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Towards an online ethnography of children’s virtual worlds: A review of current literature and research methods

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Abstract

The research around children’s use of the Internet has focused on some of the benefits and risks of online play, as well as the digital skills children require to use the Internet safely, particularly virtual worlds. These benefits, risks and digital skills have been examined in European studies, but minimal research attention has been given to young Australian children’s use of virtual worlds. Virtual worlds are simulated environments embedded with social network functions, which allow young children to explore and experiment with identity formation, interactive play and social networking. These Web sites for young children have become increasingly popular. Young children’s use of popular Internet sites, including social networking sites (Facebook) and young children’s online games (Club Penguin) have been researched using a diverse range of research methods. Some of these methods have been limited to offline observation of game play, surveys, and interviews. Whilst many of these methods have brought new insight into children’s use of the Internet, they have not examined children’s game play in real-time in order to identify how children use their digital skills (or lack thereof) to negotiate online risks, as well as how they maximise the benefits afforded by various online games, as they are playing. Thus, these methods limit the depth of understanding researchers can gain about young children’s online play. This paper reviews the literature on the known risks and benefits to young children playing within online worlds. It also identifies the digital skills that are known to help protect children against online risk. The article suggests that more research is needed to understand the risks and benefits to young Australian children and the digital skills they require when using virtual worlds. It also recommends that current research methods need to include more observation and participation techniques, which capture in real time, children’s use of virtual worlds.

Introduction

Young children today have grown up with computers, video games, mobile phones and other technical toys. Bennett et al. state that children today “are held to be active experiential learners, proficient in

multi-tasking, and dependent on communications technologies for accessing information and for interacting with others” (2008, p. 76). Thus, children’s development especially of their cognitive and communicative skills, are seemingly influenced through their participation with ICT (Bavelier et al. 2010). The introduction of digital technology into children’s lives has also changed the way children behave and engage with their peers, and interact within very public social and cultural domains (Wyness 2006; Bavelier et al. 2010; Marsh 2010).

Children’s more (inter)active status online has brought about a sociocultural shift, which has seen children taking part in the public realm with a more personal and active voice than has been seen in centuries previously (Wyness 2006; Bavelier et al. 2010; Poyntz & Hoechsmann 2011). According to Poyntz and Hoechsmann (2011) children’s lives contain “digital technologies and practices that produce new tensions and possibilities shaping how children and youth play, feel and think together” (p. 488). Whilst children these days may not be employed workers in the wider offline community, they are able to play, communicate and learn online, through various virtual worlds and platforms that offer educational and recreational benefits (Valentine & Holloway 2002). These benefits provide opportunities for autonomous online experiences, identity formation, and creative play (Marsh 2010; Kafai 2010; Granic, Lobel & Engels 2013; Valentine & Holloway 2002).

However, the advantages of online play, and particularly virtual world play, can be impeded upon by a lack of awareness of certain online risks that potentially make children vulnerable to online grooming, bullying, and adult advertising (Grimes, 2010; Green, Brady & Olafsson 2001; Rivers, Chesney & Coyne 2011; Wishart, Oades & Morris 2007). In order for children to maximise the benefits, and decrease the risks of virtual world play, children need to be equipped with the digital skills to use Information and Communication Technologies (ICT) in safe and healthy ways (Bauman & Tatum 2009; Black 2010; Green, Olafsson & Brady 2012; Grimes 2010; Holloway 2013; Marsh 2010; Poyntz & Hoechsmann 2011; Shen, Liu & Wang 2013; Valentine & Holloway 2002; Wyness 2006).

Whilst there has been research into children’s use of online games and social media in Europe, the USA and even Australia, Australian children’s use of virtual worlds, including the benefits, risks and digital skills required of virtual world use, has had minimal research attention. This article will discuss the lack of research examining Australian children’s use of virtual worlds; including the potential benefits and risks encountered within these spaces, and the digital skills considered necessary to play safely online. This gap in the literature is of concern as it subsequently affects parent’s and the wider community’s ability to help keep children safe on the Internet.

This article will also examine the research methods previously used to investigate children’s use of ICTs. These methods will be compared to the newer methodology of netnography (online ethnography). Netnography includes observing and participating within virtual communities in order to gain deeper insight into online interactions (Kozinets 2010). The examination of previously used research methods will include an argument for the incorporation of the netnographic approach in future research.

Virtual Worlds

The virtual “is regarded as a zone of freedom, fluidity and experimentation that is insulated from the mundane external realities of the material world, a zone in which it is possible to suspend the ‘real’ self” (Valentine & Holloway 2002, p. 304). Thus the virtual can transcend the limitations of real life and immerse online users into another realm. Marsh (2010) states:

Online virtual worlds are immersive 2D and 3D simulations of persistent space in which users adopt an avatar in order to represent themselves and interact with others. They may or may not include game elements (p. 24).

Virtual worlds began as “text-based multi-player domains” and developed into “multiplayer online role-playing games (MMORPGs), through which millions of people chat, cooperate, and compete with each other through their avatars” (Hendaoui, Limayem & Thompson 2008, p. 88). Avatars are used as “in-world three-dimensional representations, or ‘online faces’, that other inhabitants see” (Subrahmanyam 2009, p. 1067). Enhanced graphics within virtual worlds allow users to alter their avatar’s appearance including changing their hair colour, race, sex, clothing and accessories (p. 1067). Other features of virtual worlds include social networking, games and activities, quizzes or questionnaires (Grimes & Fields 2009; Subrahmanyam 2009).

Whilst adult virtual worlds have been popular for many years and include games such as Minecraft and World of Warcraft, children’s virtual worlds have been increasing exponentially in number and popularity. Meyers (2009) claims that the enormous growth of Internet connections, decreasing prices for these connections, the immense progress of computer technology and graphical user interfaces, and the development of business models which assured stable revenue streams are the reasons for the increase in the production of virtual worlds (p. 185). However, whilst there has been an increase in the production of children’s virtual worlds, academic research has not kept up with this changing and increasingly popular industry (Meyers 2009; Grimes & Fields 2012). Meyers (2009) states:

While much of the research and media attention has been focussed on adult virtual environments such as Second Life, or massive multiplayer games like World of Warcraft, children’s virtual worlds comprise the largest and fastest growing segments of this online genre (p. 226).

The lack of research investigating younger children’s Internet use also includes very few studies acknowledging children’s use of virtual worlds for socialising as well as for play (Kafai 2009; Grimes & Fields 2012). According to Grimes and Fields (2012) “most research into online social networking focuses only on the traditional social networking sites” (p. 3) such as Facebook and MySpace. Grimes and Fields (2012) also note that “younger age groups are understudied and under-reported even though sites targeted to children are blossoming in numbers and gaining recognition by media conglomerates such as Disney and Viacom” (p. 6). The rise in preteen virtual worlds, for children between the ages of 3 and 11 (Holloway, Green & Livingstone 2013, p. 12), is particularly on the increase as they “have emerged as

exciting new entries...intoxicating and engaging for children” (Meyers 2009, p. 226). However, according to Holloway et al:

Virtual worlds merge social network functions with game playing and as such need separate research attention regarding the benefits and risks of going online to interact with others (2013, p. 12).

The benefits of virtual worlds

From the research that has been conducted so far it is known that children’s virtual worlds are used for education, entertainment, recreation and relaxation (Balnaves et al. 2012; Bavelier et al. 2010; Black, 2010; Black et al. 2014; Kafai 2009; Marsh 2010; Valentine & Holloway 2002). Bavelier et al. (2010) note that the cognitive benefits of virtual worlds can play a role in academic achievement and include short term effects of improved visual and literacy skills (Bavelier, et al. 2010, pp. 692-695).

Virtual worlds not only benefit the development of traditional literacy skills, but also newer literacies. Holloway et al. (2013) state: “Being literate in a digital age involves multiple literacies—skills in accessing, understanding, viewing and creating in multiple digital formats” (p. 15). The development of digital literacy skills is now important for children who live in the 21st Century (Tyner 2014).

When dealing with online risks for example, digital literacy skills such as knowing how to block messages, turn on and off location services, change filter preferences or change privacy settings (Green et al. 2001) are important for protecting children’s identity. Children may be lacking these digital competencies, or these skills may be enhanced because of playing online. The digital competencies that children gain from using virtual worlds is an area that requires further research.

In addition to the digital skills children gain whilst playing online, they also experience many socio-emotional benefits. Holloway et al. (2013, p. 15) explain that using the Internet in creative ways allows children to explore “self-expression and individual identity-making” and strengthen a “sense of belonging or social connectedness” through online networking sites. Through online networking, which is an important element within virtual worlds, children are able to play, create and interact both independently and collaboratively with others online (Valentine & Holloway 2002).

According to Olson (2010) there are social, emotional, intellectual and expressive motivations for children using computer, video, or handheld games (p. 180). Olson explains that the social motivations for game play include: a focus for hanging out; the joy of competition; youth teaching each other new skills; making friends, and opportunities to lead (pp. 180- 182). The emotional motivations for game play include the regulation of feelings, such as children using games to relax or release energy (p. 182). Intellectual and expressive motivations of game play include: “challenge and mastery; expressing creativity; experimentation with different identities; curiosity, discovery, and learning” (Olson 2010, pp.183-184).

Olson researched 1,254 children aged 12-14 years old and found that the joy of competing was one of the highest ranked motivations for game play with nearly 60 per cent of boys, and just under 30 per cent of girls, claiming that they were motivated by competition (p. 181). The emotional motivations saw 62 per cent of boys, compared to 44 per cent of girls claiming that they played electronic games to relax, and 45 per cent of boys, compared to 29 per cent of girls, said they used games to help them cope with anger (p. 182). The intellectual and expressive motivations include the “customisation of game character’s appearance to the creation of new game levels”, which both boys and girls enjoyed (p. 183).

Whilst Olson’s research does not examine virtual worlds, it does demonstrate how both boys and girls are attracted to virtual games that have social, emotional and intellectual benefits. These games allow children to play and participate with others online and improve their skills in their games and social interactions (Marsh 2010; Olson 2010; Shen et al. 2013).

The risks of children’s virtual worlds

The literature examining the risks encountered within children’s virtual worlds is limited. However there have been a number of studies examining the risks children encounter on other commercial Web sites (Green et al. 2001; Staksrud et al. 2012; Valcke et al. 2011). Staksrud, Olafsson and Livingstone (2012) claim that the risks and benefits of social networking sites are interconnected and thus children who use these sites will encounter both positive and negative content, and have both positive and negative experiences (p. 41). Whilst children may be experiencing the benefits of using the Internet, for socialising and playing, research has shown that young children are more disturbed by online risks than older children, and do not have the necessary skills to deal with these risks as compared to teenagers (Holloway et al 2013).

The notion of online risk does not infer that harm will automatically ensue or that every child will be similarly affected. Instead “it is a probabilistic judgement regarding an outcome that depends on the particular and contingent interaction between user and environment” (Livingstone 2010, p. 3). However, in Staksrud, et al.’s (2012) study they observed that the risks 9-10 year olds encounter online include: seeing sexual images on any website, being bullied on the internet and meeting online contacts they did not know offline (p. 45). The most common online risks for the 11-12 year old group included receiving sexual messages and negative user-generated content (p.45). In Valke, Bonte, De Wever and Rots (2010) study they also discovered how some younger children were giving out their personal details online including passing on their home address to others they had just met, and these children were even making appointments to meet up with these strangers (p. 1300). Although these studies were conducted with European children, similar results have been reported in Australian studies (Green et al. 2001; Green et al. 2013).

There are three types of online risk outlined by Green, et al. (2013) in their comparison of an EU Kids Online study with 400 Australian 9-16 year olds. These risks include: content-related risk; contact-related risk; and conduct-related risk. The content-related risks include: pornographic content, violent/aggressive content, as well as hateful and scary content (p. 7). Contact-related risks include:

people pretending to be someone else, inappropriate sexual contact (p. 7). Conduct-related risks include: bullying, personal data misuse, hacking (p. 7). The results from this comparison found that for Australian children the greatest risks were conduct-related risks (30%) as well as pornographic (27%) and violent content (12%) (p. 5). For the European children pornographic content (22%) was the greatest risk and then conduct-related risks (19%) and violent content (17%) (p. 5). This research reveals that children globally experience these risks.

The authors explain how it is the younger children of the 9-10 year age group, rather than the 15-16 year olds, who are more troubled by content related risks, such as seeing sexual images (p. 8). Older children were more concerned by conduct-related risks rather than content. Thus children of different age groups perceive and experience online risks very differently (p. 11). Hence, educational and developmental levels also influence the way children deal with online risks as Valcke et al. (2010) state: "lower grades reflect a significantly higher level of risk behaviour" (p. 1300). It appears, therefore, that younger children are not only more bothered by particular risks, but are also involved in risky behaviour themselves, such as divulging their personal information online (Valcke et al. 2010).

Virtual worlds include policies and terms of use that many children have to agree to before they sign up for a game. Some games are free to play, however some games are subscription only, but all have conditions of use that govern children's online activities and includes the protection of private information (Grimes 2010). However, according to Grimes (2008), terms of use agreements that children have to read and agree to are usually far too complex and confusing for young children to understand, and even some parents do not fully understand the legalities of these contracts (pp. 75-77). Thus, many children do not realize that when they agree to these contracts they are signing over authorship rights and that everything they type or upload onto the site belongs to the virtual world company and is even used for marketing research (Grimes 2008, pp. 75-77). Thus, children need to be made aware, by their parents, that their play activities are in fact being monitored.

The risks that have been mentioned above relate to various social networking and commercial sites, but these risks may not necessarily correspond with children's virtual worlds. Whilst children's virtual worlds aim to create safe spaces for children to play and socialise within, there is a lack of knowledge in the literature about virtual world use. This leaves children vulnerable, and parents and the wider community unaware of potential online dangers. Therefore, further research is required to investigate the specific risks Australian children encounter within children's virtual worlds.

Methods of online research: methods and ethics

Different quantitative and qualitative methods have been used to examine how children use the Internet. The most common research methods have been: surveys, questionnaires, self-determined scales (e.g. Likert scale), interviews and observation. Many of these research methods have been employed separately or combined together, in order to gain a greater understanding of children's Internet usage. However many of these studies, whether for ethical or technical reasons, have not utilised the advantages of netnography when conducting online research with children.

Netnography is beneficial for observing and participating with research subjects in online communities. This method is similar to a traditional ethnography employing many of the same qualitative interview, and observation techniques; however, capturing data is conducted online (Kozinets 2010). The following section will discuss the reliability of the more commonly used research methods, and how they compare with the netnographic approach.

In Valcke, et al.'s (2011) study of 10 000 children they use two quantitative research methods, which include a questionnaire and the use of a Likert scale. The questionnaire asks the children about their background, and the Likert scale is used as a simple way to answer a survey about children's Internet usage and activities. These research methods are valuable in gaining information from a greater number of children with the results being more readily generalizable. However both of these methods rely on self-reported data, which can be subjective. The completion of both the questionnaire and Likert scale also rely on children's memory of their Internet use and there may be instances where Internet activities are not disclosed.

In Marsh's (2010) study she also relies on self-reported data through the utilisation of a survey and focus group interviews to examine 17 children aged 5-11. The methods allow Marsh to gain an understanding of children's use of online games from two perspectives. The online survey "focused on the nature of children's activities when using virtual worlds" (p. 28) and the group and individual interviews explored "in depth children's activities when using virtual worlds" (p. 29). Marsh gained an in-depth understanding of children's use of the online games from their perspective via these interviews.

One limitation of questionnaires, Likert scales, surveys and focus group interviews is that they all focus on using self-reported data and therefore their results are subjective and may even be considered incomplete. The interviews may allow children to discuss and explain different areas of game play they are involved in. However, there may be aspects of game play that Marsh, a trained researcher, would notice that perhaps a child might be unaware of.

The children in these studies are also quite young and their literacy and comprehension levels may impact on their ability to rate their Internet use correctly. This limitation was highlighted by Holloway et al. (2013) when they claim that young children's literacy levels are an obstacle to them being able to fill out a survey or questionnaire. "Their lack of reading and writing skills make them less able to engage in traditional survey-based data collection, either online or via pencil and paper" (p. 10).

These limitations could potentially be avoided by conducting a netnography. Researchers can navigate and explore virtual environments at their own pace, and investigate interactions they consider beneficial to their research (Kozinets 2010). Participation with research subjects and the recording of data can also take place simultaneously, in real time, which may provide a more reliable source of data than relying on participants' memories.

Whilst netnography was not used in the above-mentioned studies, the method of observation was used in both Kafai (2009) and Valentine and Holloway's (2002) research. Through observation the researchers were able to clearly document children's Internet use including changes in behaviour and activity.

In Kafai's (2009) study, she and her research team observed children using virtual worlds in real time. An after-school club was held, where 10 boys and 10 girls, mostly 10-12 year olds, would play Whyville, an online game, on computers provided by the children's primary school. The researchers observed both boys and girls online and their offline behaviour. Field notes were taken at 15-minute intervals and two cameras were used to film the students. The children played for around an hour, four afternoons during the week, and the research lasted over a seven-week period. The results of this research method demonstrated how the off-line and on-line worlds merge together to form seamless play. "It is because of these observations that we called the interactions on Whyville synthetic play—the boundaries between the two play spaces, off- and online, dissolved in children's gaming" (p. 3). Thus, the research method greatly enhanced an understanding of children's online play by observing in real time how children interacted with the game and each other as they played. Observing children's interactions is one successful way of examining children's online play and was also used by Valentine and Holloway (2002) in their qualitative study, which used a mixed-method approach including: questionnaire surveys, participant observation and interviews to examine how 11-16 year olds use Information and Communication Technology (ICT).

The research was conducted over two years examining 11-16 year old children's use of ICT both at school and in the home. Three secondary schools in the UK with 753 child participants were involved in completing questionnaires about their Internet use at home and at school. Semi-structured interviews with IT and head teachers, as well as observational work in case-study classrooms with focus group discussions that examined children's Internet use at school were also conducted. In-depth interviews with 40 children and their families were also carried out.

Valentine and Holloway come from a social constructivist perspective in that they view children as active agents in their own lives, which is why child participation was an important part of the authors' interviews and observational work (2002, p. 307). The research is delivered in two sections. The first section examines children's perspectives of their online activities. These activities include identity formation and configuration as well as their online and offline social lives and how the two interact and co-operate. The second section examines the incorporation of the online world into children's 'real' lives and how this is negotiated (2002, p. 307).

Both Kafai (2009) and Valentine and Holloway's (2002) studies used observation, a key element of netnography, in their examination of children's use of the Internet. Kafai's observations allowed her research team to follow online interactions between child participants in real time, which led to a greater understanding of children's online and offline play (2009, p. 3). Valentine and Holloway were also able to use observation to gain greater insight into the interaction between children's online and offline social lives.

It is recommended by the authors that the netnographic approach is used when examining children's use of virtual worlds. The benefits and risks Australian children encounter within children's virtual worlds needs particular research attention. Research is also needed to identify the digital competencies children require to manage or avoid online risk. While many virtual ethnographies have been carried out in adult virtual worlds (Ducheneaut et al. 2006, 2007; Malaby 2007; Simona 2007; Ceriale 2008) their seems to be little to none carried out with children of primary school age. Virtual ethnographies in children's spaces will document communications and activities children undertake online and give researchers first-hand experience of the cultural practices undertaken.

In order to conduct a netnography of young children's virtual worlds, certain ethical guidelines must be adhered to in order to protect both researchers and children. These guidelines can vary between institutions, however common beliefs and practices have been established and are discussed in the following section.

Ethics: children and online ethnographies

Tsaliki and Chronaki (2013) claim that most ethical guidelines include "respect for persons, beneficence, and justice", and that ethical research is accomplished when it includes informed consent, ensures confidentiality of participants and their data and allows participants to "represent themselves" within the research process (p.39). Lofberg (2003) claims that the "internet as a field of study in the social sciences, particularly child and youth research, empowers informants" (p. 142). Whilst the Internet can empower children and their free expression, there are ethical dilemmas that need to be addressed by the researcher that respect children's right to free speech and privacy.

Virtual ethnography includes both online observation and participation with research participants. This new form of ethnography requires a greater awareness of ethical requirements, especially with children. One of the foremost issues acknowledged by both Lofberg (2003) and Kozinets (2010) is whether what is said online is considered public or private. Holloway (2014) states:

For example, it is relatively easy to distinguish the transition from public to private spaces when informants move to private chat rooms. What is less easy to distinguish is children's understanding of the differences between public and private spaces on the Internet – and the appreciation that (as with commercial research) communications in virtual public spaces can be subject to surveillance and recording (p. 10).

Researchers also have the responsibility to respect participant's privacy. Conducting ethical research can therefore be linked to acknowledging participant's rights in the research process (Lofberg 2003; Alderson 2004). Alderson (2004) outlines three ways of conducting ethical research with children. These ways include: the principles of respect such as "always respecting children as sensitive dignified human beings"; rights based research, which includes "providing basic needs...protection...and participation"

which allows children to fully participate and feel respected during the research process (p. 98). Finally, best outcomes based ethics, which “means working out how to avoid or reduce harm and costs, and to promote benefits” (p. 98). Thus, the researcher needs to evaluate the effect of their research requirements on participants.

When conducting an online ethnography, “privacy, informed consent, online pseudonyms and documentation of data” are of utmost importance (Barbovschi & Smahel 2013, p. 8). The National Health and Medical Research Council’s report: Challenging ethical issues in contemporary research on human beings (2007) explains how consent should be obtained from human participants. The report claims that consent should be free not “forced or obtained by improper inducements”, and it should be “based on an understanding of what is to be done” and that consent should be “obtained before the research is begun” (p. 60). The Office of the Australian Information Commissioner (2014) has explained that sensitive information should not be disclosed unless it is to prevent “a serious and imminent threat to an individual’s life, health or safety” (p. 1).

Within children’s virtual worlds the anonymity of participants can be achieved through the use of pseudonyms and avatars, which allow children the opportunity to freely express themselves online (Lofberg 2003). It is also recommended that researchers gain informed consent from all research participants and their parents beforehand, and not publish identifiable data, to help to avoid incidents of insult or the publication of sensitive information (Lofberg 2003, p. 151; Kozinets 2010, pp. 142-145). This can be achieved, perhaps, by limiting virtual ethnographies to small groups of children who play together online, and are known to each other in their offline world. In this way all children involved in the virtual ethnography, and their parents, can give informed consent beforehand. In addition to this, small groups of known friends are in fact the usual groupings within many children’s virtual worlds.

Discussion

The literature included in this review examines some of the prominent research about children’s use of the Internet. Studies to date have examined the motivations behind children’s use of online games (Olson 2010), which include: social, emotional and intellectual and expressive motivations. Studies have also examined the benefits children gain from play and interacting with others online, such as creative play, socialising, identity formation (Marsh 2010), as well as improved literacy and visual skills (Bavelier et al 2010). Thus children’s engagement with the Internet can improve children’s socio-emotional and cognitive skills.

The benefits of playing online however, have been tempered by the risks. European studies (Valcke 2010; Staksrud 2013) found that children under 12 were most affected by online risks. Contact risks were a problem with European children giving out their personal details online and agreeing to meet online strangers offline (Valcke 2010, p. 1300). In contrast, young Australian children seemed more bothered by content risks such as seeing sexual images in any online site (Green, Brady, Holloway, Staksrud & Olafsson 2013, p. 8). Children under 12 were considered a particularly vulnerable group in all the studies examining risks to children. Whilst young children have the potential to gain social and emotional skills

online, they are also vulnerable when they encounter contact, content and conduct risks online (Bavelier et al. 2010; Green et al. 2013).

Australian parents, compared to European parents, seemed more aware of the need to protect and assist their young children in the safe use of the Internet (Green & Brady 2013; Valcke et al. 2011). In Green and Brady's (2013) study 90% of parents were involved in positive mediation with their children. European parents in one study involving Belgian children (Valcke 2011) found that only 12% of parents monitored their children's Internet use all the time. It would seem from these studies that young children who are most disturbed by online risk and whose social and emotional skills are still developing require more support and information from their parents, and other influential caregivers, about how to use the Internet safely and maximise the benefits that playing online is found to offer.

The methods used by researchers to examine both the risks and benefits of children play and interacting on the Internet were varied. Many studies used surveys, Likert scales, observation and interviews (Kafai 2009; Valentine & Holloway 2002; Valcke et al. 2011; Marsh 2010). These methods aimed to represent children's Internet use in the most accurate way. Whilst some methods were extensive (Kafai 2009; Valentine & Holloway 2002), others were limited in their scope and did not observe children's play (Marsh 2010; Valcke et al. 2011).

Online ethnographies are a rare method, particularly with children as there are many ethical and legal issues to observe. Despite the difficulties it can greatly enhance a researcher's understanding of participant's interactions within the research context (Kozinets 2010). The method of online ethnography would also allow the community a greater understanding of how children play and interact within virtual worlds. It would also highlight the risks and the benefits as well as the digital skills that children would need to use these spaces and how the community could assist children's safe use of the Internet.

Conclusion

Young Australian children's use of virtual worlds has received little research attention. Most of the research has focussed on European children and their experiences with various Internet websites. Research has found that there are various benefits and risks that children encounter whilst playing and socialising online. There are also digital skills that children require to be able to play online safely. Despite this awareness there has been little research conducted into children's use of virtual worlds in Australia. Young children in particular are more disturbed by online risks and parents are aware of the need to support children's Internet use. Therefore, further research, using the netnographic approach to adequately investigate children's use of virtual worlds, needs to be conducted examining the risks, benefits and digital skills young Australian children require to play in these spaces. This research will help to inform parents and the wider community in how to assist children's safe use of virtual worlds.

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