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MANAGING STUDENT DISTRACTION: RESPONDING TO PROBLEMS OF GAMING AND PORNOGRAPHY IN A WESTERN AUSTRALIAN SCHOOL FOR BOYS

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Abstract

This paper provides some initial findings from a current longitudinal study that examines the implementation of a 1:1 laptop program in a school for boys in Perth, Western Australia. One issue that has emerged from the study is the problem of managing student distraction. The school in this study has taken a proactive approach to managing student conduct on its own network. Two student monitoring initiatives were implemented during the course of the research. The first: parental control software sought to integrate the parental control features of the laptops with the school network. The second initiative: e-safe is a web tracking service that records suspicious searches and URLs that students visit. When used in tandem, these tools were shown to have a marked impact on the conduct of students in using their laptops. This paper describes these initiatives including their effect on the broader school community, and suggests some ways in which student distraction can be best managed in future practice.

Keywords: 1:1 mobile learning, monitoring, distraction, Internet, gaming, pornography

1 INTRODUCTION

With a worldwide push to integrate Information and Communications Technologies (ICT) into all levels of education and the provision of greater access to the Internet for students, schools are obliged to provide a safe network for their users. Network safety and the policing of inappropriate behaviour on school and student-owned ICT have systemic, school, teacher and parental dimensions, and the management of student distraction is a topic of great contention, particularly in negotiating boundaries and responsibilities between home and school [1]. However, given that even children from primary schools are now provided with powerful Internet-ready devices in order to research and collaborate with others, negotiating boundaries and responsibilities is both timely and crucial [2].

There is a growing trend towards students' use of the Internet to gain greater meaning from what they learn in the classroom [3]. Effective teaching and learning includes establishing routines and procedures for classroom management [4] whether this be in teacher- and/or student-centred settings. In an ICT-rich environment, management of student behaviour is amplified by the potential for student distraction. Schools are now challenged to provide a safe and secure network, and constantly monitor how this network is used. Whilst there is an abundance of information and products available to help parents provide a safe ICT environment at home [5] ; [6] systems, districts and schools tend to have more eclectic approaches to student safety and security. Further, as discerned by Anastasiades & Vitalaki [7] and DeFranco [8] there are few evaluative studies focusing on teachers' involvement of Internet safety and acceptable ICT use both in or outside of the classroom. Clear guidelines, policies and consequences are important in ensuring that the expectations of school leaders, teachers, students and parents are consistent. However, there is a reported dissonance as Prensky [9] identifies between how Generation Z students perceive ICT and the more traditional conceptions held by school leaders, teachers and parents. Hsu [10] suggests that there is an urgent need to support a generation of school leaders, parents and teachers caught in the digital divide and trying to learn on the run.

The primary aim of this paper is to discuss how the seductive nature of ICT, particularly as manifest in gaming and pornography, is managed in a school for boys in Western Australia. It is proposed that schools establish genuine partnerships with their communities, agree upon what constitutes acceptable ICT use, and put in place systems to ensure that all members of the school community comply with the standards that are agreed upon. Schools thus need to negotiate an acceptable balance between providing students with an autonomous learning environment built upon principles of trust and mutual respect and fulfilling duty of care obligations that are expected by parents.

2 BACKGROUND

This study tracks the implementation of a 1:1 laptop program at a school for boys ("the School") in Perth, Western Australia. The School began a program of gradual deployment of student-owned laptops in 2010, and will ultimately see all students in the School owning a laptop or mobile device by 2013. Two cohorts are the subject of this investigation which spans three years (2010-2012). These cohorts are a Year Five (junior school) group that progresses through to Year Seven over a three-year period, and a Year Seven (middle school) group which progresses through to Year Nine over the same period. For the purposes of this paper, the Year Five group is referred to as Cohort A and the Year Seven group is referred to as Cohort B. The School itself is a Catholic boy's school that offers an education from years four to twelve. There are currently 106 teaching staff employed at the School providing education to a student population of 1219. The School is by no means an early adopter in moving to 1:1 student-owned laptops. However, it does recognize the need to better prepare its students for life in an increasingly digital world, and also discerns that there are opportunities to provide a more engaging and relevant teaching and learning environment through the integration of ICT across the curriculum. The deployment of student-owned laptops has been successful when gauged against a number of indicators, particularly student engagement and parent satisfaction. These findings will be the subject of a future paper. The purpose of this paper, however, is to discuss the School's approach to the management of student distraction, which has been an ongoing issue since the initiative was first rolled out in 2010.

Acceptable use of ICT in this paper is defined as the use of ICT for the educational purposes set out by the School. The study has revealed that inappropriate ICT use in the School usually takes two forms: gaming and access to pornographic material. Gaming during school hours is banned unless teachers state otherwise. Teachers are empowered to use their discretion in determining whether a game has educational value. For example, during mathematics classes students are encouraged, at times, to access online interactions provided at www.subtangent.com. This site has a range of investigations, games and quizzes designed to help students with learnt concepts and deepen their understanding through guided practice and feedback. Pornographic material is defined as obscene images or content designed to excite sexual desire [11]. The School has a zero tolerance policy for staff and students in relation to the accessing of pornographic material both on- and off its network (e.g. via mobile phones).

Results from the research so far indicate the need for clear Internet and ICT use protocols and the availability of specific monitoring both on-and off-campus. Subsequently, two specific initiatives were implemented: the enhancement of parental controls and the provision of e-safe services. A comprehensive consequences framework was also put in place to support these initiatives and ensure that the whole school community complied with the Acceptable Use of ICT Policy, which had been instituted at the inception of the 1:1 laptop deployment.

2.1 Parental control software

The School conducted a thorough investigation of Apple and PC options in a range of school settings prior to the 1:1 implementation, ultimately deciding on the Apple platform. In 2010, all students in Year Five (Cohort A) and Year Seven (Cohort B) were issued with an Apple Macbook with the following specification: 13-Inch White Polycarbonate, 2.4 GHz Intel "Core 2 Duo" processor, 2 GB of SDRAM and a 250GB hard drive. A key factor, which underpinned this decision, was that, contained within the operating system of the device, was a feature called 'Parental Controls'. This parental control software enables each parent to set up a range of monitoring and time bound usage limiters as the administrator of the device. This feature was available at the point of laptop handover to the student. All parents were invited to two dedicated parental control information sessions, which helped parents enable parental controls and utilize them in their own homes. Time limits were the key feature used by parents as it allowed them to dictate when the Macbook could be used each evening. A default setting was set up for hours of operation between 8 a.m. and 8 p.m. Outside of these hours students were unable to log in to their machine without the parent overriding the parental control feature. Whilst parental controls could work well in the home environment with a parent as the administrator, they were essentially redundant in the networked environment of the School. A dedicated technical solution was sought to enable parental controls to work over the School network and this was put in place as an enhancement five months after initial deployment. The School continued its systematic monitoring it used previously, using LAN School, which is another software application enabling teachers and administrators to view all screens and observe what students are doing and attempt to limit applications such as gaming whilst in class and on campus.

2.2 e-safe

In the second year of the 1:1 laptop implementation, a UK-based company called e-safe System Limited was contracted to monitor student use of their laptops whilst on the School network. e-safe offers a key-logging monitoring service that records potentially suspicious images and text typed as search requests and inappropriate web sites accessed [12]. Sites are not blocked, however if accessed, detailed analytics are emailed to the School for evaluation, and where appropriate, action is undertaken. To scope the perceived problem of inappropriate Internet use, a group of users (n=20) from the middle school was randomly selected and a trial was set in place in the second year of the implementation of the program. The purpose of the trial was to better understand how students used their devices within the School network between the hours of 8.00 a.m. and 5.00 p.m. It was agreed at the outset, that regardless of the findings, no corrective actions be taken in the event that any of the 20 students were found to be accessing inappropriate material. Students in the trial were unaware that they had been selected as it was felt that this would prejudice the integrity of the trial by affording users the opportunity to change their behaviours. The School leadership team accessed legal counsel to seek opinion on the legal ramifications of the trial and determine the rights and responsibilities of the School and its students. It was advised that it was the School's overriding responsibility to safeguard children on its network as the children were under the age of 18 years of age.

The trial revealed unacceptably high levels of access to pornographic content, use of social media, and non-educational games. Post the trial period all students at the School were informed of the implementation of the e-safe monitoring program and also the introduction of a consequences framework if students were found to access inappropriate material via the Internet or use their laptops to play games whilst in class. This approach allowed the School to address these issues in a timely manner.

3 METHODOLOGY

The research is set in a pragmatic paradigm, and uses a mixed methods approach to provide authentic and trustworthy data that might inform the study's research questions. Research questions, along with associated data collection and analytical tools are displayed in Table 1.

Table 1:
Research questions and associated data collection techniques

Research question	Data collection/analytical tools
1. How do boys utilise their personal laptops?	Student questionnaire (*n*=192), student interviews (*n*=30), parent questionnaire (*n*=192), parent focus groups (*n*=24), teacher interviews (*n*=40), key logging analyses (*n*=771).
2. How are teachers engaging laptop technology for educational purposes?	Teacher interviews (*n*=40), Observations (*n*=12)
3. What educational impact, if any, do laptops have on student learning outcomes?	Teacher interviews (*n*=40), Observations (*n*=12), NAPLAN testing results: 2010 and 2012
4. What differences can be identified between junior and middle school implementation experiences in regard to research questions 1, 2 and 3?	Analysis and synthesis of all data sources using SPSS and Nvivo
5. What implications do these factors have for the future inclusion of 1:1 laptop programs in schools?	Analysis and synthesis of all data sources using SPSS and Nvivo

The focus of this paper is on research questions 1 and 3, specifically targeting parent and student perceptions of the 1:1 experience. Analysis of data centred on parent questionnaires, parent focus groups, student questionnaires, student interviews and key logging. An adapted set of questionnaires from Newhouse [13] were used to underpin data collection from students, staff and parents. The research has administered three parent questionnaires so far. The first questionnaire was delivered at the inception of the study with a primary function of gathering baseline data. Second and third

questionnaires were administered after one and two years respectively. The function of these questionnaires was to discern any changes in attitudes as the implementation of the 1:1 laptop initiative unfolded. The students from Cohort A (*n*=56) and Cohort B (*n*=136) provides for a total possible pool of 192 parents. Number of responses and response rates for each of the parent questionnaires are provided in Table 2.

Table 2:
Response rates for parent questionnaires at inception and the first and second years of the study

	Inception		First Year		Second Year	
	Cohort A	Cohort B	Cohort A	Cohort B	Cohort A	Cohort B
Parent	62.5% (*n*=35)	52.9% (*n*=72)	87.5% (*n*=49)	77.2% (*n*=105)	80.3% (*n*=45)	73.5% (*n*=100)

To date, three parent focus groups have been conducted. In all, 24 parents have been involved which represents 13% of the sample parent population. The focus groups usually lasted about an hour and followed a semi-structured, conversational style. Focus group sessions were audio-taped and at the conclusion of each session, a transcript was created and provided back to participants for member checking.

Three student questionnaires have been conducted and a fourth is planned at the conclusion of the study in 2012. The questionnaire was designed to gather data on students' behaviours along with their knowledge, skills and attitudes towards the 1:1 laptop program. As discussed, the sample involves tracking 56 Cohort A students and 136 Cohort B students. Number of responses and response rates for each of the student questionnaires are provided in Table 3.

Table 3:
Response rates for student questionnaires at inception and the first and second years of the study

	Inception		First Year		Second Year	
	Cohort A	Cohort B	Cohort A	Cohort B	Cohort A	Cohort B
Student	100% (*n*=56)	100% (*n*=136)	96.4% (*n*=54)	83.8% (*n*=114)	92.9% (*n*=52)	81.6% (*n*=111)

A smaller sample of 10 students from Cohort A and 20 students from Cohort B were selected for interviews based upon representation from one of three categories pertaining to academic achievement: low, medium and high. To date 60 interviews have been conducted each generally lasting around 30 minutes. The interviews typically followed a semi-structured, conversational format and were audio-taped. At the conclusion of each interview, a transcript was created and provided back to the student for member checking.

Finally, all key-logged monitoring data is collected by e-safe and a forensic monitoring report is emailed to the School on a weekly basis. These reports include: logged events for images and logged events for key words in categories deemed not appropriate. All reported data is based on access to inappropriate content during the hours of operation at the School, which is 8 a.m. to 5 p.m. (Monday to Friday). The name of the student and time of the alleged breach of the School's Acceptable Use Policy is provided to the relevant head of year level to initiate corrective action in accordance with an established consequences framework.

4 RESULTS

4.1 Initial deployment

The roll out of the 1:1 laptop program was an exciting time for students and staff. The School was ardent to manage the initiative professionally, and on deployment provided two introductory sessions to acquaint parents and students with the rationale behind the initiative and to go through some of the parental control features of the Apple MacBook. At this time parents and students also signed an Acceptable Use Policy. Enthusiasm for the initiative ran high amongst staff and students on what could best be described as a "honeymoon period" over the first six weeks of the deployment. In the initial survey conducted at the commencement of the research (*n*=192) 94.2% of students indicated

that they really enjoyed using their laptop, 73.4% felt that the work they completed on their laptop was important, and 30.7% wanted to know more about using a laptop. Typical comments included:

> The Macbook is an awesome laptop and I am thankful for it. (Student Cohort B, First Year)
>
> It is so great having a laptop for learning. (Student Cohort A, First Year)

Teaching staff were also positive about the deployment with 92% wanting more use of computers with their students and 93% believing that computers could be used to improve student learning with their classes. Laptops afforded students the opportunity to engage with a raft of activities that were not normally available in the classroom. However, while some of these opportunities were aligned to learning outcomes, some were simply distracting and, alarmingly, spread very quickly amongst the student population. Soon after deployment it became apparent that students were playing games, accessing pornographic material, listening to music, using Skype and FaceBook for social communication, and blue-toothing information from student to student. Feedback from staff indicate that these practices were commonplace both in and outside of classrooms. Student distraction was also noted in a study conducted by Dowell, Burgess, & Cavanaugh [14], who found that where students accessed a wide range of online resources and applications, at times this can expose them to inappropriate content and off task behaviour. An increase in the amount of time that students were using their laptop inappropriately was a parental concern as data collected only a matter of weeks after deployment shows:

> My son tells me that boys play games in class, this is worrying. (Parent Cohort B, Inception)
>
> After using the parental control logs I was shocked to see the porn sites that my son had accessed. (Parent Cohort B, First Year)

Students also acknowledged the potential for distraction at this early stage:

> It's really cool, except sometimes people aren't really doing their work. They're like sometimes on games and stuff, but still it's really cool. (Student Cohort B, Inception)
>
> …from the start of the term and the games have increased like better and better and better as it goes on, and another kid that I know has got the newest Call of Duty already and a few other games already they transfer their game from their Xbox or PS3 onto their computer and start giving it to all the other kids at school. (Student Cohort B, Inception)
>
> Teachers try to watch us playing games by using LAN school monitoring, but all we do is turn off our wireless connection and they then can't see our screen. (Student Cohort B, First Year)

The Acceptable Use Policy was clearly being ignored by many, and the parental controls embedded in the Apple hardware did not seem to be having the desired impact. The School relied heavily on the level and quality of teacher supervision, but clearly needed a more energized and rigorous approach to student monitoring to ensure that students were accountable for their actions. As alluded to by the above students, gaming in particular was rampant in many classes. Of note, Call of Duty and Minecraft were the top two listed games that were prominent in all interviews and also mentioned in the annual surveys where each participant was asked to list the online games they played. Data from both Cohort A and Cohort B indicated that 26% of the student sample in 2011 (n =163) regularly played Call of Duty and Minecraft. Covert and secretive bahaviours in relation to gaming suggest that this estimate could be conservative. Wei and Ming [15] argue that online gaming is one of the most likely reasons for compulsive Internet use and propose more research and policy development in this area. In the current study the aim was to educate users, promoting cultural change in the use of ICT within a negotiated ethical framework. It was felt that this approach would empower teachers to optimize the use of ICT for learning whilst at the same time build an environment of trust and transparency.

4.2 Impact of student monitoring interventions

The research informed school decision-making processes and led to the development of a two pronged approach by the School leadership team and the ICT committee, focusing on redefining expectations of correct ICT use. The key elements of this approach were the enhancement of parental controls and the introduction of a key-logging monitoring program (e-safe). A clear framework of consequences was also introduced to support these initiatives. The enhancement of parental controls and the introduction of the key-logging monitoring program have enabled the School to address many of the concerns expressed by students, parents and staff.

4.2.1 Parental controls

Students themselves were largely responsible for subverting the parental controls system, many becoming administrators of their own laptops. Parents who had not attended the initial session at handover and/or did not have adequate ICT knowledge and skills to configure parental controls on their son's laptop, probably yielded to their son's apparent expertise. Many students were able to turn off the parental controls and use their laptop without monitoring conditions. After some technical modifications to the School network, enhancement and operability of parental controls in a networked environment were enabled with parents instituted as the sole administrators of the laptop. This now provided parents the opportunity to gain the upper hand, in terms of utilisation of parent controls of their son's laptop if they so desired. Parents' most popular control was the setting of time limits to restrict use during set time.

With previous monitoring systems easily bypassed by students and the lack of detailed data about what was being accessed, this new direction was the catalyst for change in behaviour:

> Now that they have brought out parental controls I haven't seen many games or boys wasting time doing random Internet searches in class. (Student Cohort B, First Year)

4.2.2 e-safe

Data from parent, student and teacher questionnaires and interviews suggested that a more scientific and rigorous approach to student monitoring was required and as a result a key-logging monitoring program was introduced in 2010. A group of random users (*n* =20) were selected as part of a 12 week trial commencing in June 2011 and concluding in August 2011 (the monitoring period). The scale of inappropriate ICT use was immediately apparent with regard to pornographic breaches as shown in Figure 1 where the ratio of incidents to students was very high during the trial monitoring period. After the trial monitoring period, the School immediately introduced the e-safe initiative to students and parents, re-iterated the Acceptable Use Policy and implemented a consequences framework. e-safe thus went school wide, monitoring student activities on a daily basis. Data collected during this 'Active Period' (*n* =771) of six months shows a significant decrease in the ratio of incidents to students each month.

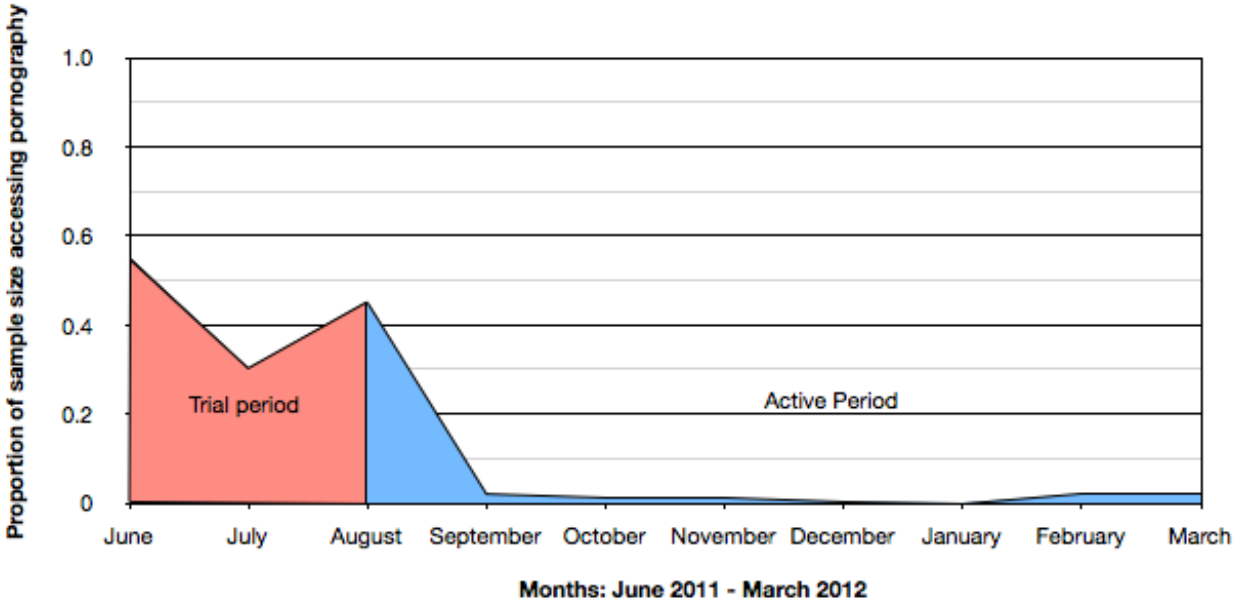

Figure 1: e-safe summary of incidents from trial to active period (number of reported incidents per student).

The e-safe initiative has been responsible for a significant decrease in the access of inappropriate material (particularly pornographic) in a very short period of time. Key logging has provided the School a tool to combat off task behaviour and minimize the possible risk of visiting sites that have no relevance to the educational outcomes at hand, or are age inappropriate.

In tandem with the implementation of the e-safe initiative, the School re-energised its Acceptable Use Policy through articulating an explicit consequences framework. Students across the School became

quickly cognisant of the fact that inappropriate behaviours were monitored in a manner that was rigorous and vastly different from the past:

> Since keystroke monitoring has been used, boys are much more aware of doing the right thing. (Student Cohort A, Second Year)

Without taking an inflexible policing approach or being precipitous in nature; a method not favourable with boys, it became apparent that communicating clear expectations of ICT use, defining the boundaries and explaining the monitoring steps were the key components for the promotion of appropriate ICT use for students. The School took on a pastoral care approach that enabled students to explain themselves first, rather than being sanctioned immediately. Conversations also took place between the student, teacher and parent to ascertain the circumstance, and determine a course of action. It should be noted that discretionary powers are applied in situations of extreme circumstances. Figure 2 shows the four-step process in cases where a breach of the Acceptable Use Policy was committed on the School network.

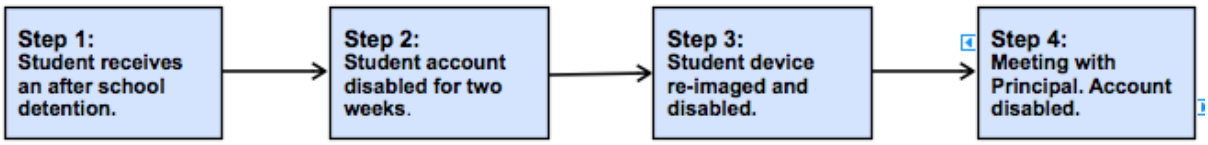

Figure 2: Student consequences framework for breaches of the Acceptable Use Policy.

These initiatives – enhancement of parental controls and the e-safe monitoring system – along with the articulation of the consequences framework have been an effective way of ensuring a renewed level of compliance with the School's Acceptable Use Policy. Hunley, et al., [16] suggest that continued research into the area of monitoring computer use in schools, with a particular focus on gender, is required. The current research will continue to monitor the online behaviours of boys in support of this agenda.

5 DISCUSSION

For the school at the centre of this research, presenting students with a personal laptop was a little like giving a set of car keys to a restless adolescent, eager to experience the thrill of the open road. Like a driving instructor explaining the road rules before handing over the keys, the School earnestly put in place policies, procedures and support mechanisms to help students on their journey. It also constructed a transparent policing system, and from time to time instituted a "blitz" to ensure that rules were observed. To a certain extent the controlled 8.00 a.m. to 5.00 p.m. environment within the School network works. Contraventions of the School's Acceptable Use Policy are under control and there is a sense of optimism about the pedagogical possibilities of laptops. However, the risk of wasteful, off-task and even subversive uses of digital devices is ever-present both on campus and in students' homes. Students in the digital world can readily use multiple devices (e.g. mobile phones, iPads and home computers) configuring these devices to run on a variety of networks (e.g. devices linked to mobile phones that act as Hot Spots). Further, students can download or share videos, images and software via Bluetooth networks or memory sticks before entering the unregulated offline environment to consume content or play games. Any "carrot and stick" approach clearly requires a more sophisticated educative dimension. However, whereas in the past, teachers and parents were able to role model appropriate behaviours and actions, in the digital world many parents and teachers feel alienated by a lack of expertise. So what can be done? This paper acknowledges the management of student distraction as a critical success factor in the implementation of 1:1 devices in the classroom, and does not attempt to offer flippant "silver bullet" solutions. Instead three themes are identified which may serve to illuminate future research and practice.

Theme 1: Holistic model

This research highlights the need for a holistic model to the management of student distraction, which includes at least five aspects:

- Documented ICT policies and procedures.
- Robust ICT built around student safety.
- Ongoing monitoring of how 1:1 devices are used by students.
- Ongoing evaluation of how educational programs are designed to take advantages of 1:1 devices.
- A visionary educative ICT agenda involving the whole school community.

Data from students, staff and parents collected in the first two years of the study suggests that policies and procedures are well documented and well understood. The selection of Apple laptops which included the parental controls feature, coupled with the work done at the School to ensure that these controls are not compromised within a networked environment, indicates a strong and effective ICT environment. Further, the e-safe monitoring program, implemented after the first year of the study has had a remarkable impact on reducing inappropriate behaviours on the School network, particularly in relation to pornographic material. The first three aspects of the model, therefore, are in place and subject to ongoing quality improvement.

Evaluation of how ICT are being used by teachers in the classroom is one aspect of the model that could be improved. If students are engaged with interesting and well-designed activities using ICT, then the tendency for distraction will be lessened [17]. The appointment of an ICT specialist at the School to help teachers envision opportunities to integrate ICT will no doubt have an impact. However, ongoing appraisal of the way in which ICT impacts on teaching and learning has been identified as an important consideration of managing student distraction. Finally, the development of a visionary educative ICT agenda [18] which involves the whole school community, embraces the variety of ICT, acknowledges the ways in which devices interact, and discusses ICT strengths, weaknesses opportunities and threats, would certainly generate a greater sense of ownership amongst all participants in the 1:1 implementation. How this educative agenda is framed and implemented is challenging in the face of the raft of other priorities faced by students, teachers, parents and school administrators. However, the importance of taking the whole community on the 1:1 implementation journey is crucial as was also acknowledged by LaRose, Rifon, and Enbody [19].

Theme 2: Community approach

Appropriate use of ICT transcends the management of student distraction in the classroom. It has important social and ethical implications, particularly for young people as they learn how to conduct themselves in society, and build relationships with their peers and family. The whole school community should be interested in the way in which values are explicitly and implicitly mediated through the Internet, particularly via pornographic and gaming content. These values will ultimately shape our future society, therefore, it is important that the whole school community embarks upon an educative journey that will inform and help to build a shared vision of what constitutes acceptable use of ICT and how this can be brought about. The current research has found that young male students are curious about pornography and gaming and as such will regularly push the boundaries of what is acceptable in school settings. It is proposed that involving teachers, parents and students in the dialogue will lead to more ownership, and ultimately, success.

Regular seminars and forums, involving parents, students and teachers could be implemented to help to demystify ICT and possibly re-harmonise households. Topics such as what constitutes an educational game, setting up and monitoring home networks, legal and ethical responsibilities associated with downloading material and sharing files, could all be of use to the school community. This approach requires energy and resources, but if responsible use of ICT is key to the success of 1:1 learning environments, then whole of community strategies are worth considering.

Theme 3: Active involvement

One of the recurrent themes to emerge from the current research is a sense of alienation that some parents feel as a result of the 1:1 laptop implementation. The study has found that when the screen comes up it sometimes forms a barrier between student and parent; eye contact is lost as the student becomes more engrossed in digital content; communication suffers and often parents are simply excluded from the student's learning if any is happening at all. One way to address alienation is to become involved. Parents who find themselves in this position usually require some ICT knowledge and an injection of confidence to adopt a more assertive posture. Making the curriculum readily available online and meeting with parents to ensure that they understand it has proven to be useful in the School. Setting up the home ICT environment to involve screen sharing can also help to make students' work more transparent.

There is strong evidence to suggest a relationship between parent involvement in a child's education and academic performance [20]. Therefore, schools should aim to optimise parent interest and not allow ICT to become an unnecessary barrier.

6 LIMITATIONS OF THE STUDY

The limitations of the current study are acknowledged. Firstly, the use of a one school case study method is limiting in terms of generalisability. Secondly, the single-sex disposition of the School has some advantages in drawing inferences, but also restricts application of findings. Finally, the study is at a relatively early phase of implementation and data collection is incomplete. Therefore, initial findings should be treated with some caution. As with many interpretive studies, the research has perhaps raised more questions than it has answered. Further research to establish and document boundaries between parents and schools in relation to duty of care in the digital world may be of use. From a pedagogical point of view, the desirability of using gaming and social networking tools in the curriculum as a way of reducing distraction is also contentious [21]. Finally, empirical studies focusing on teacher and parent involvement in Internet safety and acceptable ICT use both in and outside of the classroom would be highly valued as also discerned by Anastasiades and Vitalaki [7] and DeFranco [8].

7 CONCLUSIONS

This paper has tracked the implementation of a 1:1 laptop program in a school for boys in Perth, Western Australia, examining one facet of the implementation in detail: managing student distraction. It was found that clear and transparent policies and procedures, robust ICT and ongoing monitoring of student use of laptops are crucial components of an overall approach to managing distraction. However, it also found that these strategies are not enough. Ongoing evaluation of how educational programs are taking advantage of 1:1 devices, and a visionary educative ICT agenda encompassing the whole school community are required. A key aspect of this educative ICT agenda should target parents who may feel alienated from their child's learning as a result of the 1:1 laptop implementation. Specific strategies are required to encourage these parents to re-engage with their child's learning *through* ICT. Providing the whole school community with the opportunity to grow in this area is essential for a positive long term impact of the 1:1 laptop initiative.

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