One-to-one laptop program: Effect on boys' education

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CHAPTER 9. Conclusion

9.1 Chapter Overview

The final chapter completes the study by summarising the key findings and implications within the context of the study’s five research questions. The chapter also offers suggestions for further research.

9.2 Implications of the Findings of the Research

The above findings demonstrate the perspectives from all sets of participants about laptop use for teaching and learning. Initially, there were concerns about how laptops were being used for learning and the types of distractive behaviours that occurred. These concerns pre-empted the School to implement a suite of changes to enhance the potential of laptop use in classrooms. Some of these included:

- the enhanced parental control software;
- the introduction of e-Safe key-logging monitoring service;
- redesigning the Acceptable Use Framework of the school;
- employing a key ICT teacher to assist staff and students in classes;
- the introduction of a school portal for all stakeholders to use; and
- professional learning for teachers on laptop use for learning.

There were some differences in opinion in views between what students, teachers and parents perceived as a successful 1:1 laptop program. On the one hand, students were excited and motivated about learning whereas on the other teachers and parents were more cautious and at times anxious about the impact of 1:1 devices on learning. Inquisitive students, creative teachers, proactive leaders, and national/state policy directions were the core drivers, which ultimately would provide opportunities for students to become self-regulated and reflective life-long learners. However, five hindrances (previously discussed in Chapter Eight) linked to the 1:1 laptop program had a significant impact on the 1:1 laptop implementation. Three key themes emerged from the study which could act as a catalyst for positive
change in other settings: developing a culture for 1:1 laptop use in a school; re-defining teaching and learning outcomes in a 1:1 school; and, balancing the use of ICT.

9.2.1 Developing a culture for 1:1 laptop use in schools

A crucial stage in the implementation of a 1:1 device school is the formation of a well-founded understanding of what a 1:1 laptop program aims to achieve. Carefully considering the introduction of 1:1 initiatives in the first place may well foster an approach of transparency and understanding for all involved. Some ways in which schools can develop an outline for laptop use in schools could include:

- Providing teachers with specific teaching and learning strategies (e.g., differentiation, higher order thinking skills) targeting the use of laptops for learning.
- Supporting student use of laptops for learning in terms of ethical use, investigating, creating, communicating and managing and operating ICT.
- Engaging parents in the communication of 1:1 laptop programs with regular updates and examples of how to support their sons with the use of ICT.
- Becoming familiar with methods of addressing and managing distractions in a 1:1 classroom.
- Ensure schools implement safe networks that protect staff and students from inappropriate use of ICT with a range of strategies that include monitoring Internet use.
- With boys having a fascination with gaming, teachers need to be aware of these temptations and be active within classrooms. Similarly, teachers should consider the potential of gaming for learning.
- Encourage teachers to experiment with Web 2.0 technologies for collaboration, cooperation and communication purposes when using laptops, embracing constructivist approaches to learning.
• A pedagogical focus on core areas such as the differentiation of curriculum, where each student’s learning is tailored.

• Increasing the opportunities for students to collaborate and cooperate with each other, external communities, organisations or other schools.

• Encouraging students to take responsibility for their education with a focus of using mobile devices ethically.

• The promotion of good study habits incorporating 21st Century learning.

• Developing a school improvement plan focussed on improving academic outcomes.

These ideas could promote opportunities for an iterative dialogue with the stakeholders within a school and furthermore design a planned and targeted course of action that is transparent and supportive of teaching, learning and change as has been found by Caputo and Rastelli (2014). As was the case at the School, some teachers and parents were unsure about the 1:1 laptop program and were concerned about the impact on academic achievement and the intrusion of mobile devices in their classrooms and homes. However, through active communication and direction of school leadership teams, such guidance helped to reduce concerns and inform these groups about learning with 1:1 mobile devices. The School uncovered a range of emotions and parent and teacher views; though, these settled due to both the reactive and proactive initiatives used by the School. Introducing monitoring software to empower the School with knowledge of student laptop behaviour was key in underpinning a cultural change in how laptops were used for learning. These analytical data provided key snapshots of what sites students were accessing during school time. Secondly, the School invested both financially and in human resources in the creation of the position of an ICT facilitator to assist teachers, and at the same time working with students and parents. Providing parent sessions about setting up parental controls and educating parents on what to expect in using laptops for learning, were also changes made to engage parents further. These sessions helped to reduce the level of alienation of parents, one of the five hindrances identified in Chapter Eight.
9.2.2 Teaching and learning outcomes in 1:1 laptop schools

The study found that teachers were still predominantly administering high stakes summative examinations via pen and paper. Laptops were mainly used for formative assessment purposes with the focus being on assignments and continuous assessment. Furthermore, measuring the value or outcomes of ICT competencies of students, were not a high priority for teachers and parents.

Using NAPLAN as an indicator to monitor longitudinal performance in literacy and numeracy outcomes offers valuable insights into both cohorts. Comparing and contrasting previous cohorts facilitated comparisons, and collectively these comparisons served as one indicator. However, applying a wide-ranging approach where schools employ a variety of performance measures over time is needed. Some of these measures might include:

- assessing 21st century skills for student learning;
- measuring ICT competencies in context through the immersion of activities or assessments with a focus on creativity;
- monitoring the progress of 1:1 programs with ongoing school-wide evaluation of the provision of educational experiences for students using 1:1 devices; and
- promoting the active involvement of students, teachers and parents in the ongoing formative improvement of 1:1 programs with a focus on access to learning and sharing of information.

Applying these measures may be of benefit in developing a more refined approach to measuring outcomes in 1:1 schools using mobile devices for learning. Teachers in the study were placed in a challenging position of supporting a 1:1 laptop program, yet having to conform to the demands of high stakes testing such as NAPLAN and set curriculum outcomes. Laptops provide teachers and students access to a wide range of information and tools to supplement learning and enhancing creativity, however they also have the potential to distract students and
tempt students away from the core requirements of the curriculum. Teachers face a difficult challenge in balancing the use of ICT for learning within these constraints.

9.2.3 The balance of using ICT

Most student participants viewed the 1:1 laptop program a success and thought it was an essential part of learning both at home and school. Teacher participants expressed concerns about the potential distractions and temptations for students to be off-task (Bate et al., 2012b). However, these teachers also believed with the right balance that laptops were an integral part of teaching and learning.

Initially, the study uncovered the potential for students in a 1:1 laptop program to be seduced by the device and lose academic focus. However, over time, and as particularly observed in Cohort B, there was an intrinsic maturation and greater self-regulation of their own learning. Student participants from this older age cohort became reflective of the pressures involved in the upper year levels of middle school and the related learning area requirements that became more important over time. This shift away from the distractions of the Web and the seductive nature of ICT further emphasises the ability of mobile devices to be part of the teaching and learning solution rather than be framed as the ‘problem’.

Finally, the study has shown, that for students to be self-regulated learners, schools have a duty to monitor and provide students with feedback about expectations and importantly provide them with real world experiences. Sidelining these issues is not congruent with the 21st century approach to learning, where students are empowered with autonomy to make choices about their learning and actively apply their knowledge and capacity to use ICT innovatively (Beetham & Sharpe, 2013). Students from the study demonstrated a higher motivation and engagement towards learning when using a laptop for learning. Therefore, the arguments for 1:1 programs are compelling, certainly in terms of student satisfaction.

9.3 Suggestions for Future Research

As 1:1 mobile device programs continue to grow in schools, the focus on the use of these tools for teaching and learning in education continues to generate momentum (White, 2013), particularly with increased technology capacity and
relatively lower cost. Certainly in European schools, there is an increasing rate of adoption of 1:1 mobile devices for learning (European-Schoolnet, 2013). With this change and a higher saturation of 1:1 programs, dealing with potential effects of such programs continues to be an increasingly topical and relevant issue for schools. Additionally, with the continued diffusion of ICT in schools (Selwyn, 2010), teachers are expected to embrace methods promoting the use of ICT at a higher order of learning (Miller et al., 2008), and exploit the opportunities to communicate, investigate, create, manage and operate, and apply social and ethical practices (ACARA, 2010a).

In terms of the impacts of 1:1 laptop programs, the following four suggestions may be useful for others wishing to make applied and/or theoretical contributions. Firstly, more empirical studies that focus on boys’ education in a primary school, compared to middle school settings could provide schools with further evidence of how to make the ‘leap of faith’ into the use of 1:1 mobile devices for teaching and learning.

Secondly, as Tapscott (2009) articulated, schools are now required to change their approaches to teaching and learning to address the rapid changes taking place with students in the 21st century. Investing time to diversify away from pen and paper traditional examinations may also be of interest as discussed by Newhouse (2013). This research could potentially inform teachers of exemplary teaching and assessment practices and approaches to learning skills.

Thirdly, the role of parents in supporting students in 1:1 laptop or mobile device schools is an area with limited literature. This research could identify effective approaches for parents to support children in 1:1 schools. Specifying the types of approaches of parents who embrace, or are involved in the use of ICT as part of their child’s learning may offer some needed insights. This might be a step in demystifying some of the barriers between schools and home and possibly alleviate some of the apprehension around the use of laptops for learning. This research could assist schools in developing parent-school partnerships and by supporting parents with the provision of relevant information about laptop/mobile device use at school. The research and design of such a partnership may potentially decrease the hesitation to use ICT by some teachers and schools. This initiative may also provide valuable
information for parents who may not view the use of ICT as important and have a greater emphasis on traditional models of assessment and learning.

Finally, the area of gaming and learning continues to gain momentum within recent current literature and scholarly discussion (Gee, 2012; Klopfer et al., 2012). Macro- and micro-level politics have combined to produce a conservative approach to digital gaming although educational literature would indicate that innovation in this area may be fruitful (Bate et al., 2014). Further research into digital gaming might examine the range of cultural contexts in which digital gaming is introduced, paying particular attention to political and economic motivators that impact on decision-making and which ultimately affect student learning. Identification of key enablers that might encourage teachers to use digital games to innovate in the classroom could also be useful. Adoption of digital games in education requires careful consideration and planning (Chen & Hwang, 2014; Gee, 2005a). There are still pedagogical challenges facing teachers in terms of using digital games to stimulate higher order cognitive processes, better managing ICT rich classrooms, and minimising distractions from gaming. A crowded curriculum and high stakes assessment methods are also somewhat inconsistent with the promise that digital games bring to generating new forms of learning that focus on problem solving, exploration, investigation and creative work, and that ultimately support lifelong learning (Bate et al., 2014).

9.4 Final Comments

Chapter Nine has included a summary of the findings and discussion in relation to the five research questions. The implications of these findings are discussed and suggestions about some possible future research directions are made. The implications of the findings were also compared to previous studies.

The study comprised a cohort of male students from one school, their teachers and parents. Although small in size compared to previous large-scale research into 1:1 laptop program implementations, such as the Maine Learning Technology Initiative (Waters, 2009), the participants provided authentic feedback that endeavoured to be credible and portray an accurate reflection of the context of the study. Theoretical discussion included how laptops were used for teaching and
learning with an attempt to take an all-inclusive view of the complexities of using 1:1 laptop programs.

It is argued that a conservative political consensus was reached at the School and that this consensus thrived in an environment of complexity and uncertainty. A disconnect between the rhetoric of preparing students for the digital age (Selwyn, 2011) and the realities of educating students in an environment of accountability was evident, and this disconnect, coupled with rapid ICT change, was a source of ongoing confusion at macro and micro levels. At the macro-level, the understanding of national ICT policy by the School community, including how this relates to other structural features of the education system (e.g., high stakes assessment), shapes decision-making, action (or inaction) and ultimately students’ use of ICT. Simultaneously at the micro-level, the experiences that students and teachers have in using ICT, the successes and the failures, combine to form dispositions that become entrenched. The result for the School was a state of uneasy conservatism, which limited positive change.

Research has shown that ICT policy is shaped by broader political and economic conditions (Austin & Hunter, 2013). In Australia, the Digital Education Revolution (DER), launched in 2008, set the agenda for the deployment and use of ICT in schools. Central platforms of the DER were the provision of 1:1 access to computers between Years Nine and Twelve, and the development of educational learning resources through the Learning Federation initiative (now the National Digital Learning Resources Network). The policies implicit in the DER have sent a strong message to schools that digital technologies are synonymous with notions of “progress” and “competitiveness”, and indeed engagement with digital technologies are indispensable for contemporary students to function in the new knowledge-based economy. The School embraced these ideas; indeed the DER provided a compelling rationale for the introduction of the 1:1 laptop initiative in the first place.

Finally, 1:1 laptop programs can be a ‘doubled-edged sword’. On the one hand, they can provide enhanced opportunities for student-centred learning where access to electronic resources along with communication and creative tools are ubiquitous. On the other hand, they can be antagonistic to the learning process seducing certain types of students to spend time on wasteful and even anti-social activities. Learners
possessing a strong work ethic and well-developed organisational skills are more likely to be self-directed and educationally responsible with 1:1 devices. If these students are provided with relevant and challenging curricula, then positive educational outcomes might be expected to emerge from the 1:1 laptop program. A successful 1:1 laptop implementation, therefore, is a partnership between educator and learner (Weston & Bain, 2010), both taking responsibility for the development and maintenance of effective educational learning spaces. Asking students, teachers and parents how much and how they use their laptops provided much needed insights into some important dilemmas that need to be confronted if educational technologies are to be harnessed for the benefit of future generations.