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Play and Technology:a Study Of ICTs In Play Activities Of Irish Children (4-8 and 8-12)

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PLAY & TECHNOLOGY – A STUDY OF ICTs IN PLAY ACTIVITIES OF IRISH CHILDREN (4-8 AND 8-12)

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ABSTRACT

Defined in the Ireland's national play policy as 'freely chosen, personally directed, intrinsically motivated behaviour that actively engages the child' (NCO, 2004, p.10), play now more often than not is a technologically-mediated activity. This paper focuses on the role of technology in play and explores the impact of technological change on children's play activities. Drawing on our study commissioned by Ireland's National Children's Office, we present a detailed exploration of the play activities of Irish children, identifying the range of technologies accessed by children and how they are used in their daily play patterns. The project provided children with an opportunity to express their views and the research presents children's perspectives on the meanings, interpretations and value placed on technology-based play. We also document the views of parents and teachers on the opportunities and dangers involved. Research findings evaluate the extent of the penetration of technology into children's lives and look at the wider implications for physiological and behavioural development, education and lifestyle. These draft research findings offer valuable comparative data with which to identify the most important issues for future research and greatly complement existing research within this underdeveloped field.

Introduction

The traditional setting for children's play has undergone major change in recent years as a result of the rapid diffusion of technology through all areas of social life. The impact of new technologies on children's play activities, whether in terms of toys that are derived from developments in technology, or the leisure activities associated with information and communication technologies (ICTs), has created a multimedia environment full of rich opportunities and sometimes dangerous threats (Buckingham, 2000). This paper presents draft findings on how much technology impacts on the play worlds of children in Ireland and what, broadly, children are saying about the role of technology in their lives. The research was commissioned by the National Children's Office under the Children's Research Programme was conducted by the Centre for Social and Educational Research at Dublin Institute of Technology between July 2004 and January 2005.

Play is an important aspect of development for us all but has a central role in the development of children. It is the process through which many key skills are developed and through which imagination and creativity find expression. Through play children develop the social skills necessary to negotiate their widening world, the problem-solving strategies that facilitate school and life success. Play affords a means of checking theories, exploring options and testing limits. It is characterised by common features which include pleasure, spontaneity, intrinsic motivastion. Play can be individual or social and is the process where children find the opportunity to exercise freedom of choice (Garvey, 1990; Bruner, 1996; Moyles, 1994; McArdle, 2001). Notwithstanding its central role in development, children's play is often trivialised as something to do when not working, something to occupy children and 'keep them off the streets'.

Play, understood as the 'freely chosen, personally directed, intrinsically motivated behaviour that actively engages the child' (NCO, 2004, p.10), is now more often than not a technologically-mediated activity. The research reported here examined the technological context for the play activities of Irish children between the ages of 4 and 12. It identified the kinds of technologies they encounter on a daily basis and examined how they are used in play activities. The research explored children's perspectives on the role of technology in their lives and asked why technology-based play was important to them. It also documented the views of parents and teachers on the opportunities and dangers involved.

Young people and the new media environment

Research interest in the role of electronic media, particularly television, in children's lives has always been strong and a number of studies in the literature have achieved classic status in the literature on children and media (Himmelweit, 1958; Schramm et al, 1961; Hodge and Tripp, 1986; Gunter and McAleer, 1990; Livingstone, 1990). More recent research (Livingstone and Bovill, 1999; 2001, 2003; Roberts, 1999; Wright et al 2001), provides a baseline for key features of the media and technological environment children inhabit in the early years of the twenty first century. Such studies mark a shift towards a consideration of technology more generally, and more specifically a focus on information and communication technologies (ICTs), symptomatic of a more recent set of concerns around the Information Society, understood as new forms of social and economic organisation occasioned by information and communication technologies in a post-industrial context (Cawley and Trench, 2004).

Livingstone and Bovill (1999) have characterized the world of childhood as a rich media and technology environment where children have extensive access to their own entertainment and communication technologies. Recent research for Ireland (Amarach, 2004) confirms that 90% of children between 10 and 14 having access to their own mobile phones and video players, 81% with access to cable TV and 78% had access to a DVD player. About a third of children reported having access to cable TV in their bedrooms though only a very small number have access to the Internet in their bedroom (3%). Roberts (1999; 2000) has shown that in the US children (8 – 18 years) devote more time to media than to any other waking activity, as much as one-third of each day.

The phenomenon of the media-rich bedroom Livingstone and Bovill (1999 and 2001) has been commented on in a number of studies. Revealed as the cultural and social centre in which children play, socialise and interact with their friends (Bachmair, 1999; Tufte 2003; Baker 2004), half of 6 and 7 year-olds in the UK reported having televisions in their bedrooms, ostensibly because of parents' concerns over safety playing outdoors but also reflecting the lack of adequate leisure facilities.

As domestic access to the Internet expands to popular levels and with the wider availability of always-on broadband connections[1], particular attention is now being given to children's use of the Internet and related issues of child safety and of parental supervision.[2] For Kline (2004),

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[1] An estimated 1.2 million adults in Ireland, or 44% access the Internet. Home access to the Internet stands at approximately 30% with domestic broadband access currently 3% (ComReg, *Irish Communications Market: Quarterly Market Commentary*, September 2004)

[2] Following publication of the government report *Illegal and Harmful Use of the Internet* (1998), the *Internet Advisory Board* monitors self regulation among Internet service providers in Ireland and promotes awareness of potential dangers for children. See http://www.iab.ie

online gaming and internet connectivity has added a new dimension to the PC or console game, offering the ability to engage in multi-player competition and enhanced social interaction with friends, real and virtual, in the games environment.

The implications of this greatly enhanced technological environment for children are the subject of ongoing debate. The claim that technology is a destructive of childhood is one that has a long tradition in academic research. From Postman (1982) on, a number of social commentators including Winn (1977, 1984), Elkind (1998) and Meyrowitz (1985) have raised major concerns about the impact of electronic media on social life, and how it has eroded the line between childhood and adulthood.

Concerns about the effects of video games on children's development (Provenzo, 1991; Funk and Buchman, 1996; Gentile et al 2004) have tended to bring concerns about exposure to televised acts of violence into the whole field of computer gaming, some suggesting that video game effects should theoretically be stronger than movie or television violence effects (Dill et al 1998).

Elkind (2003) has argued that the focus on speed that the developing technologies has brought to education and other aspects of society has created a hurried society where children may feel guilty about taking time off to play. Over the last twenty years in the US children have lost 12 hours of free time a week, and 8 of those lost hours were once spent in unstructured play and outdoor pastimes (Elkind, 2003). It is possible that the critical features of development acquired through more traditional, unstructured play may well be acquired through the medium of technology but as yet there has been limited research into this aspect of the technological world.

The purpose of the current study is to examine in an Irish context how technology impacts on the play worlds of children and to document what children say about the role of technology in their lives. It examines the extent of access that children have to technology in their leisure time, the contexts in which this occurs and how patterns of use compare with international research findings.

The research study
The research project consisted of a survey of 300 children between the ages of 4 and 12 in 10 primary schools across Ireland. 5 of the schools were city-based (4 in Dublin and 1 in Cork) and the remainder in representative urban and rural settings. A number of different methods were used to collect data, including a questionnaire on access to and use of technology, focus

groups with older children (8-12 years) and interviews with teachers and parents in each of the schools. Both qualitative and quantitative approaches were employed. An underlying objective was to collect baseline data concerning access to and use of technology as well as providing children with a voice to express their feelings regarding their use of technology in their play activities.

School designation, including fee-paying private or designated disadvantaged was taken as a broad indicator of socio-economic status. Information on home financial background, parental income, parental levels of education, parental residence or marital status, was not sought in the questionnaire. The sample was equally divided into two age groups (4-8; 8-12), balanced in gender (45% girls, 55% boys) and divided between urban (40%) and rural (60%) locations. Data collection was undertaken in November and December 2004. Questionnaires were administered by a member of the team with a research assistant and focus groups and interviews conducted in schools on the same day in which the survey took place. Special consideration was given to the administering of the questionnaire with the younger age group and a research assistant worked with children of small groups of 4 or 5 children to assist them in completing the questionnaire. Some open-ended items were included in the questionnaire but focus groups were not held with this age group.

The questionnaire sought information on a number of key features which it was hoped would provide an insight into children's access to and use of technology in their leisure activities. Questions asked included:

- family context
- preferred play activities, alone and with friends
- what kinds of technologies are present in homes
- in what contexts children use technologies for leisure

For the purpose of the survey, a broad definition of technology was used, incorporating a spectrum from applied scientific devices or tools used in leisure and play contexts to information and communication technologies (ICTs), and the questionnaire included reference to such technologies as tape recorders, cameras, television, musical instruments, computers, mobile phones and games devices.

Main findings - access to technology

The presence of technology in the homes of the children surveyed was revealed to be extensive. Table 1 provides a summary of the possession of information and entertainment technologies for both urban and rural locations, girls and boys in each of the two age groups surveyed, indicating the prevalence and wide diffusion of traditional and new media sources and applications across all homes. Figure 1 provides an overview of the full range of technologies surveyed. Books, television, radio, computers and games consoles are found in the vast majority of homes. Internet access at close to 60% is well above the national average of 44% reported internet usage.[3] As children get older they gain increasing levels of access to technology, such as games consoles and Gameboys, though older children also report higher levels of access to nearly all categories, including computers, DVD players and CD.

Table 1 –Technology Presence

| Technology	Overall %	4–8	8–12	Girls	Boys	Urban	Rural
TV in own room	37	32	42	37	37	37.5	37
Computer at home	84	81	86	83	84.5	82	85.5
Computer in own room	16	9	22	16	15.5	17	15
Internet at home	58	54	61	60	56	57.6	58
Internet in own room	4	3.6	4.6	3.8	4.3	4	4
Games console	75	62	87	70	79	72	77
Games console in own room	29	18	39	28	29	26	31
Gameboy in own room	22	15	32	20	28	25	24
Own mobile phone	40	18	59	41	38.5	43	37

Figure 1 – Technology in the Home by age

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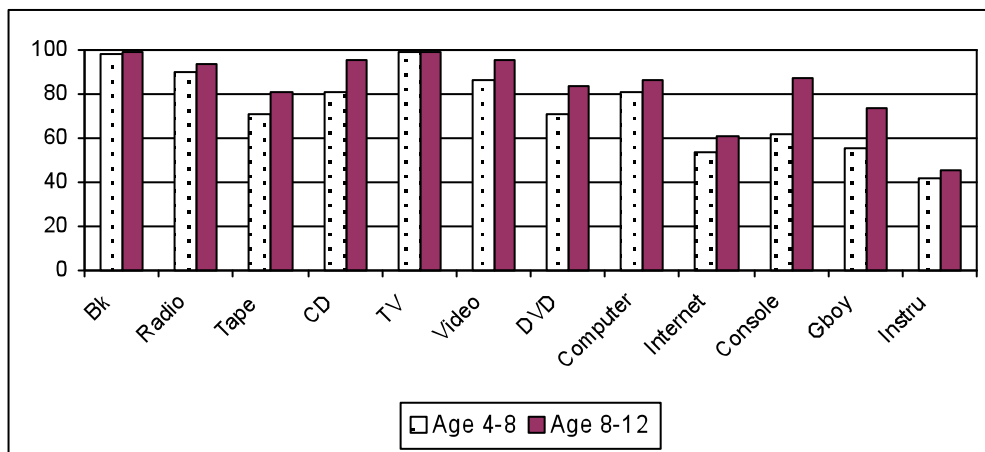
[3] ComReg, Quarterly Survey, October, 2004.

The extent of a developing media-rich 'bedroom culture' is illustrated in Figure 2. In addition to books which are widely reported, CD players, radios, TV are found in nearly 40% of children's rooms and games consoles in nearly 30%. Most children reported that the televisions in their own rooms only had terrestrial channels, as opposed to cable or satellite, and that they were frequently used for console games rather than television viewing. The highest levels of ownership of television in a bedroom setting were given in the two designated disadvantaged schools. Children from private, fee-paying schools reported the lowest levels of television in children's own rooms.

Figure 2 – Technology in Child's Own Room by age
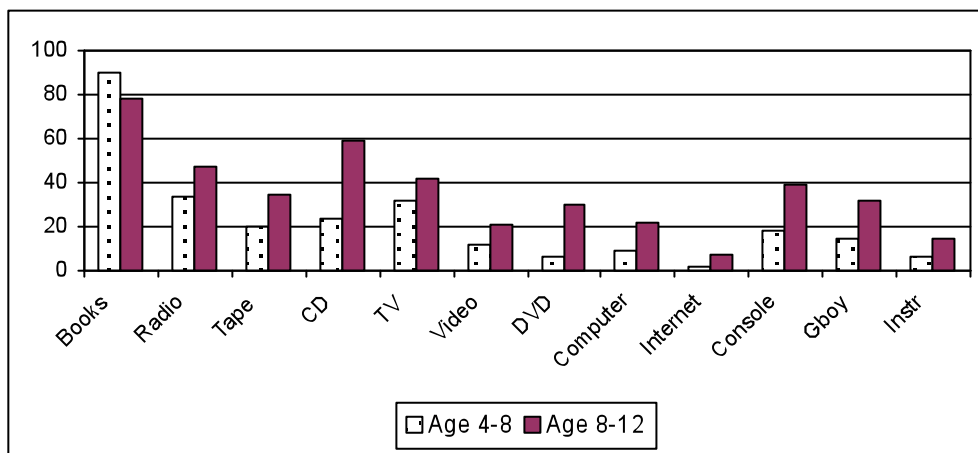
Again, there are age differences in the presence of technology in children's rooms and older children report having fewer books, and more CD players, TV, DVD players and games consoles as summarized in Table 1. The principal gender differences reported related to CD players, radio and tape recorders in girls' rooms and little gender differentiation in electronic technology such as TV, DVD or games consoles.

Most of the children surveyed said they played games on computer or games consoles. Age is the biggest differentiating factor. However, the context in which children play computer or console games differs more noticeably across the categories.

Table 2 – Children's Playing of Computer/Console Games

Children who play computer or console games (95% overall)	Overall %	4 – 8	8 – 12	Girls	Boys	Urban	Rural
In own room	44	27	59	43	45	44	44
In family room	62	68	56	59	65	68	57
At friend's home	44.5	40	48	39	49	52	40
Alone	61	64	59	52	69	72	54
With friends	67.5	60	74	63	71	69	66
With sibling	47	48	46	53	43	47	48
With parent	25	32	18	25.5	24	32	20

Children were also asked about their desired possessions, i.e., what possessions children wanted but did not already have. They were each asked to name three gifts that they would like to receive as a gift for Christmas or birthday.

Table 3 – Desired Toys

Label	Cases
Traditional Toys	61.3%
Console Games	39.7%
Media Hardware	31.5%
Sports Toys	27.4%
Other	27.1%
Surprise	20.2%
Consoles	18.8%
Entertainment Software	18.5%
Personal Gifts	13.7%
Automated Toys	12.7%
None Other	29.1%

Over 60% of children nominated traditional toys including tractors, dolls, figurines, books, board games, etc. 32.5% of girls and nearly 29% of boys wrote answers in this category. There is a much wider margin in terms of age: younger children, at 43.6%, gave this response more than twice as much as older children (nearly 18%) indicating that children lose interest in traditional toys as they grow older. Technology toys and devices dominated the remainder of responses with console games representing 40% of cases with related hardware at 30%.

Children were also asked in the questionnaire what they liked about playing in the form of an open-ended question. In the diverse responses received, over a third mentioned 'fun' in some context, others citing friendship and particular play activities, with a number mentioning that

play was a good way to pass time and to prevent boredom. When asked what activities they liked to play either with friends or alone, interesting contrasts emerged between indoor and outdoor, solo and socially-oriented activities. Children were asked to nominate 3 examples and the incidence of cases cited is given in Table 4. Examples cited by children, including 'talking' and 'chasing games' and 'texting' exhibit a strong social dimension, yet when playing alone it is technology – either console games or tv viewing – that dominates. As such, outdoor, activity-based play with friends, such as ball games and team sports, chasing games, can be seen as more highly valued by children than any other activity. Playing computer and console games and watching television are also popular as is just talking suggesting that children favour the kinds of activities that involve a good degree of interaction, or potential for discussion, with their playmates.

Table 4 – Favourite Play Activities - % of Cases

Label	With friends	Alone
Ball Games	70.2	
Chasing Games	38.7	
PC or Console games	29.5	51
Talking	13	
TV	6.8	47.3
Cycling	5.5	6.8
Shopping	4.8	
Cinema	3.4	
Swimming	3.1	
Music	2.7	
Texting	1.7	
Reading		24.3
Other Outdoor	36.3	23
Other Indoor	64.4	29

The findings on how children like to spend time with their friends, suggests that given the opportunity, children will make their own fun. Although it was beyond the scope of the study to monitor actual time spent in different leisure activities, given the Irish climate and the fact that for reasons of supervision, safety, or suitable play space, children are sometimes confined to indoor activities, this belies the concerns that children are inactive or over-reliant on technology for entertainment: most of the children surveyed prefer to be active and involved with their peers.

On the other hand, technology seems to be very present in the average home in Ireland. When they're alone, children often turn to technology for their fun and most of them have quite a high degree of access to technology. Issues of supervision were not explored in this section of the research but emerged in discussion with parents and teachers. Age emerges as a major factor in the choices that children make particularly in relation to technology. Gender seems to be less of a differentiating factor, although boys seem to be more pro-active, or interested, in using computers and the Internet.

Children's accounts of Play and Technology

Focus groups were held in each of the participating schools but were restricted for practical reasons to the older group. Moderated by a member of the research team, the purpose of the focus group was to encourage discussion about what children liked to do in their play activities and what such play time meant to them.

In general, the focus groups revealed that, regardless of school, rural or urban, children seemed to enjoy the same kind of media and pastimes for broadly the same reasons and in similar contexts. Mobile phones, the Internet, games consoles and television were important for all children in the study. Children tended to like outdoor activities and prefer to play with friends, but as they get older, their interest in outdoor pursuits wanes. Factors such as weather, time of year, and the availability of playmates, influence the leisure/technology choices they make. Television is by far the most important of the leisure technologies and although both boys and girls play console/video games, this pursuit is more popular with boys. All children preferred to play these games with others. While there appeared to be no common parental policy or rules regarding the use of televisions in bedrooms, where rules were in place, individual children took their own view in terms of compliance and subversion.

Television viewing

Television viewing was one of the most popular topics of discussion among the children. The most popular genre was comedy and included child-oriented programmes such as *Fairly Odd Parents, Family Guy, Malcolm in the Middle* as well as others targeted at an older age group such as *South Park*, and *Friends*. *The Simpsons* was universally popular and only a few children said they didn't watch it. Some children said that their parents also liked the programme and there weren't any children present who weren't allowed to watch it. Soap operas were also popular, particularly with girls though *Coronation Street* was equally popular with both boys and girls. In one school, several children agreed that they watch soap operas from 6.30pm to 8pm most weekday evenings. TV viewing patterns seemed to follow a

similar pattern in that children said they would watch some programmes, such as soap operas, with their family, but that they withdrew to their bedroom for something they really want to see. This is partly due to the fact that their parents might want to watch something else, or that they prefer not to be disturbed or disrupted in their viewing. Sports programmes, whether matches or wrestling, were more loudly described by boys – although some girls also named them, most said that they didn't really watch them very often.

Playing console games

Much discussion took place in focus groups around console game playing. Most of the children said that they play console games: all children said that they had tried console games, though not everyone liked them. Almost all had PlayStations with only a few owning rival devices such as Xbox, Nintendo or GameCube.

Weather and time of day were mentioned as factors in when some children play console games. The experience of how long or how frequently games were played varied: some children said that they would play every day, others not so often and would depend on whether friends were available, how new a game was with the added incentive of new challenges, and the mood the player was in.

Games genres were much debated in focus groups. Most children said they liked quest games or racing games. Those based on sport, such as *FIFA*, premiership management games, and rugby, were especially popular. Wrestling and action sports games, such as surfing, racing, or skiing games were also mentioned. Some children said they liked puzzle or treasure hunt type games (though others said they were frustrating). *The Sims* games were widely lauded. Although some are rated 18s, it was treated as a game suitable for all players. Games created for children were considered boring.

Action and adventure games, some of which are considered violent and bloody, were seen by children as opportunities 'for fun'. Most children had seen, if not played, games that were rated much higher than their own age. Children in all schools said they had access to, or even owned *Grand Theft Auto San Andreas,* a controversial 18s rated game that involves car theft and pimping as part of the scoring storyline.

Children seemed to feel and some explained that the violence in such games was not important; it was about reaching a high score. They were reluctant to explain the appeal of such games and responded in terms such as: "Video games that are violent…Cos they're fun" or : "Well, they're not really that violent 'cos they're mostly cartoony", suggesting that the

violence aspect was mitigated because the action clearly wasn't real. One of the attractions of these games appears to be their complexity and the problem-solving challenge presented to the player, as illustrated below:

> I like to play shooting games – well it's just kind of … it's not really about the shooting. It's more complex than most games. You go around and you mostly do missions. And there's like free role modes where you can just go around the place doing what you want
>
> [several peers agreed with this boy's explanation of the appeal of shoot-'em-up games]

Mobile phones

59% of children in the older age group overall said they owned a mobile phone.. Of those who didn't already own one, most wanted one, with camera phones being especially desirable.

Texting and the use of SMS was by far the most popular and prevalent use of the phone. Usually, this involved simply keeping in touch with friends – to gossip, discuss homework, etc., - letting friends know that a child is on their way over to visit, or to arrange collection from a friend's home by a parent. Most of the children had credit-based phones (only one child specified that he had a bill phone). Parents, especially mothers, were the ones who pay for phone credit (it did not come out of pocket money). Some children estimated that they could spend between €5 and €10 a week in credit. Some children had the phones in case of emergency.

'Pranking' was mentioned as a popular activity. This was described as sending silly text messages, or more often, phoning numbers to make what are known as nuisance calls. For most children, this is considered harmless fun, or as a means of wasting credit. A girl said that she would dial a number similar to her own, just changing a digit. In one school, although described as a means of fun, there were slightly more serious undertones. The activities described involve ordering pizzas or making nuisance phone calls to businesses. One boy said that he only used freephone numbers and another that he called phone numbers given in advertisements.

Quite a few children said that they played the games that are installed on phones. One child referred to 'borrowing' his mother's phone on more or less a permanent basis to text and play games. Only one child described using her phone to go onto the Internet to download ringtones. Downloading ringtones and games was bemoaned as a waste of credit and although most had done it, it was admitted to be expensive.

Internet use

Quite a lot of children said that they use the Internet. The most frequently described activities were to listen to (rather than download) music, to check out websites that they are interested in (for example, of bands or sports organizations, such as the GAA website), to look up game cheats, and for projects at school. One of the suggestions here was that if a project was unfinished, printing straight out from a website was a quick and simple means of completing the assignment.

In one school, the children said that they all had their own email address that they could access from anywhere (these had been set up through the school). The children were very aware of security issues. They understood and spoke about the risk of viruses and taking care with email. Some also discussed chatrooms. No-one said that they used chatrooms regularly, but several said that they would not use real names or contact details online. They would use a false identity if asked and were aware that other people weren't necessarily who they might say.

Overall, discussions with children in the focus groups revealed that they did not seem to be intimidated by any technology in any way. Technology seems to be an integral part of most children's lives and on the whole, they appeared to be confident about using technology. At home, they were often the person who would set up the DVD or programme the VCR. Even if their parents knew how to do it, the children would often 'end up' doing it anyway. Some children also said that they sometimes have to teach an adult how to use some technology: teaching the babysitter or a parent to text or use their mobile phone, teaching a parent how to do something on the computer, or (Dad was specified) teaching a parent how to work the PlayStation.

Older siblings were identified as both an important source of information and an influence in children's use of technology. Siblings were discussed, for instance, in the context of downloading music from the Internet, the lender or borrower of CDs, a difference in rules of behaviour, or being the person in the family who works out how to use new equipment/software.

Teachers' and parents' views on Play and Technology

While the focus of the study was centred on children's views and experiences, adults were also interviewed in the course of the research and some of the principal issues raised by parents and teachers are summarized below.

Parents agreed that technology now played a major role in children's leisure and saw both advantages and disadvantages of technology in play. Some commented on the importance of being involved, being aware of what their children were being exposed to and the need to monitor technology use. Some said that parents should guide their children and not use it for "childcare". Parents consider balanced and controlled, "small doses" of technology to be good for children; moderation, and a sense of perspective, was stressed by many.

The educational value of technology was an important factor for many parents, some arguing that it is important for children "to get into technology at a young age," because it would help prepare children for the adult world. Several mentioned how technology could help children develop new skills, praising the range of educational programmes available and the role they could play in developing a child's knowledge.

On the negative side, some parents felt that technology played "too big a part" in children's leisure. Several expressed the fear that console games "take over". One parent described how her son became aggressive when frustrated by a level he could conquer. Some cited peer pressure: a child who does not have what others have is not considered 'trendy'. A few parents raised the concern that interaction with friends could be diminished and that technology might be used as a substitute for friends or physical activity. They also expressed the fear that technology made children lazy or over-reliant on technology for entertainment.

Most parents expressed a preference for their children to play outdoors but saw how attractive technology was by contrast. The word "battle" was used repeatedly as a description of getting children to play outside. Parents were worried about their children's lack of activity, becoming too sedentary, and being indoors too much. Several parents referred to traditional games not being played anymore (eg. 'Cops and Robbers'), and one felt that technology had taken a lot of the fun out of play. Others also mentioned that they observed children were less able to go out and create their own games, less likely to turn to reading or rely upon their own imaginative devices.

Although parents had many concerns about the influence of technology on play, most expressed a positive attitude overall. Most acknowledged that there were benefits as well as downsides. Several returned to the parent's responsibility to ensure balanced access to

technology for their child. While there were concerns about sedentary lifestyles and the lack of creative play, there was a welcome for the skills and knowledge that technology can bring. Where peer pressure was an issue, this was somewhat countered by socialization opportunities that can develop.

Teachers similarly recognised the central role technology played for children, seeing it as very influential and as with parents, viewed technology as something of a mixed blessing. There was some recognition of educational benefits of ICTs, particularly in terms of structured assignments. This was also considered to be more of a positive when adults engage with or guide the child.

All teachers believed children had a very high level of ownership of technology, estimating that 75% upwards of homes had computers and that many children, boys in particular, had games consoles. Mobile phone ownership was also perceived to be high, especially among older children, a topic of some concern to them.

Teachers expressed much concern about the tendency for children to have television, computers and consoles in their own rooms. One teacher simply said that he would prefer that such devices were in a family room, though another felt he could not object as the practice was so widespread. The majority, however, regarded it as negative seeing it as contributing to children being tired at school and affecting concentration levels. Some teachers expressed concern that children were becoming too sedentary and lazy, mentally and physically. Several teachers commented on how children have become passive consumers and their ability to write stories and for creative play appeared to have been diminished. Several thought that language development and social skills had been curbed. One said that children seem to find it harder to communicate, especially when they are beginning to construct sentences and stories. A teacher also lamented the loss of playground games and rhymes as the influence of television and media has become stronger. Concerns about commercialization, exploitation and the powerful influence of advertising on children were also expressed.

Play and Technology in social and cultural context

With only very limited comparative data from ten or twenty years ago, it is difficult to chart how children's lives are changing in terms of leisure and this is the first study of its kind in the Irish context. Ireland has experienced societal change with increased migration, the return of emigrants and the upturn in the economy (Census 2002, Central Statistics Office, 2003). The range of schools participating in this research was broadly representative of the

educational options available to children in Ireland. The multi-denominational school included in the survey had a population drawn from a variety of international backgrounds and reflects a growing tendency towards different linguistic backgrounds in the classroom.

The emerging picture from the *Play and Technology* survey is that entertainment as well as information and communication technologies are omnipresent in Irish children's lives, mirroring international trends toward high presence of domestic technologies in the developed world (Livingstone and Bovill, 1999; 2001, 2003; Roberts, 1999; Wright et al 2001). The vast majority of the children who participated in this research actively embrace technology and see it as being an intrinsic part of their lifestyle. They aspire to owning an array of entertainment and communications devices and are confident about their ability to negotiate the technological world. Despite this, children's expressed first preference is always to play outdoors with their friends with technology-based play a second choice. There is a definite 'bedroom culture' phenomenon among a sizable minority of Irish children and the older a child gets, the more likely it is that he or she will engage with it. Children are very confident about using technology, again a trend that increases with age.

In common with Livingstone and Bober (2003) children appear to be very knowledgeable about self-protection online, of the risks associated with entering chatrooms or revealing personal, identifying information and appear to have adsorbed the messages about online safety. Children view screen-based violence or horror through a different lens to most adults and are not concerned about its potential effects. Whatever concerns adults may have, children believe that they are able to evaluate situations and content (online or televisual) for themselves.

Sociability whether in direct play activity or in the use of ICTs emerged as an important value for children in the study. Depending on age and gender, the various technologies of email, SMS and mobile phones provide children here as well as in international studies with opportunities for socialising, communicating and interacting within social networks (Leung 2001). As found by Livingstone and Bovill (2001), technology-mediated communication in the main consists largely of 'light-hearted exchanges' with real-life friends, although contact with 'virtual' friends enlivens the mix and includes playing with identity, flirting and pursuing popular culture fandoms. Mobile phones, that may have been given to children for reasons of security and monitoring, have become one of the most visible aspects of the social networks maintained by young people (Haddon, 2004; Ling, 2004). Text messaging has been found to be particularly important for young people as a demonstration of peer group membership. Released from the constraints of using the family phone, children and teenagers experience

much greater freedom in the management and maintenance of friendships with their mobile phone in ways not always understood by their parents (Ling and Yttri, 2003).

There was little direct evidence in the findings analysed to date of a digital divide, in the sense that children from less well-off households may not have access to technology to the same degree as children in better economic circumstances. In fact, the highest levels of ownership of possessions listed in the questionnaire, particularly in regard to presence in the child's own room, were almost always with children from the designated disadvantaged schools. The exceptions to this were presence of computers in the home and presence of Internet at home, where they were lower than most other schools. However, in terms of presence of these in children's rooms, children from these two schools indicated the highest and fourth highest levels of computers, and the highest and fifth highest level of Internet. The extent to which this study reflects the national landscape requires further research.

Issues for further research

Given the relatively early stage of development of research in Ireland on children's uses of media, technology and ICTs, many questions meriting further study have been identified in this research. Many relate specifically to the particular contexts in which children play, learn and interact via technology with the world around them.

The family context provides one important locus for further study and might include more detailed exploration of the role of adults and siblings in providing play and learning opportunities for children in relation to technology. There is evidence in the current study of a rising awareness and use of technology with age. At what age and how does this increasing affinity with technology take place? Who are the key influencers – peer groups, parents, siblings, school, other media? How does learning about technology take place? Most adults in this study rated themselves as moderately to highly adept or knowledgeable in terms of using technology. The exception to this was in relation to console games – the vast majority of adults admitting that they knew only a little or nothing about them. Is gaming, therefore, an example of contemporary culture in which there is a definite generational divide?

There was also relatively little awareness of the statutory and non-statutory regulatory frameworks in Ireland for digital media content, console games, DVD and video, online content. Ratings systems for software were not often heeded and there was no awareness of

the Hotline provided by the Internet Service Providers Association of Ireland[4] for the reporting of child pornography or any apparent awareness of the Internet Advisory Board[5] which provides awareness of online safety.

An intriguing finding from the study was the high prevalence of technology and ICTs among children from areas of educational disadvantage. Further research is required to determine the accuracy of this finding and an issue of social importance is to examine the extent of a digital divide on a socio-economic level for Irish children? What are the factors prompting adoption of ICTs and how is such technology being used? What are the barriers to further technology diffusion for Irish children?

With the rapid pace of technological change and the imminent deployment of high levels of broadband access, as well as the development of new mobile devices and services, there is also an urgent need to research how such technologies will be adopted and used by children. Ideally, the National Longitudinal Study of Children in Ireland should incorporate as part of its terms of reference questions of technology access and use and establish a comparative study of children's technological experiences at key intervals.

The strong preference for outdoor, active play provides major support and endorsement of the strategic objectives of the National Play Policy.[6] Both children and adults in the research strongly valued outdoor play activities. But some parents also reported great difficulties in encouraging their older children to go out and play. Further research is required on this topic to identify some of the factors governing children's access to and use of outdoor play opportunities.

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[4] http://www.hotline.ie

[5] http://www.iab.ie

[6] In particular Objective 3: 'To ensure that children's play needs are met through the development of a child-friendly environment', and Objective 4: 'To maximise the range of public play opportunities available to children, particularly children who are marginalized or disadvantaged or who have a disability'. See National Children's Office (2004).

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