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## **NEW COMMUNICATION TECHNOLOGIES AND FAMILY LIFE**

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*"I can't think of a bigger change to the family than these technologies."  
– Liz Butterfield, NetSafe*

This document reports on a scoping study, conducted in 2005, in which key informants were interviewed on the topic of new communication technologies and families. The principal investigator was Dr Ann Weatherall.

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# EXECUTIVE SUMMARY

The present study aimed to draw together the international and national scholarly literature and New Zealand expert knowledge on Information and Communication Technologies (ICTs) and families. It is hoped that this document will usefully inform the work of the Families Commission in the area of ICTs.

Twelve key informants including academics, consultants, government advisors, and researchers were asked about new ICTs and families. They were asked about the opportunities and risks, issues unique to New Zealand families and for suggestions on directions for future research.

The following is a summary of what emerged from the literature review and interviews:

## DIGITAL DIVIDE

In New Zealand, like elsewhere in the world, there is widespread concern about lower-income families, rural and minor-urban families being marginalised in an increasingly digitally mediated society, where more and more everyday life is conducted electronically (eg banking, business, communication, education and entertainment). Typically parents are less digitally literate than their children, which has implications for social support around computer use and cyber safety.

Practical challenges to reduce the gap between those who do and those who do not use these technologies, known as the digital divide, are:

- > to have reliable computers and speedy internet access in all homes in New Zealand regardless of income and location
- > to have at least one adult family member who is willing and able to provide support and advice on the use of home computers, the internet and gaming.

Statistics New Zealand is presently developing a survey that will provide internationally comparable statistics on household use of ICTs. That data will provide a firm foundation for more in-depth quantitative and qualitative research.

The *Digital Strategy* was released by the Government in 2005. It provides a key framework for closing the digital divide in New Zealand. The Ministry of Economic Development plays a key role in implementing the strategy and would welcome input from the Families Commission on how best to accomplish a digital future for all New Zealand families.

The New Zealand *Computers in Homes* project, which puts recycled computers into homes that can't afford them, provides strong evidence of the benefits of reliable computers and internet access to disadvantaged families. Those involved with *Computers in Homes* projects provide a valuable, albeit currently under-resourced, source of knowledge and expertise on families and new ICTs. *Computers in Homes* projects provide a useful framework for future interventions or research projects involving new ICTs and families.

The New Zealand Council for Educational Research's Competent Children/Learners longitudinal study is an important source of information on children's use of ICTs.

## CYBER SAFETY

The best way to ensure security and safety for families is to ensure parents are confident and skilled users of ICTs and to encourage family communication about rules and restrictions of ICT use. A widespread recommendation is that computers be kept in common areas in the home.

Safeguarding computers and the family information stored in them is an issue that needs attention from families. It is the focus of a current NetSafe campaign. Potential dangers of the internet for children include repeated and prolonged exposure to objectionable material and grooming for sexual abuse.

Surveillance, through tracking systems on mobile phones and monitoring devices on computers, is increasingly available and requires parental education and more widespread discussion about ethics and children's privacy.

## **GAMING**

Research suggests that gaming is amongst the most common uses of ICTs for New Zealand children and that at-risk children tend to have gaming as one of their exclusive recreational activities (eg Wylie 2001, 2005). Prolonged and repeated exposure to objectionable material in games is undesirable and in all likelihood harmful to children. Liz Butterfield (NetSafe), Narelle Dawson (Parentline) and Bill Hastings (Chief Censor, Film and Literature Classification) were unanimous in their concern at children's familiarity with and use of inappropriate games (eg Grand Theft Auto). Education is needed to inform parents about gaming content. Furthermore, Hastings argued that New Zealand's classification system for games needs revising.

Gaming is not necessarily harmful to children. Rather, children's interest in gaming can be harnessed in the service of education.

## **FAMILY COMMUNICATION AND RELATIONSHIPS**

International and national research points to the advantages that internet access can bring to families by improving communication between its members. Immigrant families and iwi particularly benefit because they are likely to be separated geographically.

Mobile phones are being used in families to help co-ordinate the activities of parents and children. Access to mobile phones and email can be beneficial for estranged families because they enable direct contact between non-custodial parents and children. The increasing availability of tracking and surveillance systems requires widespread discussion about family ethics on privacy issues.

ICT use in the home may reduce the times families interact as a whole. However, household use of ICTs provides excellent opportunities for families to negotiate rules around their use. Parents should be encouraged to talk to children about the dangers of the internet. Furthermore, parents can support media literacy by encouraging children to look critically at the information they find on the internet and television.

## **SUGGESTIONS FOR CONSIDERATION BY THE FAMILIES COMMISSION**

- > The Families Commission could seek membership on the advisory group that provides strategy advice on the *Digital Strategy* (suggested contact Frank March, Ministry of Economic Development).
- > That the Families Commission could consider establishing its own research advisory board on ICTs and families. Membership of this board should include academic researchers, end users and government advisors. The terms of reference for that board should include monitoring official statistics on the uptake of ICTs, tracking developments of new ICTS that may impact on families and promoting research on ICTs. In particular, better networking is needed amongst researchers of families and ICTs. With better networking, researchers will be better placed to design and make funding bids for the kind of ethnographic, longitudinal, action research that is required in the area.

## 1.0 RATIONALE AND AIMS

The term New Information and Communication Technologies (ICTs) broadly refers to computers and the internet but can also include phones, games and other electronic devices such as mp3 players. To date there has been no systematic study of how new ICTs are affecting family life in New Zealand. That gap in knowledge is worrying given that statistics show New Zealand has one of the highest rates of mobile phone use and internet access in the world (Statistics New Zealand 2004). Various agencies (eg Ministry of Education, Ministry of Social Development, Internet Safety Group) offer information and services relating to new communication technologies. However, families have been a marginal rather than a focal concern of that work. An aim of the present study was to draw together the currently disparate knowledge about new communication technologies and families in New Zealand by interviewing relevant personnel from appropriate agencies.

The international literature provides an important resource for considering issues which are common to other countries and those that are distinctive to New Zealand. A number of large-scale government-funded research projects in the United Kingdom, for example, have identified the kinds of issues that concern families in the British context. These include cyber safety, the digital divide (ie, difference between technology rich and poor homes), educational possibilities and new patterns of communication within families. A review of the international literature was conducted in order to provide a context for the present study. It is anticipated that the results of the present study will be an important record of the views of expert informants, which could become a resource for further work.

As computers and mobile phones are becoming more affordable and many families are buying mobile phones and going online for the first time, it is timely to ask important questions such as how that technology is shaping family life and how families are shaping the use of technology. The impetus behind this research was to lay the foundations for a rigorous empirical base for policy formation and directions for future research.

Accordingly, the aims of the present study were threefold:

- > To document the potential and pitfalls that key informants identify as arising for New Zealand families as a result of new communication technologies (ie, mobile phones, email, chat rooms, online gaming etc).
- > To consider what issues are unique for New Zealand families and what are common with international research on families and new communication technologies.
- > To identify useful directions for original empirical work on the impact of communication technologies on family life.



## 2.0 LITERATURE REVIEW

Communication technologies encompass a vast array of media that range from written to electronic sources and encompass books, newspapers magazines, radio, television, gaming consoles, DVD players, sound systems, computers, phones and so on. These technologies fill family homes to a greater or lesser extent. Historically, the introduction of new technologies into everyday life has been met with concern over the potential impact of that technology. However, rapid advances in the kinds of interactivity made possible by new ICTs (eg mobile phones, broadband internet and gaming consoles) distinguish the present technological age from anything that has come before. Therefore it is arguably more important than ever to understand the merits, dangers and opportunities for families within an increasingly digital society.

The literature review that follows was compiled from a variety of scholarly sources. Previous related research projects that we had conducted (on women and computers, older people and information technology and on mobile phones and text messaging) were an initial source of published research. We also searched three important databases – First Search, PsycINFO and Web of Science. Through the first two sources we were able to identify major government-funded projects and organisations that were publishing more policy oriented literature – these were also included in the literature review. Research of which we were not aware, that was referred to in the interviews, was also collected and included in this review.

A general consensus that has emerged from recent published scholarly reviews of technology and everyday family life is that more research is needed. For example, in a review carried out in the United States, Jennings and Wartella (2004) note that a reasonable amount is known about the roles of media technologies in children's and adults' lives, but rather less is known about their roles in family relationships and family life. For example, in a systematic search of scholarly family journals published between 1985-2003 Meszaros (2004) found only 50 articles that focused on the impact of new media technologies on families (see also Hughes and Hans 2001; Watt and White 1999).

Aside from the lack of research, another point upon which there is general agreement in the literature is that family practices do alter as a result of the introduction of new technologies into the home. Intuitively, changes in relationships, including modes of communication, interaction patterns, and decision-making practices would be expected, and such changes are supported by anecdotal evidence. So, although existent research on families and communication technologies is limited, it is important because it identifies widespread themes in the literature and makes clearer what are considered to be the most crucial directions for future research. The following review attempts to identify and summarise the major themes of the international and national literature on families and new ICTs. The major focus of the review is computers and the internet but some research on video games and mobile phones will also be covered.

### 2.1 ACCESS AND THE DIGITAL DIVIDE

The digital divide refers to the distribution of families into those that do and those that do not have computers, internet access and computer literacy. Having poor access to computers and the internet and/or low levels of computer literacy is typically viewed negatively because it prevents active participation in an increasingly technologically driven knowledge society. Both nationally and internationally there are concerns about a digital divide.

Predominantly (although not exclusively) the digital divide is organised around socio-economic status with socially and economically advantaged families also having good access to ICT and achieving high levels of computer/digital literacy. The *Computers in Homes* project in New Zealand, which makes recycled computers available to families unable to buy one for themselves, provides evidence via casestudies of the positive impact of introducing computers to low-incomes families (see, for example, Williams 2003). However, simply introducing computers and internet access is not necessarily enough to promote digital literacy. Typically, some training and support is required for families to realise the full potential of ICT.

In the United States the digital divide is based on income, education, household composition (families with children are more likely to have computer and internet access) and ethnicity (see Hughes and Hans 2001). Recent estimates are that around 70 percent of households in the United States with

children under the age of 18 years have a computer and about 60 percent have internet access (compared to 62 percent and 63 percent overall respectively; see Jennings and Wartella 2004).

In the United Kingdom there is also a digital divide organised by socio-economic status. Research conducted slightly earlier than the American work just cited indicates that around 68 percent of middle class homes have access to a computer compared with about 40 percent of working class homes. Internet access in the United Kingdom is low compared to other European countries at around 14 percent of middle class families and only 2 percent of working class families (see Livingstone and Bovill 1999).

Australian research has also found evidence of a digital divide (see McLaren and Zapella 2002). Data from the 2001 Census in Australia suggested that about 42 percent of families were using computers and about 19 percent of homes had online access. Access to ICT showed the typical kind of socio-economic pattern in relation to the digital divide. Families with lower incomes and with lower levels of education were less likely to own or have access to computers. However, households with children were more likely to have home computers but one-parent families were less likely to have access to the internet than two-parent families. McLaren and Zapella also recorded a geographic digital divide where families from urban areas were more likely to have internet access than families from rural areas, although that gap was documented as decreasing.

A digital divide is also evident in New Zealand (see Statistics New Zealand 2004). In 2001 nearly half of all households had a computer and about 37 percent had access to the internet. Income and education were found to be the most important variables related to computer ownership and internet access. Another important variable was household composition. Homes with two parents and children were most likely to have internet access. The age of children was also important because internet access was most likely in homes with the youngest occupant being in the 10 to 14-year-old age group. Like Australia there is a geographic digital divide in New Zealand with rural areas and minor urban areas being less likely to have internet access.

## 2.2 FAMILY USE OF ICT

There is a vast array of activities relevant for family life that become available with computers and internet access including communication with remote others, management of finances (eg budget spreadsheets, banking), storage of family records (eg photos and videos), shopping, information (eg bus timetables), education and entertainment. There are many aspects of computer and internet use and different households will, of course, vary in their use. Furthermore, any answers to questions about families and ICTs must be provisional because both technology and its social contexts of use are rapidly changing.

Data on access to ICT is more readily available than information on what people do with that technology within the privacy of their homes. Research that is available on use of technology points to a wide range of activities undertaken that vary tremendously both across households and within families. In an American survey of families, the most common activities reported by adults included email, searching for information, shopping and paying bills, while email, chat rooms and games were reportedly the most common for children (Hughes and Hans 2001).

In Britain there have been at least two large-scale government-funded research projects on children's use of the internet and families' use of the internet (see Livingstone and Bovill 1999; Livingstone 2001, 2002). Part of that work involved an in-depth study of 30 British families, with results showing that within households there was often one family member identified as an 'expert' user. A further finding was that within families a set of rules and expectations about access and use emerged. A typical hierarchy found was priority for parents' work, followed by children's homework then informational use and, lastly, entertainment. Many of the families in the study reported parental strategies to manage children's use of the internet. These included: limiting use (eg to off-peak times) and activities (eg chat rooms); keeping passwords secret; monitoring use (eg by locating the computer in a family accessible space and/or by checking history files) and teaching children not to disclose identifying information.

Presently in New Zealand there is relatively little information available about household use of ICTs. However, Statistics New Zealand is presently developing a survey that will provide internationally comparable statistics on ICT use. A relatively large survey-based study of general media use and young people has been conducted (see Lealand and Zanker 2003) which confirmed that young New

Zealanders are regular users of computers and the internet for playing games, communicating with friends and doing homework. Newer forms of ICT were not yet common in children's bedrooms.

The New Zealand Council for Educational Research's longitudinal Competent Children project has also collected some information on children's use of electronic media (eg Wylie 2001, 2005). In that study more than half the children at age 14 years reported using computers often and use was increasing with age. Activities reported included seeking information, email, chat online, surfing and games.

The New Zealand-based *Computers in Homes* projects (see <http://www.computersinhomes.org.nz/>) provides evidence of the opportunities opened up to disadvantaged families when they are provided with computers, internet access and training. Those opportunities include communicating with remote family members, seeking employment (preparing CVs, searching for situations vacant), education and improving family-community relations.

## 2.3 EDUCATION AND RECREATION

As already mentioned, computers and internet access open up a vast array of choices for education and recreation. Many educational institutions offer online classes, and the internet offers readily available information for children's school projects. There is also a huge possibility for recreation as television, radio and magazine media increasingly move to electronic formats. It seems likely that many families acquire computers for their educational potential. Indeed, Wylie (2005) reported that seeking information for school projects was the most common use of the internet for the 14-year-olds in the *Competent Children/Learners* study in New Zealand. Also, using computers and the internet may be a way of engaging and promoting competent learners.

British research suggests that young people, at least, are more likely to use ICT for entertainment than education (Livingstone 2002). The British research suggests that young people go to commercial sites for entertainment, they use computers more for communication rather than information, they prefer games and interactivity rather than passive reception, and they use computers for communication with friends and family rather than strangers.

Even if computers are used for educational purposes there is a lack of compelling evidence that computer use inevitably promotes cognitive development (see Subrahmanyam, Greenfield, Kraut and Gross 2001). On the contrary, being exposed to high levels of violence in computer games or to internet-based sexually explicit material is likely to counter good social development. A survey study on underage gaming research in New Zealand suggested that more than 50 percent of young people between the ages of 15 and 17 had played games that were classified as R18 or had been banned because of their objectionable content (UMR Research 2005).

A question raised in the literature is whether computer and internet use is displacing other leisure activities such as television viewing, reading or sport. Available research seems to point to the same answer, which is 'no'. That is, children are using computers and the internet while still doing the same kinds of things for around the same amount of time that they always have (but see Kayany and Yelsma 2000 for contrary findings). However, there is evidence that children who spend more time with screen media (ie, television, video games and computers) tend to spend less time reading or playing outside (Rideout, Vandewater and Wartella 2003). High and almost exclusive use of screen media for recreation may be associated with health problems such as obesity (Hancox, Milne and Poulton 2004) and with poor learning outcomes in children (Wylie 2005). Note that the advent of interactive games such as i-toy and Dance-Dance Revolution may reverse relationships between the use of screen media and obesity.

## 2.4 COMMUNICATION AND RELATIONSHIPS

The internet opens up a variety of possibilities for communication with family and friends and can be an important means of maintaining social ties. Furthermore, the internet provides opportunities for social interaction through online support groups (eg grieving sites). Establishing new relationships through dating sites or chat rooms is now also a possibility. A New Zealand study that highlighted the potential for the internet to enhance family communication and relationships was one of the first *Computers in Homes* projects, which was conducted with the Tuhoë community.

When given internet access, email quickly became a popular activity for parents. Families reported finding email and chat rooms useful for keeping in touch with family members who were spread throughout both the country and the world (see Craig n.d.).

An intergenerational issue that is relevant for families is that parents typically are less computer literate than their children. Jordan (2002) found that parents' levels of computer literacy govern their levels of comfort about their children's use and the extent to which there were appropriate rules about ICT use. Furthermore, adults' and children's concerns about ICT were very different. Widespread concerns among parents are about children being exposed to objectionable material, and children releasing personal information over the internet. In contrast, children worry about their levels of competency (see Jennings and Wartella 2004).

A particular gap in parental knowledge relates to video games. For example, a Spanish study found that parents rarely played video games with their children, had very little knowledge about game content and underestimated the time their children spent playing video games (Casas 2001). Other research on social interaction around the computer confirms that while a family member is on the computer there is very little interaction with that person (Watt and White 1999). So, paradoxically, the use of computers may enhance communication and relationships with family outside the home but diminish it with people within the home. The ways families interact around technology has been identified in the literature as an important area for further research.

The establishment of rules about computer use provides an opportunity for families to practise their relationship skills. Jordan (2002) suggested that parents with higher levels of computer literacy were more flexible and open to negotiation with children about computer use than parents with lower levels of literacy.

A new communication technology that is strongly relevant to communication in relationships is mobile phones. The relative recentness of mobile phones within families means that there is little published work that has examined their impact on families.

## **2.5 PLACEMENT WITHIN THE HOME**

A final issue the literature discusses is where the computer is placed in the home. The location of the computer is important because it affects the social contexts of use. For example, it may facilitate (or otherwise) levels of parental monitoring and support.

Unlike televisions, computers are more likely to be placed in a less public space in the home. Research has shown that the placement of computers within the home has important implications for how technology is used (eg Facer, Furlong, Furlong and Sutherland 2001). Computers, game consoles and so on that are placed in communal areas are more likely to be closely monitored than if the technology is in more private spaces like bedrooms. Livingstone and Bovill (1999) suggested that as communication technologies are becoming increasingly personalised (eg mobile phones, laptop computers) there may be a shift towards 'bedroom culture'. The increasing individualisation and isolation of computer use is a problem for families insofar as it means the use of technology cannot be as easily monitored, which is important for internet safety. Furthermore, research in the United States (eg Subrahmanyam et al 2001) and in New Zealand (eg Wylie 2005) has shown that high-level users and users of particular media such as gaming may be at risk of poor social and learning outcomes. The particular relationships that have been documented in the literature will need to be revisited with the increasing uptake of broadband, which may exacerbate the kinds of effect found to date.

## 3.0 METHOD

A total of 12 interviews with key stakeholders were conducted. These were New Zealanders with established expert reputations in the area. Initially, participants recruited included NetSafe, the *Computers in Homes* project and the Ministry of Economic Development. A snowball sampling technique was used to identify other key informants. That is, participants were asked to make recommendations for further participants. One suggestion that we were unable to realise was an interview with a representative from SeniorNet, an organisation that supports older adults' use of ICT.

The research was approved by the Ethics Committee at the School of Psychology, Victoria University of Wellington. All participants agreed to be named and consented to having their comments attributed to them.

### 3.1 PARTICIPANTS

**Andy Williamson:** Member of the Digital Strategy Advisory Group. He has expertise in community research and evaluation and is a strong advocate of good quality qualitative analysis. He runs a consultancy business called Wairua Consulting.

**Barbara Craig:** Lecturer in Education at Victoria University of Wellington. She specialises in the use of ITC in educational settings. Her interests include community development and she is involved in computer use in the home and developing online literacy courses. She has been one of the leaders of the *Computers in Homes* project and is a member of the 20/20 Trust.

**Bill Hastings:** Chief Censor of Film and Literature since 1998.

**Bob Hancox:** Deputy Director of the Dunedin Multidisciplinary Health and Development Research Unit and Senior Research Fellow at the Preventive and Social Medicine Department at the Dunedin School of Medicine.

**Cathy Wylie:** Chief researcher at the New Zealand Council for Educational Research. Her areas of expertise include educational policy, school development and her current projects include *Competent Children*, a longitudinal study investigating the factors affecting children's development from early childhood through school age.

**Frances Bird:** Family Planning Association Director of Health Promotion and Professional Development.

**Frank March:** Senior specialist advisor at the Information Technology Policy Group at the Ministry of Economic Development. His chief role is to provide policy advice on the *Digital Strategy* and to work with groups who are placing bids for the broadband challenge. He has been involved in the development of the internet since it was first introduced to New Zealand, and early on was involved in encouraging government departments and businesses in Wellington to take up the internet.

**Gareth Meech:** ICT project leader at Statistics New Zealand. He and his team have been working closely with the Ministry of Economic Development for the last couple of years to develop a suite of surveys that will collect information on the use and uptake of ICTs by businesses, government and households. The household use of ICT survey is due to be distributed next year as a supplement to the household labour force survey.

**Liz Butterfield:** Executive Director of the Internet Safety Group.

**Manjula Shivanandan:** Information technology and telecommunications policy advisor at the Ministry of Economic Development. She is currently involved in developing an evaluation framework for initiatives to assess the performance of the *Digital Strategy*.

**Narelle Dawson:** Senior Mental Health Consultant at Parentline Advocacy Services.

**Richard Naylor:** Technical Director for CityLink. He has an engineering background and worked as IT manager at Wellington City Council. He worked with Victoria University and created CityLink. He has pioneered home broadband over the past 15 years, is an expert on backyard solutions and has a large amount of experience on how computing and communications technologies can affect family life and lifestyles.

## **3.2 INTERVIEW SCHEDULE**

The following general questions were asked during each interview.

- > What do you consider to be issues that have arisen for families as a result of new communication technologies such as the internet, online gaming, chat rooms and email?
- > What do you consider to be issues that have arisen for families as a result of mobile phones?
- > Do you think there are any issues unique to New Zealand families and new communication technologies?
- > What do you think are useful directions for future research in this area?

The interviews were audio recorded and summaries of their content were made.

## 4.0 RESULTS

The first question in the interviews asked for opinions about the issues that have arisen for families as a result of new communication technologies. Both Andy Williamson and Cathy Wylie noted that the term 'issues' has negative connotations that might discourage positive responses. Further, Cathy Wylie noted that it is important to frame new ICTs positively so families are aware of the potential benefits and opportunities they bring to life.

Gareth Meech noted that in order to assess the impact new ICTs are having on families, it is important firstly to determine how many households have access to them. At present New Zealand lags behind other countries in producing broad range statistics representing national household ICT use. Statistics New Zealand is currently designing a large-scale survey on household use of ICT which is to be carried out in 2006 with results due in early 2007. This will provide a clear and much needed indication of the impact that ICT is having on families. The household use of ICT survey that Meech is co-ordinating aims to assess the effectiveness of the Digital Strategy by measuring, amongst other things, the uptake of broadband and by assessing the skills and capabilities of ICT use by New Zealanders.

Bob Hancox argued for widespread discussion of the issues emerging from ICTs because they have the potential to reach children in more ways than ever before. In particular the issues around advertising and commercialisation need to be discussed. He suggested caution is needed in the extent to which children are allowed access to ICTs as the long-term impacts of this have not yet been assessed. Compared to the past, children are more likely to stay inside and play on computers and watch television. However, as yet the effects of this on long-term health and wellbeing have not been ascertained and it is unlikely that families will know the full long-term effects for many years.

Almost all the participants were aware of the *Digital Strategy* released by the Government in 2005. There was strong endorsement of the strategy for providing a step along the way to managing new technologies within families.

### 4.1 THE DIGITAL DIVIDE

The digital divide was a widespread concern among the participants because families who cannot afford a computer or internet connection are likely to lag behind other families in terms of computer skills and knowledge. Thus low-income families may become more and more marginalised in an increasingly digitally mediated society. Andy Williamson objected to the term 'digital divide' because it obscures the pervasive economic nature of the problem:

There is no such thing as a digital divide because on the whole the divide is socio-economic and I think by calling it a digital divide it avoids the issue of poverty particularly family poverty within typical areas and by calling it a digital divide it's saying it's not about poverty.  
– Andy Williamson

The *Computers in Homes* project was recognised by almost all the participants as being one of the positive ways that the digital divide can be practically addressed. Barbara Craig, one of the project's champions and researchers, described in detail the history and accomplishments of the work. It started in 1997 when the 20/20 Trust ran the first NetDay in Wellington. At that event a concerning gap in computer knowledge between those who had a computer at home compared with those who only had access at school was noted. As a result, the *Computers in Homes* project was set up to provide low-income families with computers. The first project put a recycled computer, an internet connection and computer training and support systems in the homes of 25 families at Cannons Creek School, which at the time was the school with the lowest decile rank in the country. Since the first project others have been set up in a number of locations around the country, including Panmure in Auckland. In total, 600 families have been provided with a computer.

Craig also talked about the digital divide between rural and urban communities. She noted that as part of the *Digital Strategy*, the 20/20 Trust is partnering with communities to increase their online access. For example, in small rural communities such as Tangimoana, alternative technology has been brought in to provide broadband through solar power. Broadband is being beamed in from the top of a hill to schools so they can generate power to run videoconferencing and this is connecting children with other schools and ensuring that older children are provided with access to education up to Year 13 level.

Williamson endorsed the importance of computer literacy in addressing the digital divide. He suggested that the most important factor in adopting new technology is developing awareness around the value and usefulness of the technology. An example is that many early childhood centres are introducing families to digital cameras and sharing photos online by showing parents pictures of their child's activities during the day. Once parents are exposed to the benefits of new technology they are more likely to adopt it. This is particularly important with broadband, for which many people don't understand the benefits, and therefore the uptake in New Zealand has been relatively slow.

Frank March and Manjula Shivanandan explained that closing the digital divide in computer literacy and building confidence in using new technology is one issue concerning families that is a central goal of the Digital Strategy, for which the Ministry of Economic Development plays a key role in implementing. This government initiative aims to provide New Zealanders with confidence in digital skills, information seeking skills and confidence with security. The issue of computer security and internet safety was an important theme in the interviews and will be discussed in more detail below.

## 4.2 EDUCATION AND RECREATION

Craig suggested that there are benefits computers can provide for families and wider communities, and highlighted the importance of addressing the digital divide and the necessity of supporting initiatives such as the Digital Strategy. She explained:

We could see a huge gap in the classroom – you were connected in the classroom but how much time do you actually get using the computer? Very little time when you are sharing amongst a large class and those kids who had access somewhere else were miles ahead of those kids who didn't have access in the community or at home ...where kids really benefit is having that relaxed time at home...so we thought what we've got to do if we're going to address the digital divide is have all kids connected at home so that you've got that time to catch up and you're not coming in already in a deficit kind of mode.

– Barbara Craig

Being part of the *Computers in Homes* project led to a wide range of benefits for the families who took part. Improvements in children's learning and ICT competence were found. Although children involved in the project were not formally tested, their teachers reported improvements in children's classroom ICT use and literacy. The *Computers in Homes* children were responsible for running and updating the Cannons Creek School website and installing new software across the school. This provided invaluable skills and technical knowledge which led to an increase in children's confidence and competence in the classroom.

Craig also described how children benefited from parents' involvement in the project. Families often had very little contact with their children's school and teachers. This created a barrier for children's learning as teachers had little idea about what was happening in their pupils' home environments. The *Computers in Homes* project worked to increase communication between schools and parents. As part of the project, parents were required to make email contact with the school on a weekly basis. In addition, at Cannons Creek School, training and six computers were made available for parental use at school; this increased the contact parents had with teachers, as previously many parents never came to school.

Improving the education of parents was another component of the *Computers in Homes* project that benefited the family as a whole. As many of the parents involved in the project were on an unemployment benefit, one of the biggest aims for many of them was to find a job. However, a low literacy rate amongst the parents was a barrier to employment. Therefore, literacy training was introduced as a part of the project and literacy courses were provided online. For many of the parents, school was associated with negative experiences, but online they felt in control. In addition, speakers were brought in at fortnightly meetings to provide advice on job seeking, educational courses and to give advice on how to write curriculum vitae. There has been a number of success stories of parents involved in *Computers in Homes* projects who enrolled in courses particularly in the teaching, nursing and social work areas and are now employed in these areas.



Wylie suggested that families should encourage children to use new communication technology in a variety of ways. The *Competent Children* longitudinal study found that low levels of maternal qualifications were associated with less language use by children. Furthermore, children whose mothers had no qualifications were less likely to use the computer for communication purposes and school projects, and more likely to use computers for games and entertainment. According to Wylie, this poses a challenge for families: to encourage children to use the computer in a wide variety of ways, for education as well as entertainment.

Richard Naylor thought an important issue was ensuring that families are made aware of how to critically analyse media and information that comes into their homes. More information is entering the home through television and the internet on a regular basis. Therefore, it is important that families are encouraged to question information and have the necessary skills to assess the accuracy of information they find:

...as more and more content comes online there are huge amounts of issues that people have to understand ... For example, if people watch Television One news they can take that at pretty much face value that that is a reasonable representation of information, but when it's published on the web how authoritative is that?... When things are dynamic like on the internet and when people can publish anything so easily – how authoritative or how accurate is it? People have to understand that and appreciate is it quantity of information or quality and you have to teach people how to discern that and work out what is good. It won't have a rating on it but how they can work out how valid it is.

– *Richard Naylor*

As computers and new communication technology become more common, another issue that Naylor acknowledged was the accessibility of offensive content such as online pornography. Naylor suggested there is no easy answer to accessibility of potentially offensive material but there is a definite need for ongoing public discussion in this area. There is also a need for parents to discuss acceptable and appropriate sites to visit on the internet with their children, so children are aware of family rules.

Frances Bird also noted that new ICTs are making pornography more available to young people. Some research suggested that young people, and particularly young men, may be learning about sexual and reproductive matters via pornography, which causes unrealistic expectations about sexuality and relationships. Bird pointed out that education was needed and that the Family Planning Association was providing education for young people via their website.

### **4.3 VIDEO GAMES**

Gaming is an increasingly widespread activity, particularly among young people. There was widespread concern amongst the participants interviewed of the problems and risks relevant to families from gaming. Bill Hasting pointed out that many parents do not realise that they are responsible for enforcing the classifications not only of DVDs and videos, but also games. He suggested that adults often don't understand new technology and children are more media savvy than their parents and grandparents:

We've heard anecdotes of junior taking grandma to the video store to buy his Christmas present and junior says 'I'd like Grand Theft Auto please granny' and she says 'Oh that sounds like a nice driving little thing' and she buys it and the guy in the video store lets her buy it knowing that junior is going to be playing it which is pretty irresponsible in some ways.

– *Bill Hastings*

Narelle Dawson also emphasised concern about the accessibility and impact that violent and sexually explicit video games have on children. She noted that many video games currently available in New Zealand have violent or sexually explicit content. Parents may be unaware of the content of the games their children are playing, and some may purchase R18 games for their children without taking account of their rating. The impact and accessibility of these games is an issue that parents and families should be made aware of.

Dawson noted that there are only a few studies investigating the impact of these games on children. However, she pointed to compelling work such as neurological studies which have found that violent games lead to brain activity that is characteristic of other forms of aggression. In addition, Dawson had observed that children aged 5-12 who were referred to Parentline for sexually abusive behaviour towards other children, had typically played the R18 play station game Grand Theft Auto (see [http://www.nzherald.co.nz/topic/story.cfm?c\\_id=160&ObjectID=10337605](http://www.nzherald.co.nz/topic/story.cfm?c_id=160&ObjectID=10337605) for media coverage of some of the controversy about Grand Theft Auto III). Dawson acknowledged the difficulty in establishing a cause and effect relationship between playing the violent games and aggressive behaviour. However, what was important to her as a psychologist was that these games are providing children with models for antisocial behaviour. Dawson suggested that a key approach to tackling children's access to violent games is through parental education. Often children may access these games at friends' houses and parents may have little idea they are playing restricted games, or they may not understand the rating or content of these games.

Hastings believed there is good enough evidence that exposure to violent and sexually explicit games is harmful for children, particularly if they are already living in at-risk environments. However, regardless of the evidence, many games are not made for children and aren't intended to be marketed to children. So, Hastings concurred with Dawson that a major issue for families involves equipping parents and children with knowledge about media. He suggested that media studies in schools play an important role in teaching children how to interpret media with a critical eye. Parents need to be more aware of simple strategies like putting computers, TVs and technology in public places so the family can share them and monitor use, although he acknowledged that this is difficult with mobile phones. The same recommendation was made about computer placement by Liz Butterfield (see below) in relation to safety concerns.

Hancox suggested that monitoring the time children spend watching television and using other ICTs is an emerging issue of concern to families. The Dunedin multidisciplinary study found a link between time spent watching television as a child and obesity. In addition to this, more time spent watching television as a child was linked to poorer performance in the educational system, regardless of IQ and socio-economic background. Overseas research suggests the link between video playing and obesity may not be as high as that between television watching and obesity; other long-term impacts are, as yet, unknown.

...if you are sitting on the internet playing an internet-based game or a computer-based game your hands are busy you are more likely to miss a meal because you're wrapped up in what's going on rather than if you are watching TV you are more likely to sit there eating more because you haven't got anything to do with your hands while you are watching telly.

– *Bob Hancox*

In contrast to Hancox, Williamson pointed to the positive value that computer games may have on children's cognitive development. Wylie bracketed off debates about the presence or absence of a cause-effect relationship between games and development. Instead she suggested that video games may provide an entry into learning for children who are performing poorly but enjoy video games.

## 4.4 COMMUNICATION AND RELATIONSHIPS

I didn't comprehend really the difficulty if you don't have a phone and you can't write a letter and you've immigrated from Tonga or Samoa 15 years ago and your brother went to California or somewhere – you haven't spoken to them since, you've got no idea where they are so you've found them which is quite amazing and not only that they've developed the skills to be able to set up family chat rooms or family web pages so we've got families I know once a week log on and they all talk from Australia, from California, from Samoa ...when people are connected to their family they're not feeling so much that they don't belong.

– *Barbara Craig*

The *Computers in Homes* project provides evidence that internet access benefits families by improving communication between members. Many of the families involved in the project are Pacific Islanders who have limited contact with their families. Therefore, families are able to re-establish links and communicate with their families overseas via email and chatting by going online. In addition, since

starting the *Computers in Homes* project, work has begun with refugee families. The benefit of giving online access to these families is considerable, as many refugee families struggle with losing their identity when they arrive in New Zealand after spending time in refugee camps.

March and Shivanandan also endorsed the potential for family communication. An anecdote they offered of how the internet empowers families to keep in contact involved a New Zealand man who lived in the United States and downloaded pictures of his grandchildren daily and projected them onto his wall. March and Shivanandan noted that broadband is beginning to play a key part in allowing effective and immediate connection between families by providing cheap telephone communication. In addition, exchanging emails with video sequences included is opening up a new world of communication for families.

Wylie recommended that family interaction around new ICTs should be encouraged. She suggested that new communication technology creates an excellent opportunity for families to interact and share time together. Negotiating and structuring rules around family computer use is one example. In addition, the increasing emphasis on media literacy in schools should be supported in the home by encouraging children to look at information they find on the internet and television more critically. Parents should also be encouraged to talk about the dangers of the internet and work together with children to devise strategies that can be used to avoid offensive content on the internet. Rules should be made clear and discussed regularly.

Hancox argued that televisions and new ICTs have changed family dynamics. When televisions were first introduced in the 1960s, watching television was a family activity. In the mid 1980s more channels began to be introduced and families started to watch television separately. Nowadays children often go to a different part of the house to watch television rather than watching it together as a family. As digital television begins to expand, Bob Hancox predicts that people will have more options and want to watch their own programmes separately. He also suggested that if there is always something to watch on television, there will not be any need for people to go and find something else to do. Arguably, the increased use of computers may also reduce communication within families because computer use is typically an individual activity.

## 4.5 SECURITY AND SAFETY

Security and safety issues were mentioned by all participants; however, Liz Butterfield discussed it in more depth. From her perspective, safeguarding computers by making sure they have the 'net basics' is an issue that needs family attention and is the focus of a current NetSafe campaign. A recent study conducted by NetSafe found only 30 percent of all respondents had basic computer security systems in place, including regularly updated operating systems, firewalls and anti-virus software. Lacking basic internet security runs the risk of contracting viruses, but of more concern is the ability of outsiders to access files and photos stored on computers. This problem also extends outside the home to organisations storing personal information on computers, which is a particular concern for families. The New Zealand Association of Counsellors recently recognised that some counsellors may be holding files on insecure computers. This runs the risk of non-custodial parents gaining access to information about children's whereabouts or for abusers to access records to find out what was said in counselling sessions.

Surveillance through tracking systems was another major issue for families identified by Butterfield. Filtering and monitoring devices are often marketed to parents as necessary for their children's safety as they allow them to track and monitor their children's online activity and movements. However, according to Butterfield, their effectiveness is often limited by a parent's lack of technological knowledge compared to their children:

...if you get into a private surveillance war with your children chances are you will lose because generally they know a bit more about these technologies than we do as a parent so it's best not to go there.

– Liz Butterfield

Related to surveillance is an ethical issue surrounding children's privacy, which Butterfield suggests requires more debate and discussion. NetSafe questions parents as to whether they would read their children's diaries as a gauge of privacy expectations and to engender parents to think about how far they should track their children's online activity. The increasing use of online diaries (blogs) raises new

sets of issues that require wider discussion. For example, blogs also provide a great deal of information about the kids writing them which can be used by predators to establish a contact.

Butterfield pointed out that it is becoming increasingly difficult to protect children from disturbing material. Children can access the net at school, from mobile phones, and in unsupervised homes. A NetSafe study found 43 percent of children were accessing the internet at a friend's house. Butterfield suggested that the best way to safeguard children is to provide them with education. Although many parents don't understand new technology, and many feel uncomfortable talking about pornography, it is better in her opinion that parents provide children with guidance.

Dawson also emphasised that parents need to be aware of the dangers children can encounter on the internet. She described cases in New Zealand where children were being paid by older men they met on the internet to travel up from the South Island to meet them in the North Island without the children's parents knowing. She also pointed to the need for parents to be aware of young children's behaviour online and to make sure they are not engaging in deviant behaviour. Research cited by Dawson suggests that three-quarters of all sex offenders start their offending behaviour before the age of 14. Offending takes place on a continuum and may begin with viewing deviant images online and progress to deviant behaviour in the real world. According to Dawson such research endorses the importance of having computers, especially those with internet access, in common areas in the family home.

Dawson believes that New Zealand offers an environment where there is opportunity to be proactive and co-ordinate efforts to keep children safe. For example, Grand Theft Auto was released with a pornographic component hidden in the game that was not advertised on the packaging. She suggested that if families were to group together to demand a refund for the game on the grounds that it was falsely advertised then this would send a clear message to the rest of New Zealand and the world that the content of these games is not appropriate for children. Dawson called this the re strategy in which parents need to *regroup* as a co-ordinated team to *revoke* the classification of some of the games and *reclassify* and *recall* the games.

## 4.6 MOBILE PHONES

There was widespread recognition amongst participants that mobile phones have an increasingly high impact on everyday life.

Through the *Computers in Homes* project, Craig found that some lower socio-economic families favour mobile phones over landlines for reasons of controlling cost. At present telecommunication companies do not provide internet-only phone lines, which means it is difficult for families who do not have landlines to get internet access. The 20/20 Trust has lobbied Telecom to provide an internet-only line at a reduced cost. This would cut the rental price down and help low-income families access the internet, but as yet this has not eventuated.

Williamson described a research project that investigated ICT use, in families dealing with the Family Court. It was found that access to mobile phones and email enabled direct contact between non-custodial parents and children. Electronic communication seemed to fulfil an important role, as often non-custodial parents are reticent about phoning their children as they wish to avoid speaking to their ex-partner. Also, mobile phones allowed custodial parents to keep in touch with their children while they are with their non-custodial parents.

One of the recommendations that we had in the early parts of the research– although it probably didn't make it to the final report – was that the Family Court should give these kids a \$20 top-up voucher for their mobile phone every month and then they [the children] could decide who to talk to and when!

– *Andy Williamson*

Williamson and Butterfield identified the introduction of Global Positioning Systems (GPS) on mobile phones as another issue beginning to affect families. It is likely that most future mobile phones will include GPS tracking systems. This technology provides parents with the ability to find children if they get lost or keep track of where their children are. However, as Williamson and Butterfield point out, individuals and families need to think about ethical issues regarding constant surveillance.

Hastings was concerned about how to stop restricted images being accessed by children on mobile phones. To deal with this issue, the Office of Film and Literature Classification is negotiating with the major mobile phone companies for a content guideline. This will involve having a system similar to the British one in which anything restricted, including trailers and games, will not be provided to a mobile phone unless there is evidence on file that it is able to receive restricted material.

Dawson was aware that there is an increasing number of complaints of bullying on mobile phones. She suggested that parents may not be aware that mobile phone bullying is going on. There have also been cases of people being photographed with a pxt phone under toilet doors at school and this image then being sent around the school. This suggests the need for children to be educated about appropriate behaviour around mobile phone use.

## 4.7 ISSUES UNIQUE TO NEW ZEALAND FAMILIES

There was a general recognition that the issues facing New Zealand regarding families and new ICTs were similar to those found in other countries; for example, the digital divide. Another is getting culturally relevant and appropriate content online (this is mentioned in the Digital Strategy).

Naylor and Williamson both noted New Zealand had good uptake of dial-up internet, but has had relatively slow uptake of broadband. The benefits of broadband need to be further emphasised to New Zealand families. To date, telecommunication companies have not marketed effectively the opportunities available on broadband to families. Craig also noted that New Zealand families are at an advantage compared to many countries in the rest of the world because of the good rate of connectivity. For example, she suggested the model that New Zealand has used for *Computers in Homes* would not work in all parts of the world because other countries do not have the infrastructure to facilitate putting this technology into the home.

Wylie suggested that New Zealand families are in a good position to address the potential problems new ICTs can create for families. Compared to the United States, for example, New Zealand has a lower percentage of computers in bedrooms. Therefore, New Zealand has the opportunity to try to stem and change attitudes while these rates are still low, rather than waiting until it's a big problem in a few years time. She says:

We're actually in a good position I think socially as a society to work on it now. If I was thinking about this in the States I'd be thinking this is going to be much harder because things become so embedded, but we are in a much better position and the broadband is only just going in so yes – we have to do something about it but we are in a good position I think to do something about it and use social marketing and be talking to manufacturers.

– Cathy Wylie

Text messaging is a very popular mode of communication in New Zealand, particularly among young people. Butterfield noted that issues around mobile phone use may be more important in New Zealand than in a number of other countries. Having a large number of contacts in their mobile phone address books can become a status symbol for young people, and they often swap their phone lists with their friends and contact strangers through their mobile phones. Butterfield suggested that this can lead to safety problems as children may communicate and meet up with strangers who may put them in risky situations. Contact by mobile phone is often the preferred means of communication paedophiles use after meeting a child in a chat room, because their communication is not recorded in the same way it is online. After grooming the child, the next step may be to meet up with the child. A NetSafe study, *Girls on the Net*, found that 33.5 percent of girls surveyed have had a personal face-to-face meeting with someone they met on the internet. Given the increasing prevalence of internet relationships, increased awareness on how to pursue them safely is an important issue.

In New Zealand it is relatively easy to pick up a phone to create and maintain contacts and share information. Butterfield suggested that NetSafe plays a key role in facilitating this communication across sectors. For example, between schools, researchers, technology developers, community groups, governmental agencies and parents. This is key as children can face serious problems online that require communication across agencies, such as picking up signs both online and offline that suggest children may be subject to grooming or sexual abuse:

New Zealand has an incredible opportunity here to be able to do what is out of other countries' grasp to do and that is to really successfully integrate these technologies and to educate the population and it requires that coming from a number of quarters.

– *Liz Butterfield*

March and Shivanandan highlighted that ICTs are playing an important role in creating connection and cohesion within iwi that is likely to be unique to this country. For example, at present there are about 30,000 members of Tuhoe, of which only 5,000 live in their traditional tribal area. This leads to logistical difficulties as these 5,000 attempt to carry the responsibility of looking after the interests and making decisions on behalf of 30,000 members. Now, new communication technology is playing a crucial role in keeping the community informed and connected from various parts of New Zealand and the world. Digital technology is also playing an important role in preserving Tuhoe history, as Years 12 and 13 students are currently involved in a project recording digital stories of Tuhoe (see [www.digiops.org.nz/projects/currentprojects/tuhoe/](http://www.digiops.org.nz/projects/currentprojects/tuhoe/)). Furthermore, New Zealand has a high number of Asian and Pacific Island families; for such families, connectivity can ensure that even when separated by geographical distance, family members are linked.

Dawson noted that New Zealand's specific cultural context has implications for learning. She argued that in educating parents and families about how to use the internet and games safely, it is crucial that Māori are targeted effectively using culturally appropriate methods and models. Dawson suggested that New Zealand can learn from mistakes made in other countries. For example, in Australia, educators are facing problems because they tried to use exactly the same programmes for indigenous children that were used for European children, but this is not working as such programmes need to be targeted for specific cultures. This issue is particularly important in New Zealand due to the fact that Māori males are at greatest risk of negative life outcomes and of being victims and perpetrators of violence. Therefore, messages need to be culturally appropriate.

## 4.8 UNIQUE ISSUES AND GAMING

Hastings suggested that censorship for gaming may be an issue, particularly in Western cultures such as New Zealand, where children often watch films and play games without parental supervision. This is in contrast to families in India where censorship is not so important because the whole family debriefs and pulls children back from being absorbed in the material.

Hastings explained that New Zealand has a very relaxed games classification system:

...very unique issue here in that unlike DVDs films and videos, unrestricted computer games don't have to carry New Zealand labels; we only get 65 computer games into this office for classification a year and all others are able to carry foreign labels.

– *Bill Hastings*

The mixed classification system is likely to be confusing to buyers even if they are aware of classifications on games. No other countries allow this to happen; in other countries there is only one system of rating on games.

In 1993 Parliament decided to recognise Australian and British ratings for unrestricted material. According to Hastings this poses another problem unique to New Zealand, as anything that has an Australian or British unrestricted rating takes the same rating in New Zealand. This is a cause for some concern. For example, Australian censors don't look at the games but train people from the computer games industry to rate their own games, which may create a conflict of interest. Furthermore, a report recently issued demonstrates striking differences in the labelling between New Zealand and Australia. A selection of games was selected and rated by New Zealand, Australia and Germany. It was found that New Zealand and Germany rated games higher than Australia. Although the sample was too small to be conclusive, this suggests New Zealand should review the partnership rating system it currently has with Australia.

Another issue for New Zealand families is the fact that most games that are sold in New Zealand are developed in the USA. It can be argued that the USA has a higher tolerance towards gun culture and violence that may not be as acceptable in New Zealand culture, therefore Hastings stresses that New Zealand should use its own classification system for all games rather than let unrestricted material carry foreign classifications. There is also concern over an increase in cultural homogenisation, as there are no New Zealand games written by New Zealand writers:

You can't tell me it's not possible and in fact you can't tell me it wouldn't be internationally marketable. Think if you have a sort of historical Māori Wars game it would have violence which everybody wants but it wouldn't necessarily be the gross sadistic violence that we have in games now, it would be historical.  
– *Bill Hastings*

## 4.9 DIRECTIONS FOR FURTHER RESEARCH

There was general agreement about the lack of research looking at the impact of new communication technologies on families. In particular there was a perceived need for in-depth, ethnographic work with a longitudinal element so that the long-term impact of ICTs on families can be established. One problem with research in this area is that technology moves so fast, and often by the time research is published, it is already outdated.

Questions about how learning was changing as a result of the internet was mentioned by many of the participants as needing further research. Craig mentioned inter-generational learning, for example, where many children are teaching grandparents computer skills, but grandparents are insisting that children communicate to them in their first language to keep their cultural identity. Williamson noted that the motivation for parents to learn about new communication technologies is often provided by their children. A lack of ICT awareness by parents may influence children's awareness and interest in technology, and he suggested there needs to be research in this area.

From her experience with the *Computers in Homes* project, Craig was able to articulate some quite focused areas for future research. These included:

- > the role of ICTs in relationships between parents and children, and family and the community
- > parents accessing parenting information online. For example, refugee parents may not know particular school rules about truancy and may use the internet to find out basic information and get a sense for what their children should be doing
- > communication opportunities within the family and the connectivity and sense of identity this provides. The net brought people back into the fold as previously they couldn't write and didn't have a phone, but now families can email/chat and broadband is going to open up new opportunities for communication. A separate but related issue is whether there is a gendered division of labour within families in access and use of ICTs.

Wylie suggested designing an intervention for computer use and assessing its effectiveness. For example, an intervention could target a certain community and focus on educating families in the use of ICTs. One strategy could involve distributing pamphlets to families in the area about how to use computers effectively and emphasising the importance of developing rules around their use.

Wylie also identified a need for research assessing the current family rules and dynamics around new ICTs. She saw it as essential that the whole family dynamic is investigated. Wylie suggested that the work would be enhanced by using naturalistic methods to look at family interaction around computers in the home and interaction around the rules of computer use in the home. For example, parents may believe they have appropriate rules around computer use, but children may not agree. Therefore, it would be of interest to assess what awareness of rules around computer use different members in the house have.

Naylor identified two areas for future research: a study on how to market broadband to families and an investigation into whether families are storing and backing up electronic data safely.

Butterfield suggested that research targeting children who are aged three to six is needed because they are growing up with the technology. She also suggested there needs to be more research into children with disabilities and how they are using the new technology, as they can potentially be vulnerable targets online. Both Butterfield and Bird mentioned that research is needed in the area of sexuality and ICTs.

Both Hastings and Dawson suggested that an important area for future research would be to

investigate how games, particularly violent ones, affect the family dynamic and how the presence of gamers in the house shapes family life. To date the research seems to focus on how games affect the individual player and it does not seem to be related to real-life interactions. In addition, there is a need for research investigating parents' knowledge of the law surrounding technology.

Meech noted that Statistics New Zealand's household survey of ICT use will provide the basic necessary statistics to evaluate the widespread use of ICT by families and households. As a result of this survey, it is expected that other agencies and organisations may be able to develop future research with more in-depth coverage around issues related to family use.

March and Shivanandan suggested that the Ministry of Economic Development is interested in working with the Families Commission on future developments and initiatives associated with the Digital Strategy. The Ministry of Economic Development envisions that the Families Commission could play a key role in informing the Ministry of Economic Development formally about the impact of new communication technologies on families, so that these issues can be considered in future initiatives.



## 5.0 DISCUSSION

Concern about the digital divide is world-wide and New Zealand is no exception to this. The digital divide not only refers to social disparities in computer ownership and internet access but also to differences in knowledge of and skills with ICTs. New Zealand's digital strategy includes the broadband challenge that aims to get widespread uptake of fast connections to the internet. *Computers in Homes* projects provide an excellent but under-resourced model for getting ICT into financially poor homes. Parents who were part of *Computers in Homes* projects used the ICT they were given to prepare CVs, access online training and search for job vacancies. Involvement with the project increased their contact with the local community and heightened their interest in their children's computer use. Teachers reported seeing positive changes in the children's computer literacy as well as general motivation, as a result of getting a computer in the home.

Livingstone (2001) suggested three challenges for British families as the world becomes increasingly mediated by ICTs. It seems these challenges are also applicable to the New Zealand context. One challenge is practical and relates to the uptake of new developments (such as speedy connections), which is also an issue of affordability. All families should have access to reliable computers and speedy internet connection. A second challenge relates to social support in the use of ICT – are there family, friends or community representatives who can help with getting started on computers and solving problems? Families need to have at least one adult family member who takes an active interest in new ICTs. A third challenge relates to computer literacy and skill, including being able to search the internet intelligently and being able to judge the quality of the information retrieved. Accessible and affordable, culturally appropriate training needs to be available to everyone.

Internet safety and security is a major area of concern addressed both in the literature and by key informants. Placing computers in public spaces in the home has been identified in the literature as a strategy to improve safety. Key informants confirm this, but suggest the need to keep internet users safe needs to go beyond monitoring usage. Monitoring internet usage is becoming more and more difficult as new communication technologies become more and more pervasive. Therefore, informants stress that the most viable way to protect children from accessing offensive material is for families to discuss appropriate use of the internet and ways to deal with offensive material. Educating parents and children with strategies around using the internet is an important issue in a fast changing new communication technology era.

There are many benefits and opportunities that emerge from new ICTs, but as well as this there is a need to be aware of the potential dangers of new ICTs. Gaming is an area of concern that has not received a large amount of attention from the literature to date. Hastings suggests this as a particularly concerning area for New Zealand families due to the relaxed gaming classification system in New Zealand. Families need to be aware of the restriction categories placed on games and ensure that under-age children do not have access to these games.

New communication technologies are changing and developing at a rapid rate, and there is a need for families to attempt to stay informed about the opportunities and also the pitfalls that new communication technology brings. In particular, informants have suggested the need to increase awareness of the issues that surround new communication technologies and encourage more public and family discussion about the opportunities and dangers that new communication technology brings. This includes ethical issues surrounding the use of GPS tracking, and the accessibility of pornography online needs to be discussed by society.

There is strong evidence that if used in an appropriate way, new ICTs offer benefits to families, but it is important that children are encouraged to find a balance between computer use and other activities. Hancox expressed concern about the possible relationship between computer use and obesity. Wylie's (2001, 2005) research suggested that children whose sole recreational activity is gaming tend to be those most at risk of poor learning outcomes. Like many other things, computer use in moderation is unlikely to cause any harm.

The literature and interviews confirm that new ICTs can help maintain and improve social ties between family members separated by distance. Dawson and Wylie add to this by suggesting that new ICTs should be regarded as providing an opportunity for families to interact around them, by negotiating and structuring rules about their use. Craig also discussed the benefits of intergenerational learning and benefits for children in gaining confidence, competence and skills in teaching other people how to use a computer.

So, the responses the key informants provided to the questions about families and new ICTs confirmed the general themes that emerged in the published literature. However, there were some additional issues identified as being unique to the New Zealand context. One of these was the importance of getting culturally relevant and appropriate content online. New Zealand has a good uptake of dial-up internet, which increases the likelihood of success for projects such as *Computers in Homes*. Furthermore, New Zealand is a relatively small country with comparatively few 'degrees of separation' amongst its citizens. Thus it is relatively easy to create and maintain support networks for computer use, which are key to increased levels of computer literacy.

The key informants echoed a sentiment in the literature that there is a need for more research on new ICTs and families. There is a need for both applied research (for example, examining the effectiveness of interventions such as marketing campaigns about security of family data on computers) and 'pure' research (for example, in-depth ethnographic work examining families' use of ICTs). The household survey currently being developed by Statistics New Zealand will provide a broad-brush picture of ICT use in families. However, there is a need for in-depth, ethnographic work with a longitudinal element to get a comprehensive picture of the long-term impact on families. A well-funded, co-ordinated and collaborative effort between the kinds of organisations and researchers that were involved in this study would provide the expertise and experience to conduct a cutting edge study of ICTs and families that would have both national and international significance.

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