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Children and the internet: An exploration of Year 5 pupils' online experiences and perceptions of risk

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Abstract

The internet is becoming increasingly integral to children's lives. Consequently, it is vital that children are educated in how to protect themselves online and how to become responsible online users. This action research study addresses significant gaps in existing research by exploring children's online experiences, alongside their understandings of risk, from their own perspective, in order to inform a personalised and relevant internet safety curriculum within the research setting. The study utilises a mixed-methods approach, combining a comprehensive quantitative survey with a subsequent qualitative group interview with a sample of 14 participants. Findings suggest that, despite being proficient online users with an awareness of what constitutes online risk, many children largely fail to apply this knowledge to their own online practices. The study demonstrates the importance of educators and schools understanding children's online activities in order to respond to their needs and concerns effectively. Based on the research findings, it is recommended that similar research is actioned across primary schools, and that schools appoint pupils as internet safety ambassadors to provide educators with insights into children's current online activities, alongside providing peer guidance and support from a pupil perspective. These recommendations could be significant for the online safety education of children and young people in the wider context.

Keywords: Online safety; risk; online risk; internet use; children; e-safety; schools.

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Introduction

The internet is playing an increasingly significant role in the lives of children and young people (Byron, 2008; Livingstone, Haddon, Görzig, & Ólafsson, 2011) and, for many, has become an essential part of their being (Grant, 2013). It is widely recognised that the internet and associated technologies can provide a wealth of positive educational, social and cultural benefits (Becta, 2005; Cranmer, Selwyn, & Potter, 2009; Grant, 2013; Livingstone et al., 2011; Shipton, 2011), but alongside these benefits are associated risks, particularly for children. The internet is now 'thoroughly embedded in children's daily lives' (Livingstone et al., 2011, p. 1) and is ever more accessible through the development of mobile technologies such as smartphones and tablets. This virtual world can be an exciting, informative and challenging place that enables children to 'satisfy their natural curiosity and inquisitiveness' (Bower, 2013, p. 39). However, it can very easily become a public arena, potentially exposing children and young people to a wide array of risks, congruent to those in the real world (Byron, 2008).

To put online risk into context, just as risk accompanies every life experience in the offline world, the same is true for the online world, and the distinction between the two is becoming increasingly blurred (Livingstone, Kirwil, Ponte, & Staksrud, 2013). The experiences of social interaction, imaginative play, experimentation and risk-taking are fundamental to children's social, emotional and intellectual development, and to their identity construction. It is, therefore, inherent to childhood and adolescence to 'take risks, push boundaries, and evade adult scrutiny' (Livingstone & Haddon, 2008, p. 8), something that has traditionally been limited to the offline world.

The policy agenda for managing online safety is directly shaped by an adult society (Livingstone et al., 2013), and appears to be driven by very differing attitudes, perceptions and concerns to those of children and young people. Existing research suggests that adult perceptions of online danger and risk can often be misguided and exaggerated, 'deriving from a number of moral panics related to child safety' (Cranmer et al., 2009, p. 127). Children's upbringing has changed dramatically over time and, consequently, an increasing number of children are now less likely to play and interact with their peers outside of their home environment than two decades ago, as a result of media-propagated reports of stranger-danger (Livingstone, 2013). This inadvertently forces them to pursue their developmental needs to socialise and take risks in the online arena (Byron, 2008). However, this 'risk-averse culture' (Byron, 2008, p. 3) adopted by society inadvertently increases children's vulnerabilities by restricting their accurate identification, assessment and management of risk. It is this process of experiencing and negotiating risk that is central to the development of the core skills of decision-making, evaluation, adaptability, resilience, self-confidence and independence (Rolfe, 2010). Perhaps, then, the policy task for helping children to stay safe online should be not to entirely eliminate risk, but instead to build children's resilience and educate them to effectively identify and manage risk in the online world (Byron, 2008; Davidson, Livingstone, Bryce, Millwood Hargrave, & Grove-Hills, 2012; Grant, 2013).

Evidence base and rationale

Schools and teacher-educators play a significant role in delivering the internet safety message to children, yet the rapid development of new technologies and the

perpetual growth of the internet creates many challenges for educators. Research shows that greater levels of online activity directly correlate with higher instances of online risk (Livingstone et al., 2013); thus, having knowledge of children's online activities is vital for teacher-educators in order to provide children with the guidance they need to become responsible online users. Despite an increased focus on internet safety through government policies and procedures, largely as a result of the influential Byron Review in 2008, it is argued that 'e-safety' remains an insufficiently understood concept, with many children failing to grasp a realistic perception of the potential risks of online activity (Cranmer et al., 2009). As a teacher of primary-level computing, it has become apparent through classroom discussion that although many children are confident online users with the knowledge and skills needed to participate responsibly, they intentionally or unintentionally engage in risky online behaviours without fully understanding the implications. It is the concern surrounding children's perceptions of risk, alongside a professional commitment to ensuring that children acquire the digital literacy skills needed to ensure positive and safe uses of technologies and the internet, that drives this study.

Digital literacy skills are important in maximising children's opportunities and participation when using the internet, while enabling them to act responsibly and deal wisely with associated risk (Davidson et al., 2012). A significant amount of literature within the field advocates the importance of empowering children to keep themselves safe online by building their resilience against risk through educating them to use the internet responsibly, rather than prohibiting online access (Bower, 2013; Davidson et al., 2012; Livingstone et al., 2013; Ofsted, 2010). Resilience can be defined as an 'individual's ability to accurately adapt to changing and sometimes stressful environments and to feel empowered to act instead of react in the face of both novel and threatening challenges' (Przybylski, Mishkin, Shotbolt, & Linington, 2014, p. 4). Studies have shown that an ability to effectively self-regulate online use increases one's resilience when encountering potentially harmful or inappropriate content that may be faced online (Deci & Ryan, 2000; Przybylski, Murayama, DeHaan, & Gladwell, 2013). A number of recent reports recommend that more attention should be given to internet safety teaching at primary and pre-school level (Byron, 2008; Davidson et al., 2012; Haddon & Livingstone, 2012) in order to develop children's online resilience, and to enable them to make more accurate assessments of risk and to respond responsibly. Despite the policy rhetoric promoting internet safety and the explicit requirements of the new 2014 National Curriculum to teach children to 'use technology safely, respectfully and responsibly' (Department for Education, 2013, p. 205), it seems schools are essentially left to navigate the minefield that is internet safety with very little guidance (Atkinson, Furnell, & Phippen, 2009). Moreover, schools may be proficient in teaching children and young people how to use technologies, but are, perhaps, negligent in teaching them how to use technologies safely (Grant, 2013). With this in mind, it is hardly surprising that many children still fail to fully understand the concept of 'e-safety'.

Recent research base

Underpinning this study is a comprehensive review of literature and existing research, identified from an extensive search. Evidently there are significant gaps in the evidence base relating to children and internet safety. Historically, the majority of internet safety research has been quantitative, resulting in limited knowledge and understanding of children's own online experiences, and is generally 'insufficiently

reflective of children and young people's own agenda of concerns' (Livingstone & Haddon, 2008, p. 321). While a considerable amount of this quantitative research focuses on the 12–15 age group, comparatively little qualitative research has been conducted, particularly with the 5–11 age group. The technological landscape is constantly evolving and an increase in internet usage is becoming evident among very young children (Holloway, Green, & Livingstone, 2013). Access to the internet is diversifying via mobile technologies, yet research is only just beginning to explore this in relation to e-safety, despite mobile technologies providing their own sets of risks. In addition, and perhaps most significantly for this study, very little research relates to children's own perceptions of risk, the types of risk they encounter online, and the ways in which they manage risk. It is feasible to suggest that the risk-averse fears of an adult society, fuelled by the media's sense of moral panic, have a greater influence on children's e-safety education than does the knowledge of what children actually need to know, or want to know, arising from their real experiences and concerns. Livingstone and Haddon (2008) make a call for more research to be evidence-based to inform policy, charting what children access on the internet, how they access it, their practices online, whether or not they perceive their activities as risky, and what online risks they are prepared to take. Livingstone and Haddon acknowledge the challenges for research in this domain, owing to the sensitive nature of the field, but are clear on their guidance; 'Although multidisciplinary, multi-method, contextual and longitudinal research is particularly demanding, it remains sorely needed if we are to understand not only what children encounter online but also why, how and with what consequences' (2008, p. 320).

This view is supported by Davidson et al. (2012), the authors of a comprehensive review of research on children and the internet produced by the UK Council for Child Internet Safety (UKCCIS), who advocate the need for more qualitative research approaches that 'recognise and represent children's perceptions, experiences and concerns' (p. 10). They stress the importance of gaining an understanding of children's online activities, experiences and understandings of risk in informing internet safety policy so that educators can effectively respond to children's needs in practice. These views relate directly to this study by demonstrating the need for research to allow children a voice, in order to make research outcomes 'both meaningful and relevant for the pupils' (Cranmer et al., 2009, p. 141).

The gaps in the evidence base have to have implications throughout the wider context of internet safety education and form a basis for the rationale of this study.

Research aims

This small-scale study explores children's online activities and experiences, alongside their perceptions and understandings of risk. The outcome of the study will be the development of a personalised and relevant internet safety curriculum within the research setting, based around children's own experiences and concerns, enabling them to be active participants in their future learning.

The study is informed by the following specific research questions.

- What do Year 5 children perceive to be the inherent risks they are exposed to when using the internet?
- What does the data collected suggest we should be teaching children in school about internet safety?

Methodology

This study uses a complementarity approach (Greene, Caracelli, & Graham, 1989; Sale, Lohfeld, & Brazil, 2002) within a mixed-methods research framework. As this study is practice-driven, it sits within a largely pragmatist paradigm (Johnson, Onwuegbuzie, & Turner, 2007; Teddlie & Tashakkori, 2009) while employing an interpretivist perspective. This acknowledges the influence that the subjective position of the researcher has upon the research process, accepting that findings are often shaped by participant and researcher interactions. Individuals interpret and take on meaning in their own way (Bernstein, 1983); consequently, the study findings cannot be generalised. However the researcher's insider knowledge of the research context will allow for trustworthy interpretations of the participants' experiences from their own perspective (Punch, 2009).

The main purpose of the study is to explore children's online activities, experiences and perceptions of risk within an individual setting; thus, the justification for this methodology is that it provides a more robust, multi-dimensional and contextual understanding of the research issue than using single methods in isolation (Creswell, 2012; Lobe, Livingstone & Haddon, 2007). Greene and Hogan (2005) and Tisdall, Davis, and Gallagher (2009, p.43) support a mixed-methods approach when researching 'the social worlds of children' through their own eyes in order to gain a greater depth of data and understanding. The complementarity, mixed-methods approach in this study uses quantitative and qualitative methods together to effectively address different aspects of the research in a holistic way (Brannen, 1992, cited in Lobe et al., 2007).

Research approach

Considering that the outcome of the research is to develop the e-safety curriculum and improve educational practice within the setting through a greater understanding of children's online experiences, the study adopts a participatory action research approach. The concept of action research originates from the notions of Lewin (1946), Dewey (1952) and later, Schön (1983). It is not limited to any particular philosophical convention (Wilson, 2009), positioning itself between the interpretivist and positivist paradigms. Since action research is essentially problem-driven, it also links to the pragmatist paradigm. The constant cyclical process of action and reflection is based on the principle that knowledge is acquired through practice, and practice is improved by knowledge (McNiff & Whitehead, 2005). While traditional research is solely concerned with producing knowledge, action research actively uses that knowledge to improve educational circumstances through action (McNiff, 2013). In addition, it links to the teacher-researcher concept developed by Stenhouse (1975) and later, Hopkins (1985), who talk of teachers taking ownership of curriculum research and development through the conduct of research.

Moreover, action research encompasses collaboration and participation. This study regards participants as active 'social actors with a unique perspective and insight into their own reality' (Shaw, Brady, & Davey, 2011, p. 4), capable of forming and expressing their own views in order to shape their future learning through a shared approach to curriculum development, taking action research into a mode of critical education research. One aim of this study is to relate the curriculum to the needs and desires of the students while maintaining safeguarding responsibilities. Creating

a space for participants to express their own thoughts and interpretations within the limitations of their own 'voice' is a tenet of critical education research. The study allows for this through a process of reciprocal discussion, which feeds directly back into curriculum development, enabling participants to become 'active agents' (Lobe et al., 2007, p. 17) in their own learning. This participatory action research approach empowers participants to take some ownership of the research process by making an active contribution to their own educational setting. Actively involving participants in the research process allows them to see a benefit to the research; it is about them, but, ultimately, for them.

Methods

Acquiring a broad understanding of children's internet use, alongside an in-depth exploration of their online experiences and perceptions, is central to this study. The data-collection process consisted of an initial quantitative survey phase, followed by a qualitative group interview phase. Lobe et al. (2007) describe this complementarity approach as a 'sequential exploratory design' (p. 15) that enables further exploration of the data produced in the quantitative phase through qualitative methods. This design ensures cohesion between the stages of research by orientating the focus of the study as it progresses (Mayoh, Bond, & Todres, 2012). It also allows the most valuable information to be chosen for phenomenological research (Mayoh & Onwuegbuzie, 2015), while providing flexibility within the notoriously messy research process of action research (Vanderstoep & Johnston, 2009). This design strengthens the validity and reliability of the study by looking at the issue from differing perspectives (Basit, 2010; Biesta, 2006; Lobe et al., 2007). Using a combination of methods to 'precisely address the research aims' (Somekh & Lewin, 2005, p. 349), alongside relevant literature, allows triangulation to occur (Cohen, Manion & Morrison, 2011; Stringer, 2008), further increasing validity and reliability.

Phase 1 used a quantitative, self-completion survey to address the breadth of study, as an overall picture of children's internet usage and activity will facilitate future curriculum development in the research setting. Questionnaires can be valuable in that they ask 'directly the points concerned with the research' (Denscombe, 2007, p. 154) across a larger sample than most qualitative methods. Consistency is also an advantage, with the reliability of the method increased through every participant receiving exactly the same questions (Brace, 2008; Vanderstoep & Johnston, 2009). As the study involves young children who may not always fully understand the question intentions, the questionnaire was subject to a piloting process. This enabled an assessment of whether the method and design was fit for purpose. The pilot highlighted some potential issues in terminology and in the ambiguity of certain questions. From this, questions were revised to ensure clarity when issued as part of this study. This strengthened the validity of the questionnaire by ensuring that all questions were relevant, that they addressed the aims of the research and that they measured what they were intended to measure (Brace, 2008).

Although surveys provide a statistical picture of the 'what' issues in research, they are limited in response by the questions asked (Brace, 2008) and fail to address the 'why' in research. Tisdall et al. (2009) talk of children being 'experts in their own lives' (p. 3) and, as Dockett and Perry (2007) reflect, 'we have much to learn about children and children's experiences from children' (p. 48). In order to bring meaning to the quantitative data from Phase 1, a group interview format was employed for

Phase 2 of the research to potentially empower participants to talk more openly within a group dynamic (Gibbs, 2006). However pertinent the research interview is to the study methodology, the reality of interviewing children can be problematic. The fundamental aim of interviews is to elicit experiences, attitudes and perceptions through individuals' own interpretations (Danby, Ewing, & Thorpe, 2011), the complexity of which is noted by Tinson (2009). The extent to which children engage with the research topic and with the researcher can greatly impact on the information they are prepared to divulge (Tinson, 2009), and, thus, the researcher-participant relationship is perhaps the most significant aspect of a qualitative research study (Knox & Burkard, 2009).

Research context

The research centres on a large community primary school in West Yorkshire, with the majority of pupils being from White British heritage. The proportion of pupils eligible for free school meals and pupil premium is below average, as is the number of pupils with special educational needs. The study population consists of a Year 5 cohort of mixed-ability participants aged between nine and ten, an age group that is largely unrepresented in the existing body of research. This subsequently informs a purposive sample of 14 pupils to participate in further exploratory research.

Prior to beginning the research, ethical consideration was given to all aspects of the study, adhering to the educational research guidance issued by the British Educational Research Association (BERA, 2011). Research consent was gained from the University of Huddersfield and from the research setting itself. Participants were fully aware of the confidentiality and anonymity of the research in order to address the reliability and 'self-reporting bias' (Vanderstoep & Johnston, 2009, p. 67) of the data, together with their right to withdraw at any time without providing a reason.

Quantitative phase

The questionnaire was administered within the school day to a Year 5 cohort of 59 participants, and a categorical approach (Gray, 2004) was used to analyse the questionnaire data. From the 59 questionnaires issued, 56 were used for analysis, equating to 94% of the study population.

Presentation of findings

The initial analysis identified the most common online activities among Year 5 pupils in the research setting and an overall depiction of the range and frequency of behaviours relating to online activity was obtained. In line with findings from existing research (Byron, 2008; Livingstone et al., 2011, 2013; Ofcom, 2014) that the internet is entrenched in children's daily lives, the data shows that 100% of participants have online access, with 56% using the internet almost every day. Interestingly, the majority of participants (73%) say they are confident in knowing how to use the internet safely. Some 60% of participants primarily use a mobile device to access the internet. This supports research published by Ofcom (2014), which found that internet access via mobile technology had doubled since 2013, from 23% to 42%. Worryingly, 76% of these participants admit to not knowing how to perform safety measures such as disabling location tagging, as shown in Figure 1.

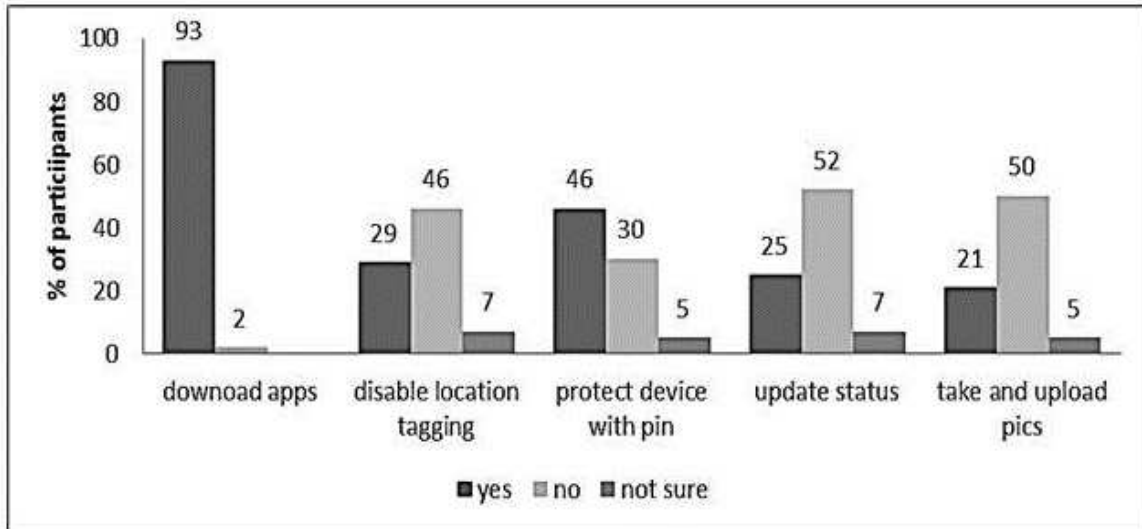


Figure 1. Q.29 - Which of these do you know how to do on a portable device such as a mobile phone or tablet?

The most popular activity appears to be watching video clips on user-generated content sites (UGC) such as YouTube (see Figure 2).

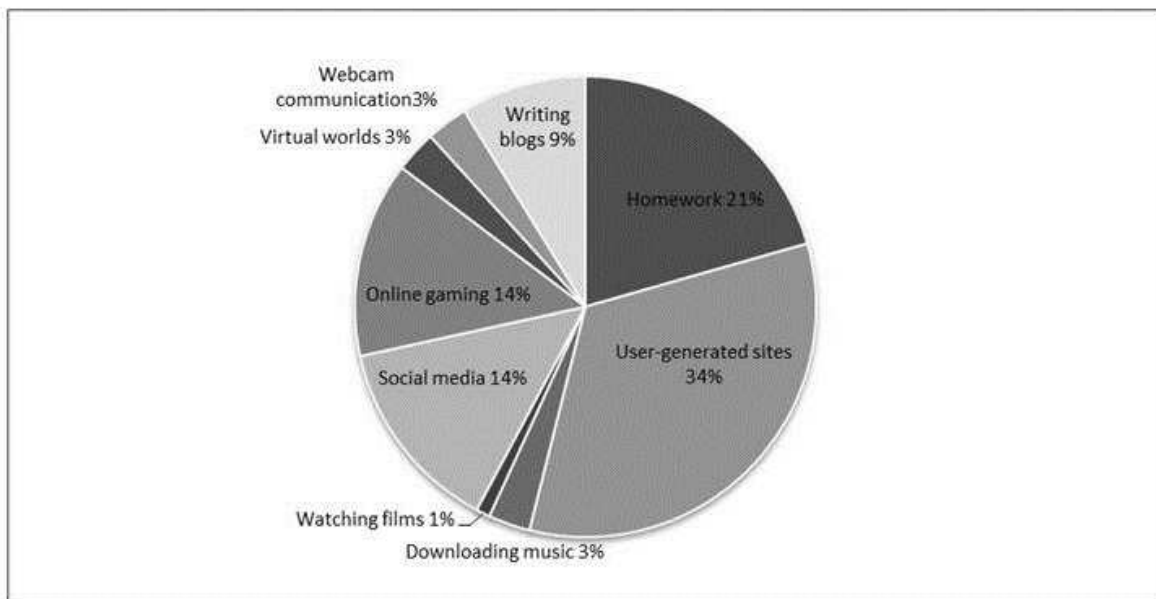


Figure 2. Distribution of online activity

This raises the important question of the age-appropriateness of the content that children are potentially accessing. The age limit for using YouTube is 13; however, as the site relies entirely on users flagging illegal, offensive or sexually explicit content, it can be easy for young children to discover age-inappropriate content through innocent searches (Livingstone et al., 2013). It would appear that the onus is on 'end-user filtering and parental control' (Fae, 2008, n.p), although the number of children with end-user filtering in place is an issue identified for further exploration.

Evidently, there are gender variations in online activity. Boys clearly use the internet more for gaming through platforms such as Xbox Live, while girls prefer online communication sites and chatrooms. Nevertheless, less than half (44%) said they participate in social media. Contrary to the ‘stranger-danger’ concerns of adults (Byron, 2008), the data show very little online communication with people not known in person, through any form of digital media. Out of the participants actively using social media, 48% have a profile on a site with an age limit of 13 and 32% admit to having over 100 online ‘friends’ on their contact list. Some 39% of participants said they would only accept people onto their contact list if they know them in person, although 23% would accept someone with a friend in common. This is suggestive of the lack of wisdom and maturity among children of this age espoused by Byron (2008), in that they are still in the process of developing ‘critical evaluation skills’ (p. 3), which may impact on their ability to make wise choices. This area was identified for further discussion during the following qualitative phase of the study.

The survey also looked at the online experiences of the participants with regard to risk through a list of predetermined statements (see Figure 3). This data informed the next phase of the study as it suggested areas of concern around children’s online safety, such as making new online friends, sharing personal information and not considering their own safety online.

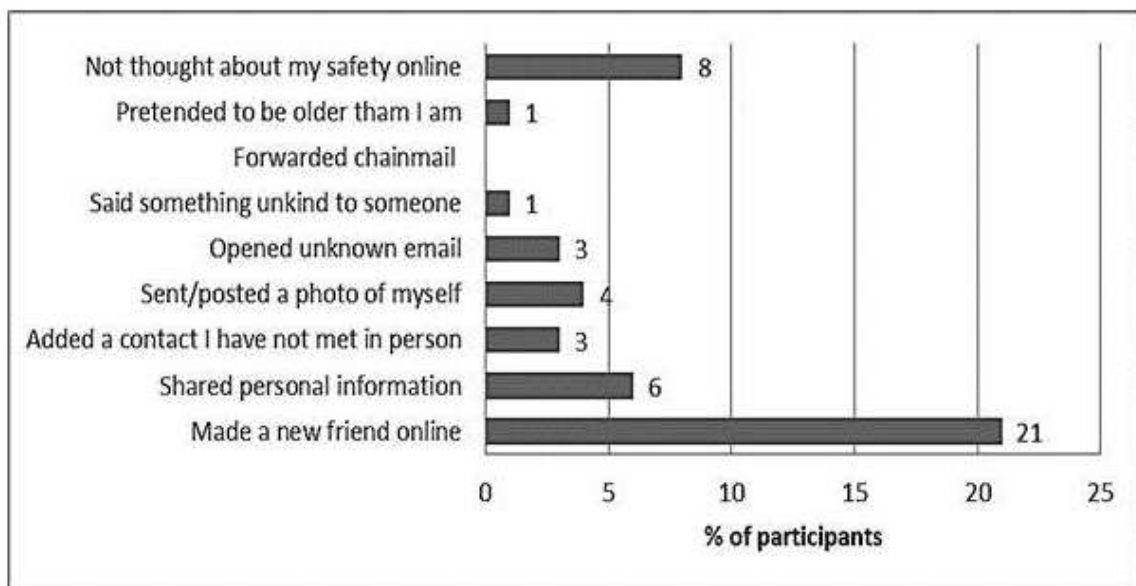


Figure 3. Participation in risky activity over the last year

Following this, the questionnaire asked participants to indicate something that concerns them online (see Table 1). Despite only 12 participants responding to this, findings tentatively support conclusions by Livingstone et al. (2013) that children’s concerns are very different to the contact-related risk concerns of adults. As these are genuine concerns for the participants, it is important that they are addressed within the developing school curriculum.

Concern	Number of participants
Hacking	5
Viruses	1
Opening dangerous email	2
Cyberbullying	1
Gaming	1
Chainmail	1
Why should I only have contacts I know?	1

Table 1. Online concerns of participants

The subsequent qualitative phase delves further into the concerns of children and their online experiences, and aims to discover their understanding of risky online behaviours.

Qualitative phase

The intention of Phase 2 is to gain a richer understanding of the complexity of children's online experiences and perceptions of risk. The broad, background data collected in Phase 1 provides the focus for this phase of the study.

Data collection

To ensure that, as far as possible, Phase 2 produced data representative of the age group, the study used a purposive sample of 20 participants based on preliminary findings from Phase 1. Punch (2009) identifies purposive sampling as 'deliberate...according to the logic of the research' (p. 359). From the 20 participants identified, 14 agreed to participate in this phase of the study, which was conducted within the research setting. This phase used a semi-structured interview strategy, which, according to Galletta (2013), 'is sufficiently structured to address specific dimensions of [the] research question while also leaving space for participants to offer new meanings to the topic of study' (p. 2). To strengthen validity, the questioning was structured thematically based on the questionnaire findings and the literature review (Arksey & Knight, 1999; Burton, Brundrett, & Jones, 2014). The themes were:

- 1) Internet use
- 2) Social networking
- 3) Information sharing
- 4) Online/risky experiences

To further increase validity, the interview schedule focused directly on the research objectives (Gray, 2004). Working on the premise of an 'organised discussion' (Gibbs, 2006, p. 186) rather than an interview put participants at ease. To encourage honest responses, the confidentiality of the information provided was emphasised.

As interviews are grounded in the natural behaviours of human conversation (Hannabuss, 1996), I regard my teacher-researcher role as advantageous here, despite it having consequences in terms of maintaining a level of objectivity across the study. I fully acknowledge my 'self' as being 'intertwined in the research process', and regard my position as a 'crucial resource' (Denscombe, 2007, p. 301) because I

possess an in-depth knowledge of the participants involved and of the research context. Working closely with the participants on a daily basis it was, perhaps, more natural for me to initiate an effective group discussion than for an external researcher to do so (Galletta, 2013). Fictman (2013) claims that, because teachers already work closely with children, they are 'uniquely positioned to...generate critical knowledge from within the four walls of their classrooms and schools' (p. 7). This subjective insider knowledge (Stringer, 2008) allows relationships of trust and mutual respect to already be established, thus adding to the overall credibility of the study.

Nevertheless, I was completely aware of Hannabuss' (1996) recommendation of balancing the impact of my role as teacher-researcher between reassuring and guiding, actively engaging in discussion while ensuring progress, reflecting on interpretations and redirecting conversation, and understanding the potential effects that my very presence may have upon the interview process.

Being fully engaged in the process as an active listener while also ensuring effective facilitation of the discussion among the group was a crucial aspect of the process for me as a researcher. I refer to Pelias' (2011) metaphor of 'leaning in' (p. 9) to the research, which, for me, is about immersing myself in the study and being sensitive to, and engaging with, the utterances and concerns of the participants. This facilitates faithful interpretations of their words during analysis. I dispute arguments that subjectivity is flawed in research, that an 'arm's length approach to the research situation' (Punch, 2009, p. 44) is needed. Instead, I agree with Lippke and Tanggaard (2014) and Galletta (2013), who claim that teacher-researchers should embrace their connection with the research through immersion in the 'the stories, images, metaphors, pauses and emotions narrated by the participants' (Galletta, 2013, p. 122). For this reason, I chose to record the discussion using the iPad application TagPad. I was keen to elicit as much from the discussion as possible and suspected that transcribing would distract my attention from the discussion. This method was fully explained to the participants and I clarified that they could withdraw even at this stage. Owing to the time constraints of a busy school day, the discussion lasted for 43 minutes.

Qualitative data analysis

Action research tends to be eclectic in its method of data analysis, as a pragmatist approach suggests using the most appropriate method for the study in question. As this phase consisted of only one group interview, the data were analysed through an interpretivist lens using Miles and Huberman's (1994) model as a guide.

Figure 4 shows the codes derived from the initial themes through analysis of the interview data.

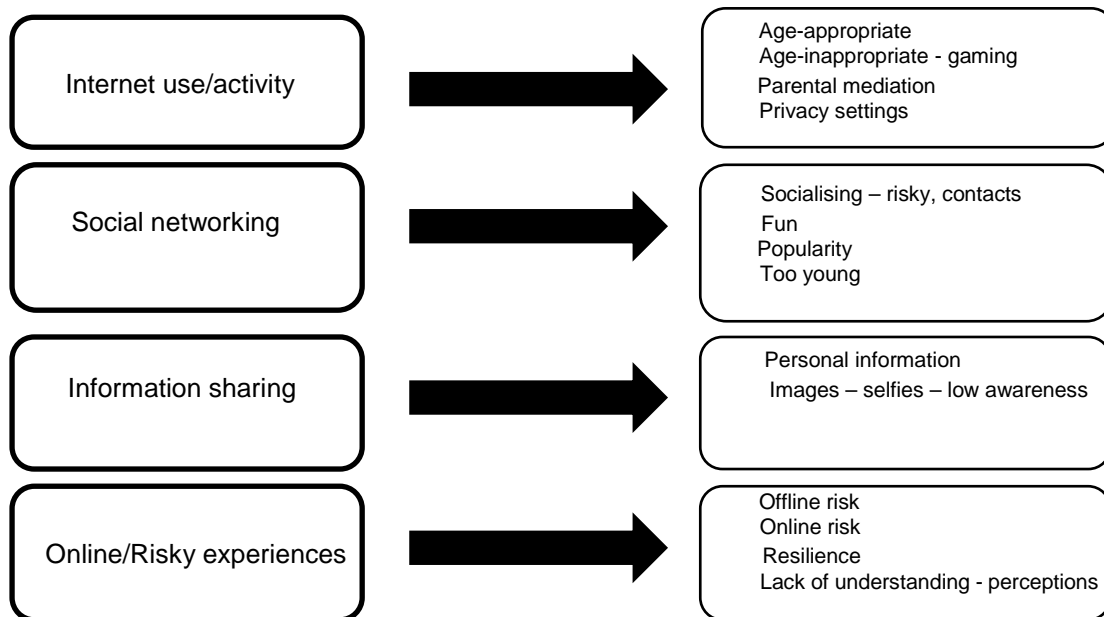


Figure 4. Data analysis process

Presentation of findings by theme

1. Internet use/activity

The initial discussion around internet use elicited similar results to the questionnaire, with participants indicating a wide range of online activities, from homework to social communication. The gender preferences were again evident, with almost all the boys preferring gaming, while the girls appeared to be more actively using communication sites. User-generated content (UGC) sites were the most popular online activity, with all participants saying that this is what they did most online. When questioned further, most have experienced seeing something they deem inappropriate on YouTube, mainly indecent images/nudity and bad language, although all participants said this was purely accidental, and appeared unconcerned.

‘It’s like when I watch, like, videos like “try not to laugh or grin”, then it comes up with, like, naked people doing like stupid things.’ (Andrew)

‘I searched for how to paint with oil pastels and then there was this video with lots of swearing and stuff on, so I turned it off.’ (Anna)

This apparent lack of concern perhaps indicates high levels of resilience within the group or a desensitisation to inappropriate content. What is deemed as inappropriate content can be highly subjective, depending on the individual (Byron, 2008). What adults might perceive as inappropriate and risky, for example nudity, children may perceive as an opportunity and can be a natural part of a young person’s development. Byron (2008) also suggests that the internet is the main source of information for many young people, and that exploring issues such as sex, drugs and alcohol may be deemed as inappropriate by many adults. When children are exposed to such content over time, there is a tendency for it to become the norm and their ability to cope with such content increases (Livingstone et al., 2013).

When asked about privacy settings, the group was divided, with half saying they have settings in place and half unsure whether they have or not. Surprisingly, 11 of

the 14 participants have their own YouTube account, allowing them to post and share content with the public and comment on others' posts. Byron (2008) talks of UGC sites being a way of children having a voice and being able to express themselves. For some, this activity has generated 'hate' from other users about the videos they have uploaded. However, it appeared the participants were not overly concerned about this and were willing to take the risk of uncomplimentary comments in their drive to develop their sense of identity and creativity.

'I just really like putting stuff on there, and if I get hate, so what?' (Lewis)

'I really want to be like a real YouTuber, you know, showing other people FIFA tricks and things like that.' (Simon)

2. Social networking

Social networking was defined, for the purpose of the discussion, as 'any type of online communication', including social media such as Facebook, Instagram and Snapchat, virtual worlds, emailing, instant messaging and multiplayer gaming. In contrast to the findings from Phase 1, all the participants said they engaged in some form of online communication, with boys favouring multiplayer gaming and girls preferring social media sites.

Most of the participants engaging in online gaming, including girls, did this as part of a multiplayer mode of gaming, allowing them to play against anyone from anywhere in the world. Some responses included:

'...when I play on, er, *Grand Theft Auto*, er, sometimes we can do like, er, last team stand ins and you can, er, go on to like a team chat.' (Frankie)

'I've got *Minecraft* on my PC and if I use a microphone I can talk to people around the world through my microphone and I've got a few friends in America that I play YouTube and *Minecraft* with and at the moment we're building a rocket.' (Simon)

When questioned about gaming, it was clear all the participants play games for much older age groups; in a couple of cases, this included 18-rated games such as *Grand Theft Auto (GTA)*. This raises questions of parental mediation, which, while being beyond the scope of the study, is a subject identified for further research. One boy (Frankie) seemed proud that he was allowed to play on these games and generated new discussion within the group, which was pursued as part of further questioning. Of the 14 participants, 11 had made an 'online friend' through online gaming.

A number of risky behaviours are at play here. The 18-rated games will attract a much older audience than the participants interviewed; consequently, there are risks of inappropriate language, of adult contact with people unknown to them, and of the game content itself. *GTA*, for example, is set in the criminal underworld of Los Angeles, and contains extremely violent and adult themes including car-jacking, prostitution, assassination and illegal drugs. Games such as *Minecraft* are content-appropriate for this age group, but when multiplayer mode is enabled, who the children are talking to is, once again, at their discretion. It could be argued that this is

even more risky, as online predators can easily gain access to younger children by masquerading as a child of a similar age.

A high percentage of the group (73%) admitted to having 'virtual friends' that they had never met in the real world. One participant said:

'I've got about 25 friends on *Bin Weevils* that I've never met.' (Jason)

Another revealed:

'I've got about 15 to 17 friends on Xbox from school but I've got about nearly 60 friends on the Xbox so I chat to about 30 or 40 of 'em that I just know from around the world from games that I play with 'em.' (Simon)

Despite this, most participants said they know that they should not accept people as virtual friends if they do not know them in person. They were then asked why they have these virtual friends if they know it is not the right thing to do. For some, it seems there is the pressure of popularity:

'It's a competition to get loads of friends, so like I could say (name) has got 50 friends, I've got 59 friends and stuff like that.' (Simon)

Others just consider online communication as 'fun' (Georgia). Echoing Davidson et al.'s (2012) findings, it appears that children consider people they have interacted with for some time online as 'friends' rather than 'strangers' and, therefore, they do not perceive this activity as risky. It would seem that the need to socialise and experiment outweighs the risks involved (Livingstone et al., 2011). Different behaviours manifest in people online as opposed to offline; in effect, their moral code is altered. This was evident through the responses of some participants to the question of whether they feel they can behave differently online than they do offline:

'I sometimes pretend I'm someone else....so I can, like, make things up, sort of be who I want to be 'cos no one knows me.' (Georgia)

'It's easy to say stuff online 'cos the other person can't see you, so, like, if someone's having a go, you can have a go back.' (Frankie)

This potentially places children at risk as they are still establishing social skills and empathy in the offline world and lack the social maturity to navigate these behaviours wisely online (Byron, 2008). This also supports Byron's (2008) argument that children possess technical knowledge and digital confidence, but lack the 'maturity and wider awareness' (p. 7) to perceive risk.

Others divulged that they play against 'randomers' (people they do not know), but that they never engage in conversation with them or add them to their contacts lists.

'My dad always says to never accept anyone because they might be saying they're 9 or something and they might be 20 and they say "meet me at like Thornes Park" and they might be 20 and they might, like, kidnap you or something.' (Andrew)

I interpreted this as a concern as the participant seemed quite worried that this could happen. This is perhaps generated from the 'risk-averse culture' debated by Byron (2008) and Livingstone (2013): more of an adult-led concern than one created by the child, yet still valid in its own right.

3. *Information sharing*

I was interested to know more about the information children are prepared to share with others online, particularly as many appear to communicate with people they do not know. The views were mixed, with many having a good awareness of the need to keep their personal information private; however, personal images do not seem to fall into the same category for them. All stated that they think it is acceptable to share personal photos online:

'Well, because my user's private I feel like it's OK to post pictures because it's only people that I've actually accepted that can see them.' (India)

'I put pictures on because I know that they won't ever meet me one day 'cos, erm, I might live far away from them.' (Claire)

The questioning was further adapted based on the given responses, asking participants whether it would worry them if someone copied their photos and put them somewhere else for others to see. This provoked quite a reaction in the group in terms of facial responses and body language. Some began discussions among themselves, and it became clear that for most, this was something they had not considered. However, one boy responded:

'Yeh, it does, 'cos my sister, er, she put a selfie on her Facebook and someone, er, screenshotted it and, er, then they put it on Facebook and Instagram and Snapchat and so anyone could've seen it.' (Simon)

This demonstrates a lack of awareness around their digital footprint, and clearly identifies an area for curriculum development.

4. *Online/risky experiences*

The discussion then moved on to risk and perceptions of online risk, beginning by establishing participants' understanding of the word 'risk'. The group instinctively started to discuss what could be an online risk. Despite the discussion we had already engaged in, and the knowledge I know has been disseminated as part of the school curriculum, their perceptions of online risk appeared limited (see Table 2). The responses clearly correlate with wider research (Livingstone et al., 2013) with no mention of 'stranger-danger' adult concerns or cyberbullying, something that the school's e-safety curriculum largely focuses on currently.

Perception of risk	Perceptions of online risk
Danger	Giving out personal information
Threat	Someone putting embarrassing comments about you
Taking chances	Having to ask people to remove embarrassing stuff about you
Something that will get you in trouble	Parents looking at my friends list
	Someone hacking your account
	Having your location visible

Table 2. Perceptions of risk

The participants were then asked if they thought there was anything they do online that they would perceive as risky but that they still do anyway. The responses here were surprising in light of the discussion so far. Most participants were shaking their heads as though they could not think of a risky activity in which they participated, despite the majority regularly playing and communicating with virtual friends. This links to the findings of Cranmer et al. (2009) and Livingstone et al. (2013) on children's limited perceptions of online risk. Livingstone et al. (2013) found that 46% of participants in their study failed to identify any online risk whatsoever or raise any concerns about any aspect of their online activity. In this study, just two participants mentioned giving out information about themselves when perhaps they should not have. It was clear that they were not connecting any of their activities with any sort of risk, which remains a challenge for the teaching of e-safety.

Owing to the time limitations of the study, it was not possible to investigate all the issues raised comprehensively; however, these have been identified for further study. Reflecting on the research process, allocating more time to the interview would have enabled the discussion to evolve more naturally, thus eliciting even richer data by allowing deeper exploration of individuals' experiences. Ideally, a wider scope of participation across more schools would be advantageous. Nevertheless, by discovering which activities children are participating in, what they are experiencing online, and what their concerns are, the research results contribute valuable findings to the current and existing body of knowledge and to the development of a personalised school curriculum for the teaching of online safety.

Conclusion and recommendations

This study set out to explore the online activities of Year 5 children, their perceptions of online risk and the implications of this in the teaching of online safety in the research setting. As this was a small-scale study, the results are unique to the research context and cannot be widely generalised. In light of this, tentative conclusions have been drawn against the research aims.

The study has drawn parallels with wider literature, showing the internet to be integral to the lives of children (Grant, 2013; Livingstone et al., 2013) and has also

highlighted the complexity of children's online worlds. The online activities typical of children in the research population have been clearly identified. Relating this to the research outcome of curriculum development, these findings provide an important insight into the online worlds of children. The constant evolution of the internet and of children's online opportunities remains a challenge for educators; therefore, an awareness of the online activities of children within individual educational settings ensures schools and teachers are adequately equipped with the knowledge and skills needed to provide guidance to pupils (Byron, 2008). It is recommended that this type of research is routinely actioned across primary schools as part of an ongoing action research process. For the research school, it is recommended that the school appoints pupils as 'e-safety ambassadors' to provide teaching staff with insights into current online sites and applications used by children, as well as providing peer guidance and support from a pupil perspective.

More significantly, though, are the findings on children's own perceptions of risk. The research has shown that, despite the teaching of e-safety in school, children are still failing to grasp a realistic perception of online risk (Cranmer et al., 2009) and that their concerns vary greatly from those of adults. The findings appear to suggest that, while children have an awareness of what constitutes online risk, they unintentionally fail to apply this knowledge to their own online practices, affirming the researcher's initial theory. The implications of this are huge with regard to the curriculum, as the challenge here is not only to develop children's understanding of risky behaviours, but also to encourage them to think more carefully about their own practices. I advocate, as does wider research (Byron, 2008; Davidson et al., 2012; Haddon & Livingstone, 2012), that a culture of internet safety should become entrenched in children's online behaviour from as early as pre-school age. This should not just be the responsibility of schools, but should take the form of a shared approach, particularly between schools and families. The role of parental mediation was not within the remit of this study; however, further research in this area could be beneficial to the individual school and to the wider knowledge base in general.

In conclusion, this study has achieved the research aims through a complementarity approach that has provided a holistic understanding of the issues studied. Owing to the evolving nature of the internet, this action research study will continue after the writing of this paper. Nevertheless, it has already made valuable contributions to the existing body of knowledge by addressing significant gaps in the evidence base, namely qualitative research with the 9–11 age group. However, this must be addressed within a wider context and used to inform internet safety policy and practice if educators are to fulfil their role of ensuring that children become responsible, resilient and safe users of the internet.

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