevitable. However, all mothers expressed concerns about their child's use of technology using highly emotive language, and chose to restrict their child's access to it.

Mothers indicated a range of reasons for their concerns about children's engagement with technology, which related to four themes: *fearful excluders*; *social issues excluders*; *lost opportunity excluders* and *dubious excluders*. Analysis of parent data indicates that mothers could hold one or more roles.

Fearful Excluders: A fearful excluder actively excluded a range of digital devices, citing reasons associated with fear. There was overwhelming alarm and anxiety expressed by the ten mothers about the impact that technology could have on children's development. Whilst many mothers had various digital devices present in the home, they did not provide their children with access to these. Fears expressed by mothers were that technology would inhibit their child's normal development, and that technology use would facilitate negative behaviours.

A particular fear articulated by mothers was that digital devices were addictive and consuming. Whilst mothers did not always specifically state that they were referring to technological toys such as Gameboy® and Playstation®, it is presumed that they were referring to gaming technology because of their examples. For instance, Vivian indicated that when her son has engaged with

digital devices he has become so engrossed and focussed on the game that he could not hear anything else.

Vivian: All they want, especially the 6 year old, is one of these Nintendos® for Christmas but I **just think he will be zapped into it because he gets so focussed that he doesn't hear anything that is going on.** (Emphasis added) (Parent Focus Group excerpt)

Similarly, Ella and Breanna verbalised their concerns that technology is addictive.

Ella: They can be excellent learning tools I think **but the problem is that they are so highly addictive.** (Emphasis added) (Parent Focus Group excerpt)

Breanna: **You don't want it to take over and control everything.** (Emphasis added) (Parent Focus Group excerpt)

The mothers' solutions to quelling their fears were to avoid integrating technology into their child's life. The following excerpts indicate their desires to 'hold off' technology until children were older.

Abigail: I am constantly thinking I just want to hold them back from being in front of the computer and they don't have Playstation®. I **just want to keep that out for as long as possible but that is my preference** and I am sure there are positives to having those things but I am wary of them. (Emphasis added) (Parent Focus Group excerpt)

Tracey: I think in terms of digital games **we have actually always kind of avoided them** because I think there will be plenty of those eventually so other than chess on the computer he doesn't do anything on the computer. (Emphasis added) (Parent Focus Group excerpt)

Paula summed up the mothers' fears and the overwhelming view that technology was not beneficial to children's development and everyday experiences.

Paula: **Generation Y is bad!** What is the next generation going to be? (Emphasis added) (Parent Focus Group excerpt)

The comments from mothers regarding the possible negative influence that technology could have on their children were significant, fearful and emotive. Recent research conducted in the United Kingdom by Plowman et al. (2008) also reports on parents' anxieties associated with children's use of technology. They found that parents of young children were more aware of the arguments about the dangers of technology than the potential. Thus, the findings of this study mirror the literature that suggests that parents viewed digital technology as threatening to their young children and their development.

Social Issues Excluders: Social issues excluders chose to exclude digital devices because they indicated that they impacted negatively on young children's social development. Seven mothers had concerns about technology relating to the impact it had on their children's socialisation and play opportunities. They felt that children's engagement with digital devices and toys would reduce the time that they had to socialise with others and participate in worthwhile play situations. Mothers emphasised that social development was more important than engaging with technology.

Mary: He has a lot of friends that have the...what is it called, Playstation®...he will go over to their place to play with them and **they will be quite anti-social.** (Emphasis added) (Parent Focus Group excerpt)

Frances and Amy jointly agreed that children need to socialise with other children to assist their language development. They infer that social and language developments are limited or do not occur as a result of children's engagement with technology.

Frances & Amy: Socialise - Yes, socialise. You know **they need to talk to other children**. Yes socialise. (Emphasis added) (Parent Focus Group excerpt) (Words reiterated at same time by both mothers)

Mothers chose to exclude technological experiences because they perceived technology as socially isolating.

Paula: Is it the isolation, it is, I just worry that they sit there and they kind of nnnn. I would prefer the normal every day. (Parent Focus Group excerpt)

Ella: I like keeping the old skills like being able to write and being able to read and those sorts of things and **being able to be social**. (Emphasis added) (Parent Focus Group excerpt)

There were many and varied examples showing the breadth and depth of mothers' concerns and indicating that they perceived technology to be a negative influence on children's social development. At its extremes, the literature suggests that childhood has been lost as a result of modern society and the advent of technology (Buckingham, 2000). Children's engagement with technology is presumed to be an anti-social experience but there is limited evidence supporting this perspective (Plowman & Stephan, 2007). However, for seven mothers the negative impact that technology could have on children's social development was a real concern.

Lost Opportunities Excluders: Lost opportunities excluders are concerned that children will lose more important learning opportunities when engaging with technology and therefore, they preferred that their children not to use technology. Mothers indicated that technology and specifically digital entertainment were not activities that were a priority in their child's life. They verbalised concern about what experiences their children would miss if and when they engaged with technology. Analysis indicates that if most mothers had a choice of activity that their child engaged in, they would choose forms of play other than those involving digital devices in all instances.

Mary: I am sort of thinking that the only problem I have with sitting down and doing computers is, or letting my child go off and play computers on his own is that he is **not learning**. It is the things that he is not learning when he is doing that all the time. (Emphasis added) (Parent Focus Group excerpt)

Prue: I would rather he do a puzzle, down on the floor than him look at that screen. I've just got this thing about sitting looking at this screen whereas they can be doing the puzzle right there with you so yeah, I must say I shy away from [computers].

Amy: **Well there is so much more to life and life experiences than getting on the computer**. (Emphasis added) (Parent Focus Group excerpt)

Frances' views, while highly emotive, typified the majority of mothers' views. This excerpt indicated that mothers generally are more interested in real, socially engaging experiences that children can have that do not include technology. The emotive question raised by Frances sums up the concern of many mothers.

Frances: What are they missing out on while you are plugged in to that (technology)? (Parent Focus Group excerpt)

Mothers did not identify positive learning opportunities that technology could potentially provide. This concern is expressed in the literature because technology provides 'second-hand' experiences rather than real, first hand experiences (Plowman et al., 2008). However, there is not a significant evidence base to support this view. For mothers, the perceived lost opportunities that might occur when children engaged with technology provided them with a reason to exclude digital devices from their children's lives. This is not to suggest that children did not access technology despite their mothers' efforts.

Dubious Excluders: Dubious excluders doubted the worth of children's engagement with technology. Three mothers suggested that 'old fashioned' learning was more important than learning connected with technology and expressed concerns about the worth of technology experiences in relation to other non-digital activities. They raised the concern that much time and effort is given to the inclusion of technology to the possible detriment of other important learning opportunities. For example, Tracey wondered if technology actually improved her son's learning experiences in the preparatory year or whether it had a purely superficial influence.

Tracey: I don't see that if you have good computer skills that that is all that you need in life. I think it will be a dimension of your person and your skills but **the good old fashion skills... we don't have a Playstation® because we need to keep working on those skills and time does seem to be more precious.** (Emphasis added) (Parent Focus Group excerpt)

Frances was also dubious about the inclusion of technology in preparatory aged children's lives. She indicated that the experiences they require at this stage of their lives do not need to come from computers.

Frances: But I still think that a lot of the basic stuff they need to learn now, you don't have to get off the computer. It is a good supplementary tool but it becomes more important as they get older. **The relative importance increases as they get older; now it is kind of you can do it that way or this way.** (Emphasis added) (Parent Focus Group excerpt)

Mothers were pessimistic about the integration of technology in children's lives. They had negative views about technology's value for their children and shied away from introducing technological devices to preparatory aged children. Mothers had particular concerns about preparatory children's engagement with digital devices and chose to, where possible; exclude digital devices, especially digital gaming devices from their children's experiences. The alignment of mothers' perspectives is noteworthy. All 10 mothers were identified as 'fearful excluders' of technology (100%). Seven mothers (70%) suggested that they excluded technology from the preparatory child's life because they were concerned about the diminished social opportunities children would have when engaging with technology. Five mothers (50%) were uneasy about the opportunities children were missing when they engaged with technology. Finally, five mothers (50%) had issues with the value of technology. Hence, overall, mothers in this study were unconvinced about the value of technology in young children's lives. There is no significant literature base yet that identifies the value and potential contributions that technology can make to children's development. However, neither is there substantial evidence that technology has a negative impact on children's social development and experiences.

CONCLUDING COMMENTS

This study established that the inclusion of digital technology and digital devices in young children's lives is a controversial topic. There was a considerable variation among the perspectives expressed by teachers and mothers about young children's usage of technology prior-to-school. In fact, a total misalignment among MKOs' perspectives was detected. Teachers were optimistic about the use of digital devices in classrooms but mothers were strongly opposed to the use of digital devices at home, especially entertainment devices. However, technology is rapidly increasing and playing a significant role in shaping children's lives. Based on the findings of this research, four avenues for future research about teachers' and parents' technological perspectives are proposed.

First, teachers' personal perspectives impact on the technology experiences provided for children in preparatory programs. Teachers fulfilled policy requirements by incorporating technology into their programs. However they have varying perspectives about the role technology has in the lives of preparatory children. It seems plausible that teachers' personal perspectives impacted on the type of technology experiences preparatory children encounter within these classes. The personal perspectives of teachers may critically influence the successful integration of technology into the preparatory environment. These perspectives need to be investigated.

Second, the age of teachers and their ability to incorporate technology might influence perspectives on the level of inclusion of technology in preparatory programs. Mrs Hughes was over fifty years of age and Mrs Lewis indicated that she was over forty years of age. These teachers included technology in their classrooms but did not proactively integrate digital devices. Miss Davis was the youngest teacher in this study at the age of twenty-eight. The World Wide Web was invented in 1989 and the laptop became a household item in the late 1990s. Thus, these technological advancements were presumably part of Miss Davis' learning, her own schooling and tertiary experiences. Due to her 'socialisation' with technology, it is feasible that Miss Davis relates to technology as a 'digital native.' As 'digital immigrants,' Mrs Hughes and Mrs Lewis might be still adapting to technological advancements. Hence, age might be a factor in the teachers' embracement of digital technology.

Third, mothers' personal perspectives impact on the technology experiences provided for children in home environments. Mothers unanimously articulated concerns and fear associated with technology use. Their views were highly emotive and related to their apprehension. If mothers viewed digital devices negatively then they would most likely not provide access to them in the home. Thus, it can be presumed that mothers' personal perspectives influence the technological devices children have access to and therefore the possible contribution they make to children's learning. The reasons for these concerns need to be examined.

Finally, these mothers have not grown up immersed in technology and find it difficult to recognise the potential contributions technology can make to young children's development. Young children have grown up with technology. They have spent their entire lives surrounded by computers, digital gaming devices, mobile phones and other tools of the digital age. Whilst these mothers may have adapted to technology they do not seem to have an appreciation of its potential in young children's lives. Thus, some parents also could be considered digital immigrants who have a sense of unease about technology. As with teachers, the age of the parents might play an important role in their views about technology. Hence, the views of younger mothers might differ from older mothers.

This investigation also gives rise to three further questions for study. The first question is, *Do fathers' also hold techno-pessimist views?* There is also a need to investigate fathers' perspectives of digital devices because they were not represented in the participating parent group. The majority of studies investigating the influence of parenting practices on young children's cognitive development have focussed exclusively on mothers (Martin et al., 2007). However, it is important to establish fathers' perspectives of digital devices, whether they are similar or dissimilar to mothers.

The second question is, *What is the impact of a child experiencing the learning environments of home and school where the MKOs' in these environments hold oppositional views about the inclusion and value of technology?* There is a strong rhetoric that teachers and parents are partners in young children's lives but the reality underpinning the rhetoric needs examination in relation to use of technology. This evidence base would provide teachers and policy creators with a foundational understanding of the types of influences that parents can have on this important component of children's lives.

The third question is, *What are the beneficial and detrimental roles that a range of digital devices play in young children's everyday experiences?* Empirical longitudinal research is also essential to understand the balance between the real potential and the 'dangers' of technology. In addition, it is

important that the range of digital devices that children engage with is investigated including ICT-orientated devices (e.g., computers), everyday devices that assist living (e.g., microwave ovens) and entertainment devices (e.g., Playstation®).

Early experiences with digital devices potentially impact on young children's ability to learn and function in the digital world of the 21st Century. Therefore, it is essential that future research investigates the mutual or oppositional goals teachers and parents hold for children's contemporary learning, the views held by fathers of young children's engagement with digital devices, and the value of a range of digital devices, tools and entertainment gadgets in young children's lives.

Our children are the latest model of human being. Looking at the world of children is not looking backward at our own past – it is looking ahead. They are our revolutionary future - Douglas Rushkoff, 1999

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