



# Home Internet Use by Eight-year-old Children

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*With the ever-increasing numbers of young children accessing the internet, often independently of adult supervision, parents and educators are facing the challenge of how best to provide young children with age-appropriate cyber-safety education. Drawing on data collected via children’s illustrations, focus-groups and a parent questionnaire, this paper explores the experiences of 25, eight-year-old children using the internet at home and parents’ mediation approaches. This paper provides evidence that children are actively engaged in a variety of activities facilitating both learning opportunities and risks to personal safety. The paper highlights the need for stakeholders to work in partnership to make the internet a safer and better place for children.*

## Introduction

Using the internet engages the fundamental human right to expression, organisation, privacy, protection and participation (Staksrud, 2016; Salway, 2018). Ease of access and affordability mean that the internet plays an important part in shaping children’s lives, culture and identities (Byrne, Kardefelt-Winther, Livingstone & Stoilova, 2016). Children are growing up with rapidly evolving, ubiquitous, convergent, technologies and this represent a moving target of changing social practices. “The risks and opportunities afforded to children by the internet are far from simple or universal, and they remain too little understood” (Livingstone, Carr & Byrne, 2015). The internet offers significant opportunities for play, sociability, communication, self-expression, learning and creativity (Livingstone, Haddon, Vincent, Mascheroni & Ólafsson, 2014a). It also presents risks (Livingstone, Mascheroni & Staksrud, 2018c) and significant challenges for parents (Livingstone, Blum-Ross, Pavlick & Olafsson, 2018a) and educators (Edwards et al., 2016). Children should be able to grow up in a supportive environment which minimises risk whilst building important life skills (Masters, 2015).

Significant media attention has highlighted the potential risks of using the internet. For example, the recent tragic death of 14-year-old Amy “Dolly” Everett who suffered online abuse from



children at her school (Hamilton-Smith, 2018). Research suggests that one in three boys, and one in four girls aged 8-9 years are experiencing weekly bullying (face-to-face and online) (Murdoch Children's Research Institute, 2017). The moral panic reflected in the media fuels anxieties about 'stranger danger' and pornography framing messages to parents suggesting their main role is to police and restrict children's access at the expense of empowering their children to learn, connect and create through, about and beyond digital media (Blum-Ross & Livingstone, 2016). This is reinforced by a shortage of evidence-based, easy-to-find sources of advice emphasising the opportunities that digital media present to learn, connect and create (Blum-Ross & Livingstone, 2016).

Young children lack the cognitive maturity to assess the potential risks of the internet (Chaudron, 2015). Difficulty in understanding arises because the internet is virtual; the risks are not immediately apparent and devices can connect physically safe places to those that can be risky and dangerous. Young children also lack the critical thinking skills needed to judge material (Grey, 2011). Children age 8-12-years old do not understand advertising's bias and persuasive intent. Therefore, their ability to process information and appropriately respond to requests for personal information is limited (Lwin, Miyazaki, Stanaland & Lee, 2012). Their naivety and trust can place them in jeopardy if they are not educated to recognise potential risks (Ey & Culpit, 2011). Many children have encountered inappropriate content (Australian Government, 2018). It is imperative that all key stakeholders take responsibility for the protection of children from unwanted and inappropriate content (Nouwen & Zaman, 2018).

Existing approaches to cyber-safety education are inadequate for young children because they are predicated on children understanding the internet as a technologically and socially connected global network through which people share information without necessarily knowing each other (Edwards, et al., 2018). Alternatively, these approaches advocate using filters and/or adult-imposed safety rules rather than building children's agency for keeping themselves safe online (Edwards et al., 2016). Given young children's little or no understanding of the internet (Chaudron, 2015), it is argued that developing children's internet cognition necessitates firstly developing their "everyday" concepts of the internet by contextualising practices and then merging this with a scientific concept to produce a "mature concept" (Vygotsky, 1987). Mature concepts facilitate older children's ability "to justify why they are taught not to talk to unknown people online, to avoid clicking on potentially virus-laden pop-ups, and why they might stumble upon (or deliberately find) inappropriate content" (Edwards, 2018, p. 51). This learning process involves talking to children in an open and understanding fashion about the realities of accessing the internet, "including the more distasteful bits" (Thierer, 2007, p. 136).

To empower children to participate in a knowledge-based, technologically sophisticated society, the Australian Curriculum ICT General Capability describes that children need to develop "the knowledge, skills and confidence to make ICT work for them at school, home, work and in their communities" (ACARA, 2018). Specifically, children need to develop the capability to create, manage, communicate with ICT whilst applying social and ethical protocols and practices and safely managing and operating ICT (ACARA, 2018). Learning outcomes focus on developing



children's capabilities to recognise intellectual property; apply digital information security practices; apply personal security protocols, and identify the impacts of ICT in society. Arguably the curriculum provides a quality framework to provide children with an effective cyber-safety education. However, school environments use content filtering technology and closely monitor activities. Personal mobile devices are often banned. This restrictive technical approach may reduce risks but impedes children's opportunities to learn to manage their online presence because they are not encouraged to gradually assume responsibility to self-regulate their learning throughout their schooling. Thus, authentic opportunities for cyber-safety education occur outside of formal learning environments where children can access a wider range of applications and networks. This raises questions about cyber-safety education as a parental responsibility rather than a public concern (Ey & Cupit, 2011).

This paper explores the experiences of eight-year old children using the internet at home and parents' mediation approaches. Investigating children's interactions with and through technology for play, learning, sociality and communication will enable further discussion around how to support children to safely use technologies in their daily lives.

### **Research Focus**

The aim of this study was to investigate how children interact with technology for the purpose of play, learning, sociality and communication at home. The term 'technologies' refers to a physical unit of digital equipment or device that contains a computer or microcontroller (e.g. computer, games console, tablet and smartphone). Four key research questions guided the study:

1. What are children's experiences using technology in their home environment?
2. What are the risks and opportunities of technology use by children?
3. What strategies do children employ to resolve online and technical problems when they arise?
4. What are parents' attitudes towards their child's use of technologies at home and how do they mediate their child's use?

### **Types of Risks and Mediation Approaches**

Young children (typically 5-8-years old) are "bound" in their thinking, viewing the internet as the technology they are using rather than a networked system (Yan, 2009). Consequently, their engagement with the internet exposes them to a variety of risks that they are not necessarily equipped to appropriately manage (O'Keeffe & Clarke-Pearson, 2011; Ey & Culpit, 2013; Chaudron, 2015; Edwards et al., 2018).

As children's access to online opportunities increases, so does their exposure to risks. The risks to children (adapted from Livingstone, et al., 2018c; Blum-Ross & Livingstone, 2016, p. 2) generally include:



- Conduct risks:* Position the child as an actor in a peer-to-peer context. Evident on websites, in mass messages and images e.g. bullying, ‘sexting’ or misuse of personal information.
- Content risks:* Position the child as the recipient of, usually, mass-produced images or texts (although user-generated content is growing in significance). e.g. pornographic, violent, racist, false or misleading content.
- Contact risks:* Position the child as participant in adult-initiated activities, possibly unwillingly or unwittingly. Usually from adults e.g. ‘stranger danger’, stalking, harassment or impersonation.
- Commercial risks:* e.g. advertising, excessive or hidden marketing, in-app purchases or scams.
- Other risks:* viruses; spam; phishing; scams; fraud; search related (e.g. hard to find things, unreliable information); hard/software related (e.g. computer breakdown, slow internet); spending too much time online (e.g. missing homework, sleep, meals, addiction); gambling; health related risks (e.g. muscular, eye-sight) and safety rules (e.g. illegal downloading).

Parents play a significant role in their child’s use, or lack of use, of technologies at home (Sonck, Nikken & de Haan, 2013; Livingstone, Marsh, Plowman, Ottovordemgentschenfelde & Fletcher-Watson, 2014c; Lipps et al., 2017). Some parents have a positive view of technology highlighting the learning opportunities it creates for their child, whilst others believe it to be detrimental to their child’s well-being (Stevenson, 2011). Some parents acknowledge the potential academic benefits but are extremely cautious given the potential for damage or harm (Hollingworth, Mansaray, Allen & Rose, 2011). Research shows that parents mediate their child’s use of technologies in different ways depending on their child, their values, the circumstance and whether their aim is to enable or restrict certain practices (Blum-Ross & Livingstone, 2016). Four main mediation types are summarised below identified by Blum-Ross & Livingstone (2016, p. 10).

*Enabling Social (Active Mediation):*

Direct and indirect conversations with children about how and why media have been produced, how to interpret and evaluate different forms of representation, what parents and children each enjoy and why, and how to recognise and respond to problems of privacy, risk and safety.

*Enabling Technical (Monitoring):*

Surveillance practices aimed at monitoring children’s uses of digital media and their physical movement. E.g., using in-built geo-location software; checking reports on websites and networks accessed; sharing passwords and/or following children on social media.

*Restrictive Social (Rules):*

Guidelines for behaviour which may be time-based (e.g. when and duration); place-based (e.g. not at meal times) and/or conditional (e.g. access when tasks are completed) and/or activity-based (e.g. no Instagram).



*Restrictive Technical (Parental Controls):*

Technologically enabled restrictions which include filtering software, turning-off routers at set times or restricting access to content from particular devices or times of the day.

Little evidence exists to suggest that the use of technical restrictions, on their own, are effective in reducing children's risk online, possibly because children find ways around the restrictions or because the software can be clumsy, leading families to discontinue its use (Nouwen & Zaman, 2019). Therefore, to reduce risk and maximise opportunity, a combination of approaches is recommended.

## **Methods**

The study adopted a qualitative methodology as its purpose was to learn from participants (children and their parents) their experiences, and how they interpret what they experience. Qualitative methodology allows researchers to use methods that provide avenues to discover and do justice to their perceptions and the complexity of their interpretations (Atieno, 2009). Methods included an initial survey of two, Year 3 classes to identify potential participants, and focus group discussions. Children who indicated they used technologies at home were invited to participate in a focus group. Two children did not have internet access at home. Parents of children who participated in the focus groups were invited to complete an open-ended questionnaire. Participants were recruited from an independent school in metropolitan South Australia. The demographic of the families was lower-middle class socio-economic status. The study received approval from the University Ethics Committee and the school's Principal. Pseudonyms have been used in this paper to de-identify participants. Participants included 25, eight-year-old children (14 female, 11 male) and their seven parents.

Focus groups are effective for in-depth exploration of peoples' experiences of a particular event or phenomenon. Focus group discussions provide opportunity to observe a large amount of interaction between participants on a topic in a limited period (Morgan, 1988). Focus group discussions were conducted with three or four children of 45-minutes duration. This method enabled the generation of valid data through conversational social interaction (Parkinson, 2001) to obtain children's ideas and perspectives. The focus groups commenced by inviting the children to draw an illustration of themselves using technologies at home and write a sentence about the frequency of their use. This approach provided an opportunity for children to freely express themselves whilst developing their cognitive understanding (Eristi & Kurt, 2011). The remainder of the focus group discussions involved asking semi-structured questions aligned with the first three research questions. The group dialogue was transcribed. Data was analysed using NVivo, a qualitative data analysis program. Using a discourse analysis approach, responses were coded and emerging themes and their relationships identified. NVivo facilitated the pairing of parent questionnaires with the respective child participant.

### Findings: Children’s illustrations

Most children illustrated themselves using mobile, devices in their bedroom. A small number depicted their use of a device with limited mobility (e.g. Xbox) in a living area. Four example illustrations are shown below. These were selected for their clear imagery and writing.

Figure 1 shows the illustration by Karen. In this she described herself as “lucky, because not many children have two laptops, four computers and two phones all to themselves”. Karen said she liked using technology at home because “you can search anything you like. At school you can only look up certain things”. The illustration depicts Karen in her both her bedroom (on the right-hand-side) and in the kitchen (left-hand-side) where she explained she sometimes uses the laptop. The dialogue with Karen revealed that she did not openly share her online activities with her parents. She commented that she rarely approached an adult to help her and was aware that her activities were against her parents’ requests: “I am not allowed to have Facebook or Instagram, even though I have Instagram.”

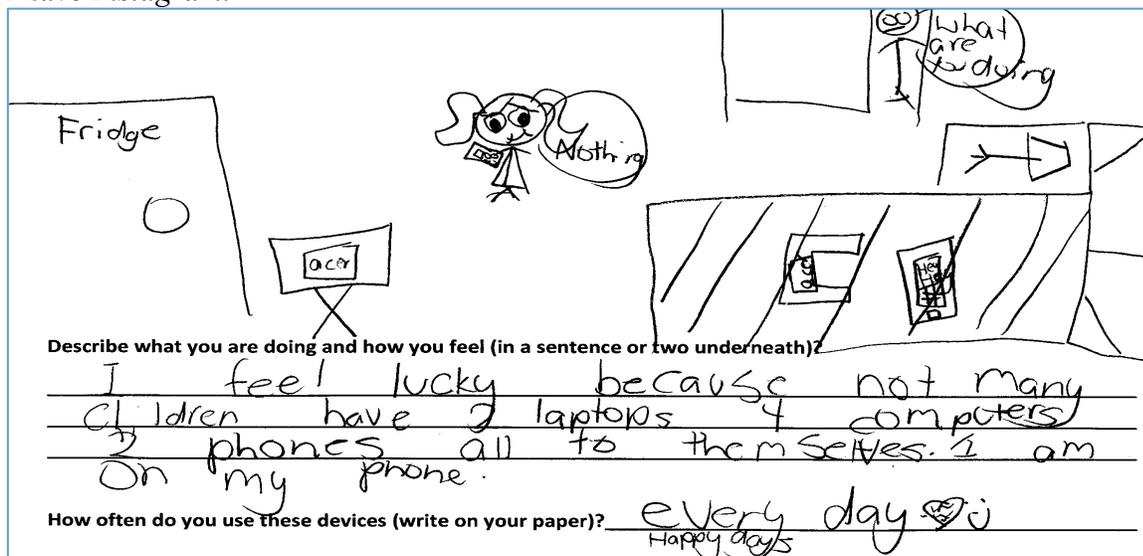
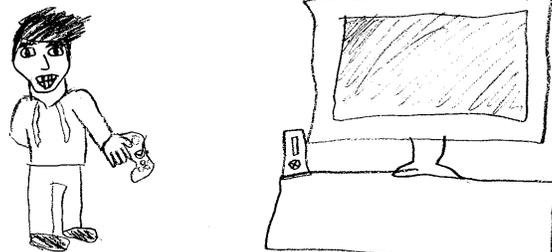


Figure 1: Karen’s illustration

Figure 2 shows the illustration by Dion. He explained that he enjoyed using his Xbox which he played whenever he had the opportunity, in his words “24/7”. He said he used his technology “everywhere, but not outside”. His primary activity was Minecraft which he accessed via his Xbox. He also enjoyed using YouTube to “look things up” on the family tablet.



Describe what you are doing and how you feel (in a sentence or two underneath)?

I'm good. I'm play a xbox.

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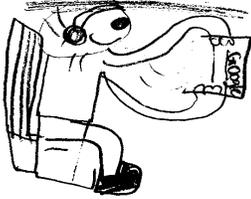
How often do you use these devices (write on your paper)? 24/7

Figure 2: Dion's illustration

Figure 3 was by Ezekiel's. Ezekiel explained that he used technology daily. His illustration depicted him smiling whilst using a tablet with headphones. He commented that he did not look up inappropriate stuff and enjoyed using Google because he can “do whatever [he] want[s]”. He explained that he used the internet to “watch YouTube and watch Minecraft YouTubers and learn how to make stuff.” Having encountered inappropriate content on occasions, he explained that he knew that when this happens he is to “close the app and go straight away and tell my Mum because she wants me to be safe.” Ezekiel recognised that rules were to keep him safe and described these when he commented:

*Firstly, I can't look at inappropriate stuff. Secondly, it's rude if you don't ask permission if it's another person's [work]. Thirdly, you can look up certain stuff [but] not inappropriate words, and fourthly, you can't get an app. When your Mum comes: shut it down so she can't see! And lastly don't cause a big argument over one little thing.*

Ezekiel's quotation using the pronoun “I” suggests that he understands that he is not allowed to search for inappropriate content using inappropriate words. It is noteworthy that Ezekiel's interpretation of the fourth rule appears to be that it does not apply if his Mum doesn't know about the app. His comment highlights the relationship tensions associated with technology use.



**Describe what you are doing and how you feel (in a sentence or two underneath)?**  
 I am on google looking stuff up. But  
 not inappropriate. I feel ok because I can  
 do what ever I ~~want~~ want.

**How often do you use these devices (write on your paper)?** About 3 times day and 1 hour  
 A night.

Figure 3: Ezekiel's illustration

Figure 4 was by Erin. She explained that she had her own iPhone 6 which she used after school “everywhere” each day. This suggests Erin engages in a high level of screen time. Her iPhone was internet-enabled allowing her to download games, play Minecraft and search for “how to do things” on Minecraft. She enjoyed “making videos and playing games”. Erin claimed she had “no-one” to help her with technology at home. When she encountered unwanted content, she described that she found this “really, really annoying. I try to get [it] go away but [it] won't”. She acknowledged there were rules prohibiting the use of Facebook and online phone calls. She argued these rules were pointless: “I should be allowed to call my friends and I should be able to go on Facebook. I love Facebook and I love my friends”. This view indicates Erin’s lack of the cognitive maturity to understand the need for rules to protect her safety.



**Describe what you are doing and how you feel (in a sentence or two underneath)?**  
 Happy and touching my iPhone 6

**How often do you use these devices (write on your paper)?** 3.30 to 9.00

Figure 4: Erin's illustration

## Findings: Focus Group Conversations

The children described access to a wide range of mobile, internet-enabled technologies at home. Laptops were the most common digital technology used (52%), followed by tablet devices (44%) and iPod Touch (32%). Most children reported accessing their technologies on a daily (64%) or almost daily basis (16%). Three children (12%) reported access once or twice a week, and two children irregularly (8%). Children described using a range of activities/applications shown in Table 1. These included YouTube (60%); Skype (48%); Open World games (such as Minecraft) (72%) and creating photos and/or videos (84%). Most activities involved an internet connection. Some children mention activities that did not connect with the internet.

Table 1

*Purposes for digital technology usage (measured by frequency of mention)*

<b>Activities connected to the internet</b>	Activity mentioned	%
<b>Viewing for entertainment</b> <i>Watching multimedia.</i>	YouTube	60(15)
	Netflix®	16(4)
	iView®	0
<b>Learning-related tasks</b> <i>Assignments, homework tasks set by school.</i>	Self-directed learning	44(11)
	Research online	28(7)
	Pictures for school work	12(3)
<b>Communication</b> <i>Imparting or exchanging information by speaking, writing, or using some other digital medium.</i>	Skype™	48(12)
	Social Networking:	
	- Instagram®	4(1)
	- Facebook®	4(1)
	Emails	8(2)
	FaceTime®	4(1)
<b>Games</b> <i>Sorted into genres using the game creators' descriptions on their official sites.</i>	Open World	72(18)
	Virtual Pet	16(4)
	Racing	12(3)
	Strategy	12(3)
	Endless Runner	12(3)
	Music	8(2)
	Simulation	8(2)
	Arcade	8(2)
	Puzzle	8(2)
	Action/Adventure	8(2)
	Role-Play	8(2)
	Animal	8(2)
	Educational	4(1)
	Fashion	4(1)
<b>Activities not connected to the internet</b>		
<b>Creating</b>	Photos/Videos	84(21)
	Art/Craft	32(8)
	PowerPoint®	8(2)
<b>Communication</b>	Phone calls	4 (1)
<b>Viewing for entertainment</b>	Videos	44(11)
	Movies	36(9)
	TV	28(7)



Most of the experiences described by the children were unique to the home context: viewing for entertainment and gaming experiences. These leisure activities are not generally offered in schools. The majority of the children (21 out of 25) commented they preferred to use technologies at home. Example comments are:

*You have more space and you don't hear everyone else. You just hear the technology you are using.*

*At school they want to lecture you. Where at home you can go on anytime you want and you don't really have to follow the rules, and you can go in your room and shut the door.*

*At school there is[sic] websites you can't look at, but at home you can.*

Only one student expressed a preference for using technologies at school because she “didn’t want to set [her] house on fire”. The other children indicated they did not have a preference towards use at home or school. One child commented this was “because sometimes you get to play games on the computer and sometimes you don’t”.

Most activities required the internet. Most children described searching information and images, viewing for entertainment, and playing games. Almost half (44%) of the children reported engaging in self-directed learning involving searching the internet. Some children (28%) described searching for information for school-related projects and 12% described searching for pictures for school projects. Children reported “searching for ideas and plug-ins” for games such as Minecraft. This suggest they may have been using technologies as a self-development tool to progress in the game. The children described Minecraft as both a game and a learning opportunity. Minecraft enables children to create, plan, manage and problem solve based on their own creations.

YouTube was frequently mentioned by children (16 out of 25). One child proclaimed that she “really want[s] to be a YouTuber” when she gets older. This child described how she undertakes her own educational exploration by viewing YouTube videos to learn more “about being a YouTuber”. Her goal was to create her own YouTube channel.

Several children highlighted their participation in activities were in breach of age restrictions. Noteworthy were children’s reports of using restricted games (age 18+) and social media platforms. One student, Karen, openly took pride in describing her activities using email, eBay, Gumtree and Instagram.

When asked where they used technology at home, most children identified the bedroom (64%) and/or in the lounge room (64%). Other popular locations included the dining area (24%), Sibling’s room (24%), office (20%) and parent’s room (20%). Most children (64%) reported that they were

not supervised when they accessed the internet; 32% indicated they were supervised sometimes, and one said he was always supervised.

Most children (92%) said they enjoyed using technologies and 8% said they enjoyed using it sometimes or were unsure. Example comments are:

*I do. It helps me get faster and to learn things that I would like to know.*

*I love working with technology because it keeps me relaxed. Cause when I practice my trumpet and stuff I normally get pretty tense.*

*Yes, because you can find funny stuff and you can learn and it's interesting.*

Table 2 shows children's feelings they experienced when they encountered online and technological problems. This is in relation to the research question put forward about resolving online and technical problems. Some children described more than one emotion. Anger was the most frequently mentioned emotion, followed by frustration. One child described feeling scared having encountered inappropriate content commenting: *"I scream, cry in bed, and I go tell my Mum and she takes it away because I am too scared to even touch it"*.

Table 2  
*Children's feelings towards online & technological problems*

<b>Feeling Mentioned</b>	<b>Online Issues % (Number)</b>	<b>Technological Issues % (Number)</b>
Anger/mad	32(8)	40(10)
Excited	4(1)	4(1)
Frustration/annoyed	28(7)	12(3)
Bad/guilt	8(2)	16(4)
No emotion	12(3)	0
Sad/upset	4(1)	28(7)
Scared/frightened	4(1)	0
Stressed	4(1)	0
Uncomfortable/embarrassed	0	4(1)

An example comment expressing frustration and anger related to technical problems is:

*I normally get really frustrated when something happens like it shuts down when you're watching something and then I have to look it back up again ... After that I just relax and just think to myself it's ok: there, there now, it will be alright.*

Table 3 shows children's reactions when faced with technological and/or online issues. Many children explained they would first try and fix the problem themselves before seeking an adult. Only a quarter of the children identified an adult as their first port of call. Children attempted to fix issues themselves by turning off the device or seeking a sibling for help (Table 4).

Table 3  
*Children's reactions to inappropriate content*

<b>Reaction mentioned by participant</b>	<b>Percentage % (Number)</b>
No mention of adult involvement	60(15)
Seek adult first	24(6)
Turn it off	44(11)
Shut program/website	24(6)
Emotional response	12(3)

Table 4 identifies the person that children sought when they encountered technological and/or online issues. Most children (16 out of 25) identified siblings, followed by Mum and/or Dad. Many children thought they may get into trouble if they asked a parent so they asked their sibling(s) for help. One child commented: *"I would probably not tell Mum and Dad straight away because they might get really angry with me. I would tell my brother or sister and see what they say"*.

Table 4  
*The person children sought when they had problems (online or general)*

<b>Person sought to assist</b>	<b>%(Number)</b>
Mum	52(13)
Dad	40(10)
Sibling	60(15)
No-one	4(1)
Family	8(2)
Nan/Grandma	4(1)
Aunt	4(1)
Uncle	4(1)
Imaginary friend	4(1)

To identify potential risks and opportunities of technology use, children were asked to identify any rules they were expected to follow when using technologies. Most children indicated there were a range of rules. See Table 5. The most common related to restricted access to content.

Table 5  
*Rules related to technology use at home identified by children*

<b>Rules</b>	<b>%(Number)</b>
No rules	20(5)
Yes	80(20)
- Content accessed	60(15)
- Time limits	16(4)
- Being responsible (trustworthy)	20(5)
- Permission	
o Always ask before using	16(4)
o Ask for permission to use the internet	12(3)
- Parent/carer access or informed of activities	8(2)
- Not allowed in bedroom	4(1)
- Don't use all the internet data	8(2)

One child indicated there were no rules, commented: *“I would like to have rules, like when rude things come up”*. This suggests she would like guidance in how to deal with problems of inappropriate content.

### Findings: Parent Questionnaire

The parent questionnaire was designed to address the fourth research question: What are parents’ attitudes towards their child’s use of technologies at home and how do they mediate their child’s use? Table 6 shows the rules specified by parents related to the use of technology in the home. Time limitations were identified as the most frequent and important rule. One parent indicated they utilised filters or parental controls to manage the use of the internet in their homes. Some of the rules identified by parents were not mentioned by their child. However, not all children’s responses could be paired to their respective parent’s as only 7 parents participated.

Table 6  
*Rules parents felt important related to technology use at home*

Rules	%(Number)
Time limitations	100(7)
Location limitations	43(3)
Certain sites restricted (verbal instruction)	29(2)
Permission	14(1)
Parental controls	14(1)
Tasks to be completed first	14(1)
Limit access to device (take it away)	29(2)
Filter used	29(2)
Reward system	14(1)

Five parents acknowledged that they felt comfortable with their child using technologies as it provided opportunities for their child to learn about things that interest them (e.g. popular culture and how to make things), be entertained and express themselves (e.g. drawing, music). Two parents stated they “disliked” technologies or limited its use to weekends when at their father’s house (and didn’t know if he had the internet). Both parents indicated that children’s use of technologies was for playing games. One parent indicated that blocked access was used as a punitive consequence for misbehaviour.

Two parents commented:

*“I find it quite difficult to keep track of what he’s looking at because I don’t spend the whole time looking over his shoulder. We make sure there is no technology in bedrooms. We put a child safe filter on the computer. We make sure children use technology in a place that can be monitored. We talk to our children about what is appropriate and what is not. ... He enjoys it a lot. I think relies on it too much for*



*entertainment. We have lots of discussions about it. I try to limit time spent. We also use it for punitive purposes.”*

*“He has on a couple of occasions said he has seen “scary” images. We’ve talked about them and whether they are real or not or likely to affect our lives and then discussed the need to be very careful when using the internet.”*

*“When at his Dad’s he’s on the iPad most of the time playing useless games. Not good for your eyes, fingers, spine and health. Children are so carefree, they don’t realise the dangers which are out there. I’d rather keep it to a minimum until they really need it and understand what they are doing, and still I’ll be a hawk. ... Even as an adult you can easily get yourself into a pickle.”*

## **Discussion**

This section addresses the overarching research question for this study: “What are children’s experiences using technologies in their home environment?” guided by the four research questions.

### **Children’s Use of Technologies (Activities and Experiences)**

The findings of this study are consistent with previous research showing that young children are using a range of technologies at home (Green, Brady, Olafsson, Hartley & Lumby, 2011). Most children (92%) described their enjoyment using technologies either on either a daily/almost daily basis (80%), three children used technologies once/twice a week (12%) and two children used technology irregularly (8%). They expressed a preference for using technologies at home rather than school because they could engage in self-directed activities at their own pace where there was less restricted access to content. Laptops and tablets were the most popular devices.

These findings could reflect a bias because the children participating in this study were from one school and selected because they had access to technology at home and were willing to talk about their activities and experiences. The findings are consistent with previous studies indicating that most children used laptops and tablets (Ofcom, 2016). In this study, 80% of children reported using technology on a daily or almost daily basis and 12% accessed it once or twice a week. A similar division of children into two groups: those who use the internet daily or almost daily (60%) and those who use it once or twice a week (33%) was identified in a U.K. study of 9-11-year-olds (Green et al., 2011). This finding is consistent with previous studies indicating that children from lower-income, less well-educated households spend proportionally more time online (Blum-Ross & Livingston, 2016). Blum-Ross & Livingston (2016, p. 4) argue that the long-held focus on the quantity of screen time is now obsolete, “parents should instead be asking themselves and their children questions about screen *context* (where, when and how digital media are accessed, *content* (what is being watched or used), and *connections* (whether and how relationships are facilitated or impeded).



The most popular activities reported by 84% of children in this study involved creating videos and editing photos which did not use an internet connection. Interestingly, a U.K. study indicated children's much lower participation in these activities with 18% of 5-7-year-olds having edited a photo and 22% having created a video (Ofcom, 2016). This difference may reflect the increasingly shift towards visual content on social media and the availability of easy to use tools.

The most popular *online* activity reported by 72% of children was playing open world games. Similar findings have been reported in recent studies showing that 80% of 8-17-year-old children have played online games (Australian Government, 2017) and 68% of 8-11-year-olds have played online games in the U.K. (Ofcom, 2016). Viewing YouTube videos was reported as the second most popular online activity by 60% of children. Similarly, in the U.K. 54% of 5-7-year-old children reported using YouTube to consume 'TV-like' content (Ofcom, 2016). The third most popular online activity reported by 48% of children in this study was Skype, followed by self-directed learning activities involving searching the internet for ideas and plug-ins. A U.K. study indicated that search sites were one of the most visited by 6-14-year-old children, with searching for images being the most popular goal (Ofcom, 2016).

### **Opportunities, Motivations and Risks**

Most children (64%) identified the bedroom or the lounge room as the location where they used technologies. Most children (64%) reported that they were not supervised when they accessed the internet; 32% indicated they were supervised sometimes, and one said he was always supervised. The findings indicate that technologies provided children with opportunities related to learning, entertainment, socialization, creativity and expression. Most parents acknowledged the benefits of technology use. However, two parents expressed a strong negative attitude towards the use of technologies as their child only used it to play games, an activity which they did not value.

It is important to consider children's motivations for using technologies. In terms of information seeking needs, the internet fulfils it by allowing children to search, receive and download information about current issues and events and 39% of children in this study identified this activity as related to school tasks. Information seeking is a cognitive need that is associated with increasing knowledge through resources. Results from previous research suggest that 10-12-year-old children with strong information seeking motivations may be more informed and aware of privacy issues, and thereby more cautious with their personal information when online (Lwin et al., 2012).

In contrast, children with online social networking motives related to social acceptance and the excitement of social interaction may be more prone to information disclosure. Playing online games raises privacy concerns because this activity is often associated with interactive processes that promote the exchange of personal information. Research indicates that children may be willing to take greater risks to fulfil this motive, trading information disclosure for the opportunity for social interaction (Lwin et al., 2012). Children's motives related to playing online games increases their exposure to 'conduct' and 'content' risks. These risks are increased if children are using social media or games that are not age-appropriate. The findings of previous research provide mixed



messages about the risks of playing online games for young children. A study of 8-year old children showed that 42% of children did not consider it dangerous to meet with people they only know from the internet (Ey & Culpit, 2011). According to a U.K. study, most children play games by themselves or with people they already know. Only 10% of 8-11-year-olds say they have played games online with people they have never met and 5% say that they use the game chat features to communicate with people they only know through the game (Ofcom, 2016).

Some children described exposure to ‘conduct’ and ‘content risks’ through encounters with upsetting images and/or video accessed through YouTube and/or their search for images and information. This is consistent with a U.K. report which found that 10% of children aged 8-11 say they have seen something online in the past year that they found worrying or nasty (Ofcom, 2016). Content analysis of YouTube indicates more realistic consequences and more negative context than television violence (Livingstone, et al., 2014b).

The children appeared to be generally unaware of potential risks related to their activities. This is consistent with the literature indicating that young children have minimal understanding of the internet (Yan, 2009; Mertala, 2019) and generally perceived technologies as opportunities (O’Keeffe & Clarke-Pearson, 2011). In this study, two children described their awareness that their actions were in breach of boundaries but still placed themselves at risk (Ey & Culpit, 2011; Hadlington, White & Curtis, 2019). Only one child indicated that she wanted help to manage inappropriate content.

### **Strategies Children Employ to Resolve Problems**

These findings show that children often felt anger and frustration when they encountered technical and/or online problems. Most children (60%) did not mention seeking adult help for fear of getting into trouble. This finding is contrary to the 2011 Australian study of 9-16-year-olds indicating that 74% of children found parent mediation helpful. However, it is consistent with previous research indicating that children from lower-income, less well-educated households have parents are less able to ask their parents for support (Blum-Ross & Livingston, 2016). Rapidly evolving technologies present significant challenges to parents which they may not be fully aware of. This effects their ability to provide technical and cyber-safety guidance. Recent research suggests that 58% of parents can change privacy settings, and mothers report a greater ability than fathers (Livingstone et al., 2018b). Children typically resolved issues when they arose by ignoring the problem or turning the device off. These strategies may provide a short-term solution. However, without the implementation of interventions such as altering security settings or blocking unwanted content, it is likely that children will encounter the problem again. Moreover, offending content cannot be unseen.



## **Parents' Mediation**

Parents control access to devices and the internet in the home. They also mediate and model online behaviours. Their attitudes towards technologies influence the strategies they adopt towards their children's use and this shapes the development of their children's digital skills (Mertala, 2019). Parents of 0-8-year-olds struggle to find a good balance between limiting their children's use of technologies and encouraging constructive use (Chaudron, 2015; Nouwen & Zaman, 2018). Consequently, parental strategies are mainly motivated by fears of possible negative effects that only partially match real risks. Some parentally set rules are the norm and it is common for these to be time-based, location-based and conditional with more relaxed restrictions on weekends (Lipps, 2017).

Twenty percent of children in this study indicated there were no rules set in their homes. However, this finding was not supported by the parent questionnaires. This may have been because the children were unable to recall the rules and/or did not recognise them as they were not explicitly displayed like often found in school. Most children (80%) described that their use of technologies was managed by rules related to restricting their access to content. In addition, some children (20%) reported rules related to 'being responsible (trustworthy)', 16% reported rules related to screen time limitations and 28% reported rules related to seeking permission to access technologies and the internet. Parents' questionnaire responses also indicated that rules were set with the most common being time-based (100%), location based (43%), restrictions to devices (29%) and restrictions to content (29%). Combined, this evidence provides a strong indication that parents adopted a *restrictive social mediation* approach. Three parents (43%) indicated the use of parental controls or filters which is characteristic of *restrictive technical mediation* approaches. Two parent responses to the questionnaire (29%) provided evidence that an *enabling social active mediation* approach may be used related to "discussions" with their child about appropriate behavior and how to respond to problems when encountering inappropriate content. The findings of this study found no evidence to suggest that parents mediated their children's use of technologies through *enabling technical monitoring*.

In summary, the findings from this study clearly indicated that parents were predominantly using *restrictive social mediation* strategies. There was also some limited evidence that parents were using *restrictive technical mediation* strategies (parent control) and *enabling social active mediation* strategies. Restrictive mediation strategies and prohibitions are still common among parents and are problematic for two main reasons. Firstly, only younger children can be protected by prohibitions and restrictions. Moreover, this approach may enhance children's interest in forbidden content (Sonck et al., 2013). Secondly, whilst such measures may prevent risk and harm, but they also reduce children's online opportunities for learning, communication, participation and fun (Paus-Hasebrink, Sinner & Prochazka, 2012). "Research shows that parents who use a combination of approaches, modelling positive digital behaviours and involving their children in setting limits, have children who are more able to access the potential of, and manage the challenges presented by, digital media." (Blum-Ross & Livingstone, 2016, p. 4).



## **Conclusion**

Online environments will continue to represent high levels of risk to children's safety. As the internet becomes ever more embedded into children's lifeworld, it is important to examine not only children's access and vulnerabilities to risks but also, more importantly their relationship with the world mediated by the internet and how this influences their well-being (Hadlington, White & Curtis, 2019; Livingstone et al., 2018c). A narrow lens focused on risks positions children solely as vulnerable victims and neglects their agency and rights to access, information and participation. Consequently, highly protectionist or restrictive policies are advocated for children that may undermine their freedom of expression or trade children's needs off against adult freedoms (Chaudron, 2015). Internet access is no longer an optional extra, something that can be limited and controlled through restrictions. Such an approach leaves parents unsupported in finding opportunities for children and parents to learn, connect and create together (Blum-Ross & Livingstone, 2016).

Parents are the most influential people in guiding their children's development and behaviour (Sonck et al., 2013). There is an assumption that the more parents regulate their children's media use, the less governments need to impose top-down regulation on industry (Blum-Ross & Livingstone, 2016). To be effective, all stakeholders need to work in partnership to develop approaches that enable all citizens to use online technologies for actively participating in society (Blum-Ross & Livingstone, 2016; Nouwen & Zaman, 2018). This necessitates supporting parents to know where to turn for advice; parents and educators examining their conceptions of childhood, schools being recast as sites of ICT exploration rather than ICT restriction, and attending to the voices of children and young people because their concerns differ from those of adults and offer valuable insights into the conditions of their distress (Livingstone, et al., 2014b). Establishing consensus between children's and adults' viewpoints in terms of the recognition of opportunities and risks is a good starting point as this makes it possible for both children and adults to understand each other.

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