CHAPTER 5.
Findings: Boys’ Laptop Experiences

5.1 Introduction

This chapter reports how two cohorts of male junior (Cohort A) and middle (Cohort B) school students used their laptops in their daily lives for the three year period of the study. Students’ use of their laptops is considered in context of schooling and that of the relevant perceptions of stakeholders, which comprise students, teachers, school leaders and parents.

As discussed in Chapter Four the ICT capability learning continuum (ACARA, 2010a) was the lens through which the study viewed student action. This chapter identifies themes that should be considered in the implementation of 1:1 laptop or mobile device programs within schools. The chapter draws on data from the annual questionnaire surveys (Cohort A: N = 56 at inception and Cohort B: N = 136 at inception), the annual semi-structured interviews (Cohort A: N = 10 and Cohort B: N = 20), five student forums held on the specific topic of gaming, and 30 classroom observations to investigate laptop use from the perspective of the student participants.

5.2 Student Background

The focus of this chapter is to understand how the boys used their laptops for learning. Educational literature suggests that students are motivated by working with ICT at school, however, their experiences can vary depending on their gender (Heemskerk, ten Dam, Volman, & Admiraal, 2009). There appears to be limited published research specifically into how male students use their laptops or mobile devices for learning. This study investigated a 1:1 laptop gender specific initiative to contribute to previous research which has focussed more generally on 1:1 laptop initiatives (Bebell & O'Dwyer, 2010; Lei & Zhao, 2008; Newhouse, 2005; Won Hur & Oh, 2012).
5.2.1 School attendance

Previous research provides no evidence to suggest 1:1 laptop programs improve school attendance rates (Abell-Foundation, 2008). However, recently in a research project in the United States of America, student involvement in a 1:1 laptop program seemed to indicate a reduction in the number of unexcused absences from the beginning to the end of the year (Rosen & Beck-Hill, 2012). The National Report for Schooling in Australia (ACARA, 2010b) presents the student rates of attendance for the comparative cohorts between 2007 to 2010. Table 5.1 displays the attendance data for male students within the Catholic sector of Western Australia between the years of 2007 to 2010. Included are the attendance rates for both Cohort A and Cohort B between the years of 2010 (first year) to 2012 (third year). The School attendance rates were similar to other schools in the same sector and did not substantially change through the period of the study.

Table 5.1  
**Male Student Attendance Rates, Catholic School Sector, State and Territory, 2007-2010**

<table>
<thead>
<tr>
<th>Year</th>
<th>Year Five</th>
<th>Year Six</th>
<th>Year Seven</th>
<th>Year Eight</th>
<th>Year Nine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2007</td>
<td>92.0</td>
<td>92.0</td>
<td>93.0</td>
<td>93.0</td>
<td>92.0</td>
</tr>
<tr>
<td>2008</td>
<td>93.0</td>
<td>91.0</td>
<td>93.0</td>
<td>93.0</td>
<td>92.0</td>
</tr>
<tr>
<td>2009</td>
<td>93.0</td>
<td>94.0</td>
<td>93.0</td>
<td>94.0</td>
<td>94.0</td>
</tr>
<tr>
<td>2010</td>
<td>94.0</td>
<td>94.0</td>
<td>95.0</td>
<td>94.0</td>
<td>94.0</td>
</tr>
<tr>
<td><strong>Mean (2007 – 2010)</strong></td>
<td><strong>93.0</strong></td>
<td><strong>92.7</strong></td>
<td><strong>93.5</strong></td>
<td><strong>93.5</strong></td>
<td><strong>93.0</strong></td>
</tr>
<tr>
<td>Cohort A</td>
<td>90.7</td>
<td>94.6</td>
<td>93.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohort B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>93.0</td>
<td>93.6</td>
<td>90.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The following section of the chapter will discuss students’ initial views about learning with laptops soon after the implementation of the 1:1 laptop program.

5.2.2 Students’ knowledge, skills and experiences at the inception of the study

At the beginning of the 1:1 laptop implementation (first year – March 2010) all 192 student participants from Cohort A and Cohort B were asked to complete a questionnaire, which consisted of 13 items. The purpose of the questionnaire was to gather baseline data, which assisted in providing background information about
Cohort A and Cohort B. In the interest of maintaining internal consistency in this chapter, a reference to an ‘Item’ refers to a question in the annual questionnaire, which is part of the quantitative arm of the study. Similarly, reference to a ‘Question’ indicates a question asked in the annual interview as part of the qualitative arm of the study.

Item One of the inception questionnaire presented 15 learning based statements to ascertain what type of work students experienced at school. Students were invited to indicate the extent to which they engaged in various classroom learning experiences by selecting one of four options on a Likert-type scale: rarely, some, often and mostly. Responses were then coded where 1 = rarely, 2 = some, 3 = often, and 4 = many. Figure 5.1 presents the results.

![Figure 5.1. Student mean responses for classroom learning experiences at the beginning of the study for Cohort A and Cohort B combined.](image)

The two highest scores were: “I work at my own pace” with a mean score of 3.5 ± 0.1 and “I find it easy to work and learn” with a mean score of 3.4 ± 0.1. Overall, most student responses were concentrated in the options of often to some. When asked to respond to the Likert items: “I find the activities challenging” and “I create reports on my investigations,” students recorded a mean scores of 2.4 ± 0.2 for both, indicating a higher concentration of respondents ticking the some option.
Item two required students to respond to a range of applications about how laptops were used at the School during the first term of the first year of the study (see Figure 5.2 for student mean score). These were in the form of nine Likert items, part of a Likert-type scale: 1 = never, 2 = rarely, 3 = some, and 4 = often. It appeared that the students had used their laptops between the often to some options for: basic skills (3.6 ± 0.2), word processing (3.4 ± 0.2), graphics (3.2 ± 0.2), email (3.0 ± 0.2), Internet (3.9 ± 0.2) and other functions (e.g. Google Earth, Photo Booth, Atlas) (3.2 ± 0.2). Laptop use was not at the same level for video or audio (2.8 ± 0.2), spreadsheets (2.7 ± 0.2), and computer programs (2.9 ± 0.2). The result indicates that the students regularly used laptops for a small number of commonly reported functions. Similarly, a study by Keengwe et al. (2012) found laptops were regularly used for word processing, searching the Internet and creating presentations.

![Figure 5.2. Student mean scores for identified laptop competencies at the inception of the study for Cohort A and Cohort B combined.](image)

Item Four invited students to respond to a set of student impression statements about how they felt about using laptops at school (see Figure 5.3 for student mean scores). Response options were in the form of eight Likert items, part of a Likert-type scale: 1 = never, 2 = rarely, 3 = some, and 4 = mostly. The data suggests that, students felt good about using their laptops and had ticked either the mostly or some options. The lowest scoring item was, “I am given a choice to use a laptop for school work”. This may indicate that teachers, initially at least, were not inclined to give
students too much choice preferring instead to provide a relatively traditional learning environment.

Figure 5.3. Students’ mean responses for impressions about laptop use at the School at the beginning of the study for Cohort A and Cohort B combined.

Item Five required student participants to indicate the amount of time they used laptops at school each day. Laptops were used: less than 30 minutes (13.5%), 30 minutes (10.4%), 1 hour (23.5%), 2-3 hours (34.2%) and more than 3 hours (18.3%). It is significant that over three quarters of students from Cohort A and Cohort B (76.0%), indicated using laptops more than one hour a day (see Figure 5.4).

Figure 5.4. Initial student estimation of amount of time in minutes laptops were used at school each day.
According to Item Six, 73.4% of students reported not having difficulties using their laptop. Item Seven showed 94.2% of the students believed there was something they enjoyed about using the laptop. Item Eight reported 30.7% of the students wanted to improve their knowledge and skills of how to use their laptop.

These findings at the inception of the research suggest students were enthusiastic to use their device. Students used their laptops regularly for learning and outside of school. Most students (76.0%) used their laptops for more than one hour a day in class for learning.

5.2.3 Perceptions of the learning environment: First year to third year

The annual student questionnaire was administered to both Cohort A and Cohort B separately in November of the first year (2010), second year (2011), and third year (2012). Both questionnaires were the same in design and content and consisted of 25 items relating to student learning and laptop use.

Item One consisted of a mixture of learning statements (Newhouse, 2005) requiring students from Cohort A and Cohort B (Table 5.2 and Table 5.3) to respond to 13 statements about their learning (Likert items), part of a Likert-type scale: 1 = never, 2 = rarely, 3 = sometimes, and 4 = often. The following conclusions are drawn from Cohort A (refer to Table 5.2) and their views about what best described their classroom experiences. The highest recorded mean score was (3.7 ± 0.1) for Item One in the first year (d): “I work at my own pace”. Overall, students predominately ticked the sometimes option for the 13 student statements about their learning. A theme to emerge from the data was the decline in Item One (h): “I am really interested in the activities.” There was a gradual diminution of -0.2 annually in the mean score for the three years of the study from 3.6 ± 0.2 (first year) to 3.2 ± 0.2 (third year). This change was statistically significant (One-Way ANOVA, p < 0.01).
Table 5.2
*Cohort A Student Participants Classroom Experiences Annual Mean Scores: Item One of Questionnaire*

<table>
<thead>
<tr>
<th>Learning Statements (Cohort A: N = 56)</th>
<th>First Year Mean (SEM)</th>
<th>Second Year Mean (SEM)</th>
<th>Third Year Mean (SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) I do activities to investigate the real world</td>
<td>3.0 (0.12)</td>
<td>3.4 (0.09)</td>
<td>3.2 (0.10)</td>
</tr>
<tr>
<td>(b) I access up-to-date information for my work</td>
<td>3.6 (0.10)</td>
<td>3.5 (0.09)</td>
<td>3.5 (0.08)</td>
</tr>
<tr>
<td>(c) I help decide how to do an activity</td>
<td>2.8 (0.11)</td>
<td>2.9 (0.11)</td>
<td>2.9 (0.10)</td>
</tr>
<tr>
<td>(d) I work at my own pace</td>
<td>3.7 (0.07)</td>
<td>3.6 (0.07)</td>
<td>3.6 (0.09)</td>
</tr>
<tr>
<td>(e) I do group work activities</td>
<td>3.2 (0.10)</td>
<td>3.1 (0.09)</td>
<td>3.1 (0.09)</td>
</tr>
<tr>
<td>(f) I am assessed on the activities I do rather than just tests</td>
<td>2.9 (0.10)</td>
<td>3.2 (0.09)</td>
<td>3.3 (0.10)</td>
</tr>
<tr>
<td>(g) I find the activities challenging</td>
<td>2.6 (0.10)</td>
<td>2.8 (0.10)</td>
<td>3.0 (0.10)</td>
</tr>
<tr>
<td>(h) I am really interested in the activities</td>
<td>3.6 (0.08)</td>
<td>3.4 (0.09)</td>
<td>3.2 (0.09)</td>
</tr>
<tr>
<td>(i) I find and use information about a problem or task</td>
<td>3.3 (0.09)</td>
<td>3.5 (0.08)</td>
<td>3.5 (0.09)</td>
</tr>
<tr>
<td>(j) I analyse information to make decisions in activities</td>
<td>3.2 (0.11)</td>
<td>3.4 (0.08)</td>
<td>3.2 (0.11)</td>
</tr>
<tr>
<td>(k) I create reports on my investigations</td>
<td>2.7 (0.11)</td>
<td>2.8 (0.13)</td>
<td>2.5 (0.09)</td>
</tr>
<tr>
<td>(l) I am given help to learn in the best way for me</td>
<td>3.3 (0.11)</td>
<td>3.3 (0.10)</td>
<td>3.2 (0.10)</td>
</tr>
<tr>
<td>(m) I find it easy to work and learn</td>
<td>3.7 (0.08)</td>
<td>3.5 (0.10)</td>
<td>3.5 (0.09)</td>
</tr>
</tbody>
</table>

By the conclusion of the study, Cohort A indicated learning became increasingly challenging whilst progressing from the junior to middle school. The mean score for Item One (g): “I find the activities challenging” between the first year (2.6 ± 0.2) and third year (3.0 ± 0.2) increased by 0.4, which was a statistically significant increase (One-Way ANOVA, p < 0.01). The results suggest an enthusiastic outlook towards learning for junior (primary) school students, which is consistent with Johnson and Holdway’s (2007) review of the literature about attitudes towards academic achievement and student satisfaction.

The three major themes arising from Item One for Cohort B (as seen in Table 5.3) were: (b) “I access up-to-date information for my work” (3.4 ± 0.1), (i) “I find and use information about a problem or task” (3.4 ± 0.1), (m) “I find it easy to work and learn” (3.4 ± 0.1), and (d) “I work at my pace” (3.6 ± 0.1). This last Likert item recorded the consistently highest annual mean scores. There was less group work occurring over time with the reduction of the mean for: (e) “I do group work activities” from the first year (3.5 ± 0.1) to third year (2.9 ± 0.1). The third year mean scores are shown for students who consistently ticked the options of rarely and never for Item One: (g) “I find the activities challenging” (2.8 ± 0.1), (k) “I create reports
on my investigations” (2.8 ± 0.1), and (h) “I am really interested in the activities” (2.9 ± 0.1). These three Likert items recorded the lowest annual mean scores for Item One of the questionnaire.

**Table 5.3**
*Cohort B Student Participants Classroom Experiences Annual Mean Scores: Item One of Questionnaire*

<table>
<thead>
<tr>
<th>Learning Statements (Cohort B: N = 136)</th>
<th>First Year Mean (SEM)</th>
<th>Second Year Mean (SEM)</th>
<th>Third Year Mean (SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) I do activities to investigate the real world</td>
<td>3.1 (0.07)</td>
<td>3.1 (0.06)</td>
<td>3.2 (0.05)</td>
</tr>
<tr>
<td>(b) I access up-to-date information for my work</td>
<td>3.4 (0.06)</td>
<td>3.4 (0.06)</td>
<td>3.5 (0.06)</td>
</tr>
<tr>
<td>(c) I help decide how to do an activity</td>
<td>3.2 (0.07)</td>
<td>3.0 (0.07)</td>
<td>2.9 (0.06)</td>
</tr>
<tr>
<td>(d) I work at my own pace</td>
<td>3.6 (0.06)</td>
<td>3.6 (0.06)</td>
<td>3.5 (0.06)</td>
</tr>
<tr>
<td>(e) I do group work activities</td>
<td>3.5 (0.06)</td>
<td>3.2 (0.06)</td>
<td>2.9 (0.06)</td>
</tr>
<tr>
<td>(f) I am assessed on the activities I do rather than just tests</td>
<td>3.2 (0.07)</td>
<td>3.1 (0.07)</td>
<td>3.1 (0.06)</td>
</tr>
<tr>
<td>(g) I find the activities challenging</td>
<td>2.8 (0.06)</td>
<td>2.9 (0.06)</td>
<td>2.8 (0.05)</td>
</tr>
<tr>
<td>(h) I am really interested in the activities</td>
<td>3.0 (0.07)</td>
<td>2.8 (0.06)</td>
<td>2.9 (0.05)</td>
</tr>
<tr>
<td>(i) I find and use information about a problem or task</td>
<td>3.4 (0.06)</td>
<td>3.3 (0.06)</td>
<td>3.4 (0.06)</td>
</tr>
<tr>
<td>(j) I analyse information to make decisions in activities</td>
<td>3.2 (0.07)</td>
<td>3.2 (0.06)</td>
<td>3.2 (0.06)</td>
</tr>
<tr>
<td>(k) I create reports on my investigations</td>
<td>2.7 (0.08)</td>
<td>2.7 (0.07)</td>
<td>3.0 (0.07)</td>
</tr>
<tr>
<td>(l) I am given help to learn in the best way for me</td>
<td>3.2 (0.07)</td>
<td>3.0 (0.07)</td>
<td>3.0 (0.07)</td>
</tr>
<tr>
<td>(m) I find it easy to work and learn</td>
<td>3.5 (0.07)</td>
<td>3.4 (0.06)</td>
<td>3.4 (0.06)</td>
</tr>
</tbody>
</table>

Further analysis of the data was conducted for Item One, where an Independent Samples t-test of difference was conducted for Cohort A and Cohort B. Table 5.4 demonstrates this procedure and shows where a difference of statistical significance occurs.
Table 5.4
Independent Sample t-Test for Difference in Mean Responses Between Cohort A and Cohort B: Item One

<table>
<thead>
<tr>
<th>Item One</th>
<th>Mean difference</th>
<th>Std. Error diff.</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) I do activities to investigate the real world</td>
<td>.045</td>
<td>.070</td>
<td>.636</td>
<td>244.1</td>
<td>.525</td>
</tr>
<tr>
<td>(b) I access up-to-date information for my work</td>
<td>.077</td>
<td>.060</td>
<td>1.273</td>
<td>290.3</td>
<td>.204</td>
</tr>
<tr>
<td>(c) I help decide how to do an activity</td>
<td>-.157</td>
<td>.071</td>
<td>-2.216</td>
<td>273.9</td>
<td>.027</td>
</tr>
<tr>
<td>(d) I work at my own pace</td>
<td>.058</td>
<td>.055</td>
<td>1.066</td>
<td>339.5</td>
<td>.287</td>
</tr>
<tr>
<td>(e) I do group work activities</td>
<td>-.017</td>
<td>.064</td>
<td>-.267</td>
<td>309.0</td>
<td>.790</td>
</tr>
<tr>
<td>(f) I am assessed on the activities I do rather than just tests</td>
<td>-.019</td>
<td>.069</td>
<td>-.271</td>
<td>294.8</td>
<td>.787</td>
</tr>
<tr>
<td>(g) I find the activities challenging</td>
<td>-.053</td>
<td>.068</td>
<td>-.782</td>
<td>256.2</td>
<td>.435</td>
</tr>
<tr>
<td>(h) I am really interested in the activities</td>
<td>.507</td>
<td>.062</td>
<td>8.136</td>
<td>315.9</td>
<td>.000**</td>
</tr>
<tr>
<td>(i) I find and use information about a problem or task</td>
<td>.074</td>
<td>.061</td>
<td>1.197</td>
<td>295.7</td>
<td>.232</td>
</tr>
<tr>
<td>(j) I analyse information to make decisions in activities</td>
<td>.073</td>
<td>.067</td>
<td>1.092</td>
<td>277.4</td>
<td>.276</td>
</tr>
<tr>
<td>(k) I create reports on my investigations</td>
<td>-.153</td>
<td>.077</td>
<td>-1.996</td>
<td>300.1</td>
<td>.047</td>
</tr>
<tr>
<td>(l) I am given help to learn in the best way for me</td>
<td>.213</td>
<td>.072</td>
<td>2.947</td>
<td>293.3</td>
<td>.003**</td>
</tr>
<tr>
<td>(m) I find it easy to work and learn</td>
<td>.134</td>
<td>.062</td>
<td>2.151</td>
<td>305.8</td>
<td>.032</td>
</tr>
</tbody>
</table>

Note. This table considers the differences between the overall means for November 2010 (first year) to November 2012 (third year), for Cohort A and Cohort B. ** Indicates significance at the p < 0.01 level.

The analysis of the data confirmed that for two of the 13 student learning statements: Item One (h) “I am really interested in the activities” and (l) “I am given help to learn the best way for me” there were statistically significant differences in the mean responses between the two cohorts. Figure 5.5 and Figure 5.6 demonstrate a difference between mean scores for Cohort A and Cohort B. These two differences in mean score between the Cohorts was statistically significant in each case (Ind. Samples t-test, p <0.01). These differences between the cohorts, specifically relate to research question four – differences between junior and middle school implementation.
Figure 5.5. Mean responses by students to Item one (h) I am really interested in the activities for Cohort A and Cohort B.

Possible reasons for Cohort A having greater interest in activities may have been due to the fact that there were higher levels of differentiation, greater levels of learning engagement, and the stability of being in predominately in a single classroom. A possible reason for the student perception that they were given more help in Junior School than Middle School could be teachers in a junior setting spend more time with their students, and subsequently may be better equipped to support the needs of junior students. This will be discussed further in Chapter Nine.

Figure 5.6. Mean responses by students to Item one (l) I am given help to learn in the best way for me for Cohort A and Cohort B.
5.2.4 Time spent using laptops: First year to third year

The effective use of laptops should include questions about how much time laptops are used, and for what purposes. Spies (2010, p. 1) suggested that teachers should embrace the opportunity to use laptops for learning:

Why I believe, we should embrace technology (including laptops) and thus use it in our classrooms … is that this generation of learners, primarily the millennials (born from 1982 to 2002) have grown up with technology and use it as a primary method of learning.

The annual questionnaire recorded consistent data in relation to how much time students reported using their laptops from inception to the third year. Item Four of the questionnaire required student participants to report the amount of time they used laptops at school for each day of the week. These were in the form of five Likert items, part of a Likert-type scale: 1 (less than 30 minutes), 2 (30 minutes), 3 (one hour), 4 (two to three hours) and 5 (more than 3 hours). Students from both cohorts reported using laptops between the one hour to two to three hour options. In the third year, there was a sharp rise in the mean score from 3.1 ± 0.1 to 3.7 ± 0.1, which was statistically significant. (One-Way ANOVA, p < 0.01). This increase could suggest a possible link associated with laptop use and the transition from junior to middle school (see Figure 5.7).

![Figure 5.7. Estimated time spent using a laptop at school (resolved by day of week) - Cohort A.](image-url)
The middle school learning load compared to a junior school learning load increased over the study. This increase was noted by four students in Cohort A:

Over the last 12 months, I’ve used my laptop mainly for schoolwork and homework at home. Sometimes it is just though looking something up on the Internet but we use it quite a lot at school for schoolwork, a couple of hours a day roughly. Homework is about roughly an hour to two hours at home and it is just Internet for that, looking up, you know, researching for assignments and stuff like that. There is definitely a lot more work in the middle school than the junior school. (A052012).

Cohort B demonstrated a fluctuating mean score for the amount of time spent using laptops. The mean score increased significantly from the first year (3.4 ± 0.1) to third year (3.7 ± 0.1); (One-Way ANOVA, p < 0.01). Mean scores for Cohort B are shown in Figure 5.8.

Figure 5.8. Estimated time spent using a laptop at school (resolved by day of the week) – Cohort B.

Consistent with the questionnaire at the beginning of the 1:1 laptop program, students from both cohorts were using their laptops more than one hour a day. The overall three year mean score for Cohort B (3.6 ± 0.1) was higher than Cohort A (3.2 ± 0.1); (Ind. Samples t-test, p < 0.01). As discussed in Chapter Four, the reported laptop use in time by students was consistent with the views of teachers.
5.2.5 Laptop use outside of school.

Students from Cohort A and Cohort B were asked to respond to Item Three (h): “I use a laptop outside of school.” A Likert-type scale of 1 (never), 2 (rarely), 3 (sometimes), and 4 (often) was used. The three year mean score for students in Cohort A was $3.5 \pm 0.1$ and $3.8 \pm 0.1$ for Cohort B; significantly different (Ind. Samples t-test, $p < 0.01$). Figure 5.9 presents the mean scores for laptop use outside of school being mainly between the options of *sometimes* to *often*.

**Figure 5.9.** Mean responses by students to Item three (h): I use a laptop outside of school.

Item 14 of the annual questionnaire required students to indicate how they used their laptops at home. Item 14 was similar to those questions posed to students across Australia in the Australian Communications and Media Authority (ACMA) CyberSmart initiative (ACMA, 2013). Item 14 consisted of eight Likert items, part of a Likert-type scale: 1 (never), 2 (once a month), 3 (every two weeks), 4 (two to three times a week) and 5 (everyday). Table 5.5 presents the mean scores for each year and an overall mean for both cohorts.
### Table 5.5

**Student Laptop Use at Home: Cohort A and Cohort B**

<table>
<thead>
<tr>
<th>Laptop Use</th>
<th>First Year Mean (SEM)</th>
<th>Second Year Mean (SEM)</th>
<th>Third Year Mean (SEM)</th>
<th>Three Year Mean (SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cohort A</td>
<td>Cohort B</td>
<td>Cohort A</td>
<td>Cohort B</td>
</tr>
<tr>
<td>(a) Surfing the web</td>
<td>4.0 (0.15)</td>
<td>4.7 (0.07)</td>
<td>4.5 (0.10)</td>
<td>4.7 (0.06)</td>
</tr>
<tr>
<td>(b) Emails</td>
<td>3.1 (0.15)</td>
<td>3.1 (0.11)</td>
<td>3.2 (0.15)</td>
<td>3.3 (0.10)</td>
</tr>
<tr>
<td>(c) Instant messaging/MSN</td>
<td>1.4 (0.13)</td>
<td>3.0 (0.15)</td>
<td>1.8 (0.18)</td>
<td>2.7 (0.15)</td>
</tr>
<tr>
<td>(d) Webcam chatting</td>
<td>1.5 (0.13)</td>
<td>2.6 (0.14)</td>
<td>1.8 (0.16)</td>
<td>2.8 (0.13)</td>
</tr>
<tr>
<td>(e) Social networking (e.g. Facebook)</td>
<td>1.6 (0.17)</td>
<td>3.5 (0.15)</td>
<td>2.3 (0.21)</td>
<td>3.9 (0.14)</td>
</tr>
<tr>
<td>(f) Watching and sharing information</td>
<td>2.7 (0.18)</td>
<td>3.7 (0.11)</td>
<td>3.0 (0.19)</td>
<td>4.0 (0.09)</td>
</tr>
<tr>
<td>(g) Word processing/Power Point</td>
<td>4.2 (0.11)</td>
<td>4.4 (0.08)</td>
<td>4.1 (0.12)</td>
<td>4.3 (0.08)</td>
</tr>
<tr>
<td>(h) Playing games</td>
<td>3.1 (0.14)</td>
<td>3.3 (0.11)</td>
<td>3.2 (0.19)</td>
<td>3.0 (0.12)</td>
</tr>
</tbody>
</table>

The data suggest that Cohort A students increased their use of laptops over time for communication and exploration purposes. It is interesting that Cohort A in the Third Year exhibited a lower mean than Cohort B in Year One of the study. Although both of these statistics represent Year Seven, Cohort A in their third year had a more lukewarm attitude towards social networking tools possibly due to the tools becoming less attractive as they were implemented.

An independent samples test (t-test) was conducted for Item 14 to determine if there were any significant differences between Cohort A and Cohort B. Of the eight Likert items, differences between mean scores for five Items were statistically significant at the $p < 0.01$ level, as shown in Table 5.6.
### Table 5.6

**Independent Samples t-Test for Item 14**

<table>
<thead>
<tr>
<th>Item 14 – Laptop use at home</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean difference [Cohort A] - [Cohort B]</td>
<td>Std. Error Difference</td>
<td>t</td>
<td>df</td>
</tr>
<tr>
<td>(a) Surfing the web</td>
<td>-.360</td>
<td>.083</td>
<td>4.354</td>
<td>243.8</td>
</tr>
<tr>
<td>(b) Emails</td>
<td>-.031</td>
<td>.105</td>
<td>.300</td>
<td>295.6</td>
</tr>
<tr>
<td>(c) Instant messaging/MSN</td>
<td>-.889</td>
<td>.140</td>
<td>6.332</td>
<td>356.9</td>
</tr>
<tr>
<td>(d) Webcam chatting</td>
<td>-.810</td>
<td>.119</td>
<td>6.779</td>
<td>347.1</td>
</tr>
<tr>
<td>(e) Social networking-</td>
<td>-1.775</td>
<td>.144</td>
<td>12.366</td>
<td>293.4</td>
</tr>
<tr>
<td>Faceook or Myspace</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Watching and sharing</td>
<td>-.812</td>
<td>.122</td>
<td>6.643</td>
<td>256.9</td>
</tr>
<tr>
<td>information-YouTube etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Word processing/</td>
<td>-.100</td>
<td>.083</td>
<td>1.213</td>
<td>292.6</td>
</tr>
<tr>
<td>PowerPoint/Keynote</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Playing games</td>
<td>.175</td>
<td>.121</td>
<td>-1.446</td>
<td>297.3</td>
</tr>
</tbody>
</table>

**Note.** If Sig. < 0.01, the difference is said to be significant at the p < 0.01 level (also denoted with ***) . If Sig. < 0.05 only, the difference is said to be significant at the p < 0.05 level (also denoted with **).

The following section discusses the mean as an overall three year mean. Item 14 (a): “Surfing the web” recorded the highest three year mean for both Cohort A (3.7 ± 0.1) and Cohort B (4.7 ± 0.1). Cohort A recorded a mean of 2.0 ± 0.2 and Cohort B recorded a mean of 2.8 ± 0.2 for Item 14 (e): “Instant messaging/MSN”. Item 14 (d): “Web chatting” Cohort A (1.8 ± 0.2), and Cohort B (2.6 ± 0.1). There were increases between the first year and third year of the reported use of Item 14 (e): ‘social networking’ for both cohorts. The mean score for Cohort A increased by 0.8 (1.6 ± 0.1 to 2.4 ± 0.1) and Cohort B also increased by 0.7 from the first year to the third year (3.4 ± 0.1 to 4.1 ± 0.1). Both of these increases indicate the use of social media rose quickly over the study. Item 14 (f): “Watching and sharing information” recorded a three year mean of 3.1 ± 0.1 for Cohort A and 3.9 ± 0.1 for Cohort B. Clearly, students from Cohort B were more attracted to the Web and social media. These themes will be further discussed in the Communicating with ICT and ethics, issues and ICT sections of this chapter.

The 30 student participants selected for the qualitative interviewing were asked the following question (18): “If you use your laptop outside of school how do you use it?” The total coded responses listed indicated that laptops were being used for:
homework and assignments (66), social media (34), searching the Internet (19), playing computer games (16) and listening to music (12). The following examples attest to the high number of responses for homework and assignments:

Well, I don’t really use it much out of school. I usually use it for homework, researching or just doing spelling, things like that. Sometimes I might go on a game for half an hour or so just to have a bit of fun. (A032010)

I mainly use my laptop for homework accessing the Internet, communicating with my friends by Facebook and accessing You Tube. But predominantly I am using it for homework purposes because the work is increasing from subject to subject each year. (B222012)

Of the 30 students, five from Cohort A and six from Cohort B reported not using laptops for playing computer games at home. These 11 students preferred using specific gaming devices such as Xbox, Wii, PlayStation, DS and PSP:

I think a major factor is that people aren’t really interested in gaming on their laptop as much. People are more into devices like the Xbox or PlayStation and the laptop’s just becoming more and more just a school thing and then when they get home, that’s when it starts. (Gaming Forum 5 Cohort B 2012)

The use of laptops at home was predominantly for completing assignments and homework. Students also used their laptops for communication purposes and using the Internet. It also emerged that students preferred using gaming devices other than their laptops to play games. This preference is consistent with data analysis presented in Table 5.5 which shows a reduction in the use of the laptop for playing games in both cohorts. Figure 5.10 displays the three year pooled response frequencies of students’ responses for Item 22, specifying the type of game console owned.
Chapter 5: Boys’ laptop experiences

5.2.6 Types of laptop uses at school

Item Two required students to respond to the 14 Likert items, part of a Likert-type scale: 1 (never), 2 (rarely), 3 (sometimes) and 4 (often). These 14 items will be categorised and discussed across the five organising elements of the framework: Managing and operating ICT, Applying social and ethical protocols and practices when using ICT, Investigating with ICT, Creating with ICT, and Communicating with ICT.

5.3 Managing and Operating ICT

5.3.1 Types of software applications used

Item Nine of the annual questionnaire invited students to list software used at the School. Both cohorts reported using similar types for learning. Google recorded the highest response from both Cohort A (n = 29) and Cohort B (n = 82). It was interesting the respondents considered Google, a Web search engine, a program or an application. Pages, Keynote and Numbers were the three programs from the Apple iWork package installed on student laptops registering the highest response for both cohorts. Notably the Adobe Suite of software was the fourth most mentioned type of software; however, predominately used with Cohort B. Recorded frequencies from the student participants for the programs and applications used are shown in Figure

![Figure 5.10. Types of gaming consoles owned by student participants.](image-url)
5.11. Caution is required in this instance as students may have been unable to reliably name the software program or application in all instances.

![Types of programs and applications](chart.png)

*Figure 5.11. Student participants’ coded responses to Item Eight of the annual questionnaire: Listed software used at the School.*

### 5.3.2 Operational skill areas

Item Eight of the questionnaire required student participants to indicate their level of proficiency for 11 skill areas as seen in Figure 5.12 and Figure 5.13. As in Chapter Four, the study was interested in the options of *advanced* and *competent use*. This is of most interest under the structure set in place where student participants were able to select multiple answers: 1 (*none*), 2 (*basic*), 3 (*competent*), and 4 (*advanced*).
Figure 5.12. Cohort A three year pooled frequencies of responses for ICT competencies using laptops.

Figure 5.13. Cohort B three year pooled frequencies of responses for ICT competencies using laptops.
As both cohorts progressed through their respective school year levels, the levels of proficiency increased. A higher proportion of Cohort B (43.6%) compared to Cohort A (33.0%) students had ticked the advanced option across the 11 items. There was an increase from the first year to the third year in the lowest option of none for both Cohort A and Cohort B for the items of “web page authoring” (Cohort A = 13.6 and Cohort B = 15.5 percentage points) and “blogs and wikis” (Cohort A = 13.5 and Cohort B = 35.9 percentage points). This result validates the data collected from both the questionnaires and the interviews, as there were limited references about these two competencies. Overall, both cohorts could be considered as competent in the 11 competencies.

With the apparent decrease in competencies of ‘blogs and wikis’ and ‘web page authoring’, an inference could be made about the infrequent use of these tools in mainstream classes. Additionally, these skills could have decreased due to the rise of other avenues for expression, especially social networking sites such as Facebook. These types of ICT competencies were mainly found in specialised ICT subject areas. Two teacher participants who were interviewed, and taught the subject Applied Information Technology (AIT), shared examples of the type of skills students would complete in this subject area:

**Q:** What are the main purposes for you to use ICT with your students?

**A:** We do a lot of focus on website designing, as well, so either designing whether it be in image manipulation so using programs like Photoshop, Illustrator, Fireworks Flash, they’re probably the core things. (C502010I)

This dialogue provided an example of when these tasks, classified as operating with ICT, could also be considered as creating with ICT. The two participants mentioned the use of wikis and web design in their interviews:

There’s a couple of ways we use the laptops, the first way is pretty much the delivery of content, particularly from electronic wikis. So in many ways it’s more of a tool to facilitate learning as opposed to a way to learn itself though it depends on what kind of software we do use. (C702011)

The full Adobe Suite we use all the way across. Photoshop’s probably the one that gets hit every year but Dreamweaver gets hit most years. We’re doing After Effects in Year 9 and 10 as well, so yeah, across all year groups we’re hitting them all but predominantly Dreamweaver, Photoshop, Flash. (C642012)
All of the mentioned ICT competencies in one form or another have the capacity for use in one or more of the five organising elements of the ICT capability learning continuum. However, it is dependent on the approach a teacher takes to enable a student to use a laptop for learning. Three students commented that teachers had slowly shifted to using laptops:

Like, first, teachers probably prefer to use the books and now they are kind of seeing it is probably easier to use the laptops, a bit more organised, a lot less papers around and stuff. (B222012)

With this perceived shift the opportunity to develop skills and learn new approaches could be seen as important for learning with laptops. Chapter Seven discusses the extent to which these learning opportunities and impacts occurred.

5.3.3 Challenges and difficulties faced using a laptop

Providing students with a laptop for learning presents a range of opportunities and challenges for schools (Linvingstone, 2012). Question Nine of the annual interview asked: “What challenges, if any, have you faced using the laptop each day?” Students from both cohorts reported the following types of challenges: authentication and connectivity, backing up, battery life, Internet, new platform and programs, reduced performance and resisting distraction. Figure 5.14 provides a radar graph distribution of the total coded responses made by student participants about these challenges between the first year and third year. The further the line to the outer point of the radar graph indicates a higher frequency of reported cases of a challenge.
The difference seen between Cohort A and Cohort B for new platform and programs is interesting. Twenty one students from Cohort B reported experiencing difficulties with the new platform and software. These were consistent with the following comments:

Well, sometimes they ask us, some teachers ask us to do something that we, that I don’t know, like, because I’ve been using a PC most of my life, not a Mac, so I don’t know all the features on there. (B232010I)

…it’s really hard to know all the stuff on it, it’s really hard to get; a couple of kids know how to do it really well, but I struggle really bad with it. ICT, I’m pretty good with it, but it’s mainly based on Microsoft Word which means they don’t have all the same stuff on Mac as they do on Microsoft. (B252010)

Students had previously used PCs, and in the change of platforms the main cause of difficulty was the change from PC to Apple.

Authentication and connectivity was a challenge faced by half of the students (Cohort A = 5 and Cohort B = 10). During the first year and second year of the study, students (Cohort A = 7 and Cohort B = 8) experienced difficulties connecting to the Internet. Students (Cohort A = 5 and Cohort B = 8) reported in the third year, their laptops having issues related to battery life and the declining performance of the laptop (Cohort A = 3 and Cohort B = 5). Seven students from Cohort B indicated

**Figure 5.14. Coded responses for challenges faced by student participants using laptops.**
they faced distractions when using laptops, with one reported case from Cohort A. Table 5.7 provides examples of the challenges reported by the students.

Table 5.7
Student Responses to the Challenges Faced Daily Using Laptops

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to portal</td>
<td>The only thing is that with laptops they’re really good but sometimes it’s just the portal, the web shutting down at school and that kind of thing can be a problem but apart from that it’s all pretty good. (B212010)</td>
</tr>
<tr>
<td>Authentication and connectivity</td>
<td>The time it takes to connect to the Internet because you have to change your location, then you have to sign in to the school Internet, and then it asks you to sign in again and you have to do that multiple times and then when you get onto the Internet ask for a Blue Reef login. So there’s quite a lot of logins to be able to access the Internet at school. (B272011)</td>
</tr>
<tr>
<td>Backing up</td>
<td>Well, mainly backing up. I’ve had troubles with that, and I would like to know more. (B302010I)</td>
</tr>
<tr>
<td>Battery life</td>
<td>One of the challenges is the battery life because, it says it should last about seven hours, but when I charge it I don’t turn it off and charge it, I just close the lid and charge it and when I do that I probably only get three hours out of it, three and a half hours. (B122010)</td>
</tr>
<tr>
<td>Email</td>
<td>Not all the time but a little bit of the time, emailing, but just some of the time. (B272010)</td>
</tr>
<tr>
<td>Heavy bag</td>
<td>It’s heavy to take to school because your back gets sore after a while having a heavy bag. (A042012)</td>
</tr>
<tr>
<td>Internet</td>
<td>Internet, like, if the Internet’s down it kind of gets frustrating when it’s not up, because then you can’t do your work, and you really want to get onto it. (A082011)</td>
</tr>
<tr>
<td>New platform and programs</td>
<td>Well, the Mac is completely different so changing some things are hard and ... yeah. But I’ve gotten used to it now. (B222010)</td>
</tr>
<tr>
<td></td>
<td>Mainly just getting used to it and kind of, like, teaching my family to get used to it. (B192010I)</td>
</tr>
<tr>
<td>Reduced performance</td>
<td>The first year I found the laptops really good and there wasn’t a lot of problems and now, as they’re beginning to get a bit old, might have been because I wasn’t taking special care with it. When it’s loading, if you move anything you have to go into the rainbow spinning wheel and then you have to force quit the whole program. (A012012)</td>
</tr>
<tr>
<td>Resisting distraction</td>
<td>Resisting the temptation to do other things than work really. (B232010)</td>
</tr>
</tbody>
</table>

5.3.4 Levels of support

As discussed in Chapter Four, the School is well resourced for the provision of ICT support. Access to an ICT support centre was provided to students to resolve or rectify their ICT issues. Question 27 of the annual interview required students to respond to: “How do your parents help with your laptops?” Both cohorts indicated a limited level of parental support with their laptops. Nine students (Cohort A = 5 and
Cohort B = 4) identified their parents attempted to help them, but it was related more to the actual task, rather than the use of the laptop:

They don’t really like my laptop because they’re used to Windows so sometimes they get a bit frustrated at the different applications, and they don’t really know what to do. But, they help me when I’m trying to find a website, and they somehow find a really good website for me. And they make sure it’s got lots of information. (A032011)

Five (50%) Cohort A and sixteen (80%) Cohort B students reported that parents had little understanding of the Apple platform and were unable to help. This suggests that, at home at least, students were primarily left to their own devices to resolve problems with their laptops. These data also confirmed that a ‘digital divide’ (in this instance, an ‘Apple divide’) between the parents (digital immigrants) and students (digital natives) was evident (Prensky, 2001). Most students from both Cohort A and Cohort B believed parents were not suitably experienced to help them with their laptops:

My parents do not actually help me that much with my laptop because the era that my parents grew up in was the old PCs and DOS and stuff like that. They don’t really know that much about the Macs. (B112011)

Well, Mum and Dad, they help but they are kind of technophobes, they are not great with technology so they try their best, and they do help. (B212012)

I find it hard to assist using an Apple Mac as I am a PC user. I struggle to see the benefit of Apple Mac for the school when PCs are used in commerce. I think the school should use the Windows PC environment for school to better prepare them for what they will use later. (Parent comment 2011 Parent Questionnaire – Cohort A)

This lack of support from parents was not due to the lack of desire, but more probably due to a perceived lack of understanding of the Apple platform. Also, many adults have only a superficial knowledge of computer operating systems and commonly used applications. This lack of understanding highlights the possible issues when implementing a non-PC platform for parents who may have limited experience in the Apple operating system for laptops, and contributes to the theme of alienation, which is discussed in Chapter Eight.

5.3.5 Attitude towards using laptops at school

Item Three of the questionnaire asked students to think about how they used laptops at school over the year and respond to eight statements. The statements were in the form of eight Likert items, part of a Likert-type scale: 1 = Never, 2 = Rarely,
3 = Some, and 4 = Often. Table 5.8 presents the mean scores and a three year mean for both cohorts.

Table 5.8

<table>
<thead>
<tr>
<th>Laptop Use</th>
<th>First Year Mean Cohort A</th>
<th>Second Year Mean Cohort A</th>
<th>Third Year Mean Cohort A</th>
<th>Three Year Mean Cohort A</th>
<th>First Year Mean Cohort B</th>
<th>Second Year Mean Cohort B</th>
<th>Third Year Mean Cohort B</th>
<th>Three Year Mean Cohort B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 (a) - I am comfortable using my laptop for class work</td>
<td>3.9 (0.04)</td>
<td>3.9 (0.05)</td>
<td>3.9 (0.04)</td>
<td>3.9 (0.04)</td>
<td>3.8 (0.02)</td>
<td>3.9 (0.02)</td>
<td>3.9 (0.02)</td>
<td>3.9 (0.02)</td>
</tr>
<tr>
<td>Q3 (b) - The work I complete using my laptop is important</td>
<td>3.8 (0.06)</td>
<td>3.7 (0.06)</td>
<td>3.6 (0.07)</td>
<td>3.6 (0.07)</td>
<td>3.8 (0.03)</td>
<td>3.8 (0.03)</td>
<td>3.6 (0.03)</td>
<td>3.6 (0.03)</td>
</tr>
<tr>
<td>Q3 (c) - The activities using laptops are interesting</td>
<td>3.7 (0.07)</td>
<td>3.5 (0.07)</td>
<td>3.3 (0.08)</td>
<td>3.2 (0.08)</td>
<td>3.7 (0.04)</td>
<td>3.4 (0.04)</td>
<td>3.4 (0.04)</td>
<td>3.4 (0.04)</td>
</tr>
<tr>
<td>Q3 (d) - Using a laptop allows me to tackle complicated activities</td>
<td>3.5 (0.08)</td>
<td>3.6 (0.09)</td>
<td>3.5 (0.07)</td>
<td>3.4 (0.07)</td>
<td>3.6 (0.04)</td>
<td>3.5 (0.04)</td>
<td>3.5 (0.04)</td>
<td>3.5 (0.04)</td>
</tr>
<tr>
<td>Q3 (e) - I make an effort to complete activities involving my laptop</td>
<td>3.8 (0.06)</td>
<td>3.7 (0.06)</td>
<td>3.6 (0.06)</td>
<td>3.5 (0.06)</td>
<td>3.8 (0.03)</td>
<td>3.7 (0.03)</td>
<td>3.7 (0.03)</td>
<td>3.7 (0.03)</td>
</tr>
<tr>
<td>Q3 (f) - I feel motivated at school when working on activities using my laptop</td>
<td>3.7 (0.07)</td>
<td>3.4 (0.07)</td>
<td>3.3 (0.07)</td>
<td>3.2 (0.06)</td>
<td>3.5 (0.05)</td>
<td>3.4 (0.05)</td>
<td>3.3 (0.05)</td>
<td>3.3 (0.05)</td>
</tr>
<tr>
<td>Q3 (g) - I am given a choice to use a laptop for school work</td>
<td>2.8 (0.13)</td>
<td>2.8 (0.11)</td>
<td>2.8 (0.07)</td>
<td>2.8 (0.07)</td>
<td>2.8 (0.06)</td>
<td>2.8 (0.06)</td>
<td>2.8 (0.06)</td>
<td>2.8 (0.06)</td>
</tr>
<tr>
<td>Q3 (h) - I use a laptop outside of school</td>
<td>3.4 (0.11)</td>
<td>3.8 (0.06)</td>
<td>3.5 (0.11)</td>
<td>3.7 (0.08)</td>
<td>3.7 (0.06)</td>
<td>3.5 (0.05)</td>
<td>3.8 (0.03)</td>
<td>3.8 (0.03)</td>
</tr>
</tbody>
</table>

Cohort A recorded a higher three year mean score in five of the eight possible statements. Furthermore, only four of the five were significantly higher. There were (b), (c), (e) and (f). The possible reason for Cohort A having higher mean scores could relate to greater levels of satisfaction and interest towards learning compared that of Cohort B. This notion will be discussed further in Chapter Eight (Discussion).

An independent sample test (t-test) was conducted for Item Three to determine if there were any significant differences between Cohort A and Cohort B. Of the eight Likert items, four differences of mean were statistically significant at the p < 0.01 level, and one at the p < 0.05 level, as shown in Table 5.9.
Table 5.9
Item Three Independent Samples t-Tests between Cohort A and Cohort B

<table>
<thead>
<tr>
<th>Item Three</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) I am comfortable using my laptop for class work</td>
<td>.011</td>
<td>.028</td>
<td>.381</td>
<td>409.479</td>
<td>.704**</td>
</tr>
<tr>
<td>(b) The work I complete using my laptop is important</td>
<td>-.160</td>
<td>.038</td>
<td>-4.213</td>
<td>482.875</td>
<td>.000**</td>
</tr>
<tr>
<td>(c) The activities using laptops are interesting</td>
<td>-.217</td>
<td>.046</td>
<td>-4.706</td>
<td>458.206</td>
<td>.000**</td>
</tr>
<tr>
<td>(d) Using a laptop allows me to tackle complicated activities</td>
<td>-.063</td>
<td>.048</td>
<td>-1.312</td>
<td>426.117</td>
<td>.190</td>
</tr>
<tr>
<td>(e) I make an effort to complete activities involving my laptop</td>
<td>-.147</td>
<td>.040</td>
<td>-3.641</td>
<td>474.835</td>
<td>.000**</td>
</tr>
<tr>
<td>(f) I feel motivated at school when working on activities using my laptop</td>
<td>-.184</td>
<td>.063</td>
<td>-2.926</td>
<td>341.777</td>
<td>.004*</td>
</tr>
<tr>
<td>(g) I am given a choice to use a laptop for school work</td>
<td>.031</td>
<td>.070</td>
<td>.449</td>
<td>371.417</td>
<td>.654</td>
</tr>
<tr>
<td>(h) I use a laptop outside of school</td>
<td>.253</td>
<td>.060</td>
<td>4.247</td>
<td>330.103</td>
<td>.000**</td>
</tr>
</tbody>
</table>

Note. If Sig. < 0.01, the difference is said to be significant at the p < 0.01 level (also denoted with ‘**’). If Sig. < 0.05 only, the difference is said to be significant at the p < 0.05 level (also denoted with ‘*’).

For Item Three (b) “The work I complete using my laptop is important”, the three year mean score differential between Cohort A and Cohort B was -0.16 and indicates students in Cohort B were less enthusiastic about the importance of work done on laptops (see Figure 5.15).

Figure 5.15. Mean responses by students to Item three (b): The work I complete using my laptop is important.
Both cohorts experienced a statistically significant decrease in the mean score for Item Three (c): “The activities using laptops are interesting.” The three year differential in the mean was 0.2 between Cohort A and Cohort B. The level of significance for the first year to third year was at the $p < 0.01$ level in both cases (One-Way ANOVA). Figure 5.16 shows the decline of mean scores for both cohorts and emphasises that activities on the laptops were seen to be less interesting compared to the early years of the study. This decline could be linked to the novelty factor decreasing between the first and third year of the study.

*Figure 5.16. Mean responses by students to Item three (c): The activities using the laptop are interesting.*

For Item Three (e): “I make an effort to complete activities involving my laptop”, students from Cohort B recorded a consistent decrease in mean scores each year of the study, whereas Cohort A remained stable. The first year to third year decline was significant (One-Way ANOVA, $p < 0.05$). Figure 5.17 shows the three year differential in the mean was -0.2 between Cohort A and Cohort B.
Figure 5.17. Mean responses by students to Item three (e): I make an effort to complete activities involving my laptop.

Both cohorts demonstrated lower levels of motivation in the third year compared to the first year of the study in response to Item Three (f): “I feel motivated at school when working on activities using my laptop.” The three year differential in mean between Cohort A and Cohort B was statistically significant (Ind. Samples t-test $p < 0.01$) at -0.18 and suggests Cohort A was more engaged at school when using a laptop than Cohort B (see Figure 5.18). For Cohort A and Cohort B, the diminution in mean response from first year to third year was significant (One-Way ANOVA, $p < 0.05$).
Figure 5.18. Mean responses by students to Item three (f): I feel motivated at school when working on activities using my laptop.

The three year mean differential between Cohort B and Cohort A was 0.3 and statistically significant (Ind. Samples t-test, p < 0.01). This difference indicated students in Cohort B had a higher rate of use for Item Three (h): “I use a laptop outside of school.” The use of a laptop outside of school was the only one of the eight Likert items on which Cohort B recorded a significantly higher mean score than Cohort A (see Figure 5.19).

Figure 5.19. Mean responses by students to Item three (h): I use a laptop outside of school.
The overall message from students towards laptop use at the School was one of a slight and gradual decline in interest, effort and engagement. There were five items (a total of eight) from Item Three, which recorded a change of mean that was statistically significant (Figures 5.15 to 5.19). These findings further emphasise the importance of providing a quality learning environment through engaging and motivating lessons (McDonald, 2010).

5.4 Investigating with ICT

5.4.1 Research and Internet use.

The response of students from both Cohort A and Cohort B were concentrated in close proximity to the option *often* for Item Two: (i) “I have used the Internet to find information for my work” and (j) “I use my laptop for research” (see Figure 5.20 and Figure 5.21).

*Figure 5.20*. Mean responses by students to Item two (i): I have used the Internet to find information for my work.
Figure 5.21. Mean responses by students to Item two (j): I use my laptop for research.

Students from both cohorts predominately ticked the options of rarely and sometimes for Item Two (h): “I have used laptop programs to find information.” When referring to laptop programs, these were specific pieces of software installed on laptops such as ClickView (videos on demand) and Encyclopaedia Britannica. Figure 5.22 shows both cohorts recorded a similar mean score for this Likert item.

Figure 5.22. Mean responses by students to Item two (h): I have used laptop programs (e.g., ClickView, Encyclopaedia Britannica) to find information.

Question two of the annual interview asked students: “How do you use your laptop for research?” For students, laptops as a research tool equated to accessing the
Internet. Seven students from Cohort A reported accessing the Internet, as did fifteen from Cohort B. Google appeared to be the first preference for nine Cohort A and fourteen Cohort B students:

I can search up information using Google. (A062012)

Well, obviously start off with a Google search on any curious topic and then there is just so many sites out there that you can find out about almost anything. (B192012)

Three students from Cohort A and four from Cohort B reported accessing Wikipedia when using laptops for research. Tools used for research included: online dictionary (Cohort A = 1 and Cohort B = 5), eBooks (Cohort A = 1 and Cohort B = 7), online atlas (Cohort A = 0 and Cohort B = 1), online encyclopedias (Cohort A = 0 and Cohort B = 1) and YouTube (Cohort A = 0 and Cohort B = 1).

Accessing authentic data to connect to the world provided opportunities for students to be self-directed in completing research related tasks. According to the examples of how students used laptops for research, an underlying theme emerged. Students tended to rely on a set of tools (mainly the unsophisticated use of Google) and this approach to research did not serve students well. All but one student did not identify reputable online encyclopedias, for example, as a way to research. Chapter Eight (Discussion) explores this theme further.

With the Internet (network) and the Web (content) being used at such regularity, and described by Soeters and van Schaik (2006, p. 35) as a ‘playground for children’, it is important to consider the possible risks associated with using the Internet. The issue of risk will be discussed in the ‘Applying social and ethical protocols and practices when using ICT’ section of this chapter.

5.4.2 Problem solving

ACARA (2013) defines problem solving using ICT as students collecting, accessing and presenting different types of data with the help of software. Both cohorts reported using their laptops for solving problems sometimes to often, for Item Two: (m) ‘I use my laptop for problem solving.’ The changes in the mean as shown in Figure 5.23 were not statistically significant.
Figure 5.23. Mean responses by students to Item two (m): I use my laptop for solving problems.

Question Eight of the annual interviews queried student participants: “How do you use your laptop for solving problems?” Students used a range of applications, programs, websites and desktop widgets such as calculator, dictionary, encyclopaedia, Mathletics and Pages to solve problems. The following interview excerpts provide insights into how students perceived using laptops for problem solving:

The dictionary you can get on Dashboard, one of the widgets can be a dictionary and that is good because it is has a thesaurus in it. It is right there really and you can just find out what something means or what are some of the synonyms. (A052012)

It is good for solving problems because it has stuff like calculators, dictionaries, encyclopaedias, just all these applications on the computer. Solving problems, like we had to make a budget for SOSE [Studies of Society and Environment] recently and on numbers there was this, one of the spreadsheets you could do was a budget thing and all you had to do was type in the numbers and it did the rest for you. (B1122010)

Eight students from Cohort A and thirteen from Cohort B indicated using the Internet to solve problems had become a common occurrence. Five students from Cohort A and four from Cohort B reported using Google for problem solving:

Well, mainly to solve problems we just basically do the most simplest things. It kind of works out in an order. I have a problem that I can work out with myself, first solution Google it. If you can’t do that, go on answers.com. If that doesn’t do it then basically you have to really tighten the search. It all really comes down to the www search. (B1122011)
I use the Internet a lot more now to just search up for what the problems that I have and to figure them out. (A092012)

I like to use as many programs as I can to solve problems but generally it will come from the Internet, I search the problem I'm trying to find and the Internet will most likely have a solution for it. (B202012)

According to the responses from students from the two cohorts, they predominately used the Internet, and more specifically Google to solve everyday problems. The access for students to find information had improved since the implementation of the 1:1 laptop program. Four students from Cohort A and four from Cohort B reported it was easier to solve problems or access information with their laptops. According to student B27 the ‘too hard’ barrier of having to go to the library and locate a book or information had diminished. Information on demand was now the norm within the 1:1 laptop environment:

The laptop program makes it all that much more easier. Before I would not find the time to go to the library to find information. Now there is no excuse. It is so much easier with the laptop. (B272010)

This kind of learning, where students spent time using the Internet, may have increased the amount of reading a student completes each day, without them even knowing that this was happening. With a great deal of boys’ education literature available in the area of raising boys’ achievement in schools (Bleach, 1998; Driessen & van Langen, 2013; Hawkes, 2001; Warrington, Younger, & Bearne, 2006), this form of digital literacy could be viewed as beneficial to the development of literacy skills in both of the cohorts. Johnson (2006) suggested that, from a developmental perspective, using the Internet and accessing websites stimulates cognitive processes involved in interpreting text and images.

Both cohorts did not demonstrate any other examples of how to use their laptops for problem solving. Common answers such as accessing applications, widgets, dictionaries, calculators and the Internet continued to be consistent responses. A pragmatic view that could be construed is that the laptop had an effective function of enabling students to access digital information on demand. Overall, a moderately low level of problem solving using laptops was observed.
5.4.3 Self directed learning

The FIT:COM teacher observation protocol used for the study and discussed in Chapter Four, provided an opportunity to observe student participants simultaneously. According to Jimoyiannis (2011), the aim of using ICT is for students to develop their independence in its use, and make learning more empowering. To investigate whether students had shown signs of progression with the use of ICT, Items Eight and Ten within the dynamics section of the FIT:COM protocol were used to verify this view. Item Eight: “Interaction with technology provided students with a sense of independent control and mastery over an environment” demonstrated a gradual progression for both Cohort A and Cohort B (a minimum score of zero or maximum score of four was possible). Cohort A recorded a higher mean score (representation of the possible score ranges) in the first year (1.7 ± 0.1) compared to Cohort B (1.5 ± 0.1). Figure 5.24 shows that by the third year, Cohort B had recorded a mean score of 2.2 ± 0.1 compared to 2.0 ± 0.1 for Cohort A. These mean scores would suggest that there were signs of a slight shift of the locus of control from the teachers to the students (a total of 30 observations took place between the first year to the third year).

![Figure 5.24. Cohort A and Cohort B three year mean scores for interaction with technology provided students with a sense of independent control and mastery over an environment.](image-url)
Item Ten of the observation protocol: ‘Students were encouraged to generate conjectures, alternative solution strategies, and ways of interpreting evidence’, recorded higher mean scores from the first year to the third year for both cohorts. Cohort A increased from the first year (2.2 ± 0.1) to the second year (3.0 ± 0.1), then decreased in the third year (2.5 ± 0.1). This decrease in the third year may be linked to Cohort A transitioning from a junior school to middle school. Cohort B, on the other hand, demonstrated a consistent rise in the mean between the first year (1.8 ± 0.1) and third year (3.3 ± 0.1) as shown in Figure 5.25.

![Figure 5.25. Cohort A and Cohort B three year mean scores for students were encouraged to generate conjectures, alternative solution strategies, and ways of interpreting evidence.](image)

Observations confirmed that the students were using their laptops primarily for investigating and creating with ICT. These observations are consistent with the views of the students and reinforce their beliefs that the laptops were regularly used for research, creating and completing tasks.

### 5.5 Creating with ICT

For each of the Likert items in Item Two, a three year mean was calculated. Figure 5.26 shows (b): word processing. Figure 5.27 (c): graphics. Figure 5.28 (d):
video or audio. Other Likert items included Figure 5.29 (e) spreadsheets, and Figure 5.30 (k): creative work.

**Figure 5.26.** Mean responses by students to Item two (b): I have used word processing to produce my work.

![Figure 5.26](image-url)

**Figure 5.27.** Mean responses by students to Item two (c): I have used graphics to improve my work.

![Figure 5.27](image-url)
Chapter 5: Boys’ laptop experiences

Figure 5.28. Mean responses by students to Item two (d): I have used video or audio to improve my work.

Figure 5.29. Mean responses by students to Item two (e): I have used spreadsheets to organise and present information.
Figure 5.30. Mean responses by students to Item two (k): I use my laptop for creative work.

Responses to Item Two: b (word processing), c (graphics), d (video or audio) and k (creative work) indicate that students mainly answered in the sometimes to often options. Students from both Cohort A and Cohort B mainly responded that they used their laptops for creating documents. Both cohorts also considered their work on their laptop to be creative. Students used spreadsheets to organise and present information rarely and sometimes.

5.5.1 Types of creative uses

When posed with question one and question five of the annual interviews: “How have you used your laptop at school over the last 12 months? and “How do you use your laptop for creative work?” students reported 10 examples of creating with ICT throughout the study. The types of creative uses as shown in Figure 5.31 contribute to a broader understanding of how students perceive to be creating with ICT.
Creating documents with laptops recorded a high number of responses from both cohorts when asked: “How do you use your laptop for creative work?” All ten students from Cohort A and eleven from Cohort B reported using software packages such as Pages (word processing) and Comic Life (program for creating comics) for the creation of posters, brochures and word processed documents:

Probably in English. We had to make a picture book, using Comic Life, a program on the computer. And you had to ... it has to be about a social like problem, so I did one on the environment. We had to sort of research a bit, have a look about, like, what’s happening in the environment and then you had to make a picture book about it and draw, you drew, I drew the pictures on the paint and yeah, paste. (B162010)

We use Pages to create posters, brochures and write up information. We also use Comic Life where we create a series of events with pictures. We created a story book which was fun. (A082012)

Five students from Cohort A and eleven from Cohort B reported creating animations with their laptops using Adobe Flash or After Effects, I Can Animate or Stykz. Students enjoyed using their laptops to create animations:

We use it in ICT for making programs and making animations. When it comes to making these animations, we use Flash and Stykz. I have used another program called I Can Animate as well. This type of learning is so much fun. (B242011)

We made animations using I Can Animate. Yeah, that was pretty fun. (A062012)
Sometimes we use it for, like, in AIT [Applied Information Technology], computing, we use it to make animations with After Effects, and we then use Dreamweaver to make webpages to include them. (B142012)

Sixteen students from Cohort B stated using laptops for digital design and visual graphics, compared to four students from Cohort A. Cohort B seemed to have a greater exposure to software such as the Adobe Creative Suite (Photoshop, Illustrator, InDesign, After Effects, Flash). Editing images also interested Cohort B, with 14 students stating they used laptops to edit images using programs such as Gimp, Adobe Photoshop and iPhoto:

Well, for IT we’ve been doing Stykz and that kind of thing but we also use it for, like, Instant Alpha out photos and Photoshop and that kind of thing so they’re the main creative things. (B212011)

Well for creative work I use a lot of photo image software. When I use some pictures off the Internet or other images I use a program like Gimp or Photoshop to improve the picture or image. Like using Instant Alpha or crop or adding parts to an image. (B202011)

Four students from Cohort A also stated that they used laptops for editing images. Students also reported making movies (Cohort A = 6 and Cohort B = 13) and presentations (Cohort A = 6 and Cohort B = 7) with their laptops. Students reported using software such as iMovie, Garageband, and Keynote to create subject related tasks:

Well, we’ve got the opportunity to make posters which has been fairly creative because we’ve been able to add effects and get pictures and stuff and I suppose iMovie and Keynotes because you can always put in transitions and sound effects, things like that, and a few Garage Band podcasts. (A012011)

Well, at the start of the year we had to make a video using iMovie and Garageband for SOSE [Studies of Society and Environment] which I thought was good to learn about how to edit videos and things like that. (B162012)

Students from Cohort B in the third year [Gaming Forum] of the study suggested that creative uses of ICT were taking precedence over distractive elements:

Another point is that people are getting more creative and instead of gaming as such, people are focussing on things they want to do. Some people are on Photoshop making things or web designing and, like, not gaming but not exactly on task but doing something, like, more creative towards their future or something. (Gaming Forum 4 Cohort B 2012)
Student capacity to create using laptops developed across both cohorts over time. Laptops had enabled students from both cohorts to access a new level of digital creation tools, beyond the previous typical pen and paper approach. The implementation of the 1:1 laptop program had demonstrated the ability by students to create movies, animations, presentations and digital documents.

5.5.2 Organisation of thoughts and management of work

Question 11 of the annual interviews was used to elicit an understanding of students’ organisation of thoughts: “To what extent has the use of a laptop helped you organise your thoughts?” Students reported five types of responses: brainstorm, electronic calendar, notes and reminders, shift from paper and use of laptop, and a tool to manage their thoughts. Three students from Cohort A and four from Cohort B stated they would brainstorm and create a mindmap to help them organise their thoughts. They believed this was an effective way to use the laptop with the help of the applications: MindNode or Inspiration (mind mapping applications):

A lot better because sometimes when you do not have a piece of paper on you, you can just go onto Inspiration or MindNode and just brainstorm all your ideas on the paper. You can delete them later on and you can even put them down and it will make a chart for you. (A052011)

Well, with applications like MindNode and Stickies, it just helps you out, you know, it’s got them all laid out ready, and you can always just tick things off much easier, and it’s easy just to get back to your notes and stuff. (B262012)

Fourteen students who were all from Cohort B indicated using the laptop as a tool to manage themselves. Interestingly there were no coded responses from Cohort A when referring to the laptop as a management tool. The following excerpt provides an example of how a Cohort B student used his laptop for the organisation of his thoughts:

Before the laptops really came along, I had a bit of trouble using the diary. I tended to try and remember everything. With the laptops, they’re a much more efficient and effective way of doing it because if you can’t remember everything you just go to your documents and scroll through the subjects and then if you see a document you were working on in class. For example, ‘Oh, I didn't finish this piece of work, go on.’ (B112012)

Eight students, two from Cohort A and six from Cohort B, believed that with the shift from paper based activities for learning there was an overall improvement in file management skills when using the laptop. These students reported having a file
structure in place to save and retrieve documents on demand and no longer relied on a paper diary:

Definitely just being able to, like, arrange folders, have some files in here, some files in there and just being able to have everything on one machine and able to access everything with a few clicks of a button. It’s really good. (B192011)

The school diary system was a start, definitely, on the organising the thoughts program, but the fact that it was so small meant that I could lose it quite easily and forget to bring it home or something. But, I always bring my laptop home so I have taken to using the Stickies application which you can essentially put a post-it-note on your desktop and then write down your diary stuff. (B112011)

I think the laptop’s really helped me actually because, especially in the last year I have been trying to really pick up my school work and the best way to do that is to get organised and I think by creating, like, a filing system that works for me. It’s really helped me to, like, put everything in place and understand what I’ve got to do and when I’ve got to do it because all my work’s just there and I can get at it easily. (B162012)

Implementing a 1:1 laptop program had provided students with an alternative digital approach for keeping themselves organised for the following: making notes and reminders, brainstorm, and use of an electronic calendar. The types of applications stated by students to organise their thoughts were: iCalendar, Inspiration, MindNode, Pages, Keynote, and Stickies. Organisation of their thoughts appeared to relate to school tasks concerning organisation (e.g., remembering dates for assignments and assessments). Brainstorming and the use of mind mapping applications were used but perhaps under-utilised by both cohorts for organising their thoughts.

### 5.6 Communicating with ICT

Both Cohort A and Cohort B reported using their laptops for communication when responding to Item Two of the questionnaire. Cohort A laptop use, for Item Two: (l) “I use my laptop for communication” mean score increased significantly (One-Way ANOVA, p < 0.05) between the first year (2.8 ± 0.3) and the third year (3.3 ± 0.3). The corresponding Cohort B mean score did not change significantly as seen in Figure 5.32. Students responses from Cohort A were mainly concentrated in the rarely to sometimes options compared to students from Cohort B who were concentrated in sometimes to often options.
Figure 5.32. Mean responses by students to Item two (l): I use my laptop for communication.

Cohort B recorded a significant decline (One-Way ANOVA, p < 0.05) in the mean score (-0.2) between the first year (2.5 ± 0.2) and the third year (2.3 ± 0.2). Subsequently, student participants from Cohort B were mainly concentrated in the option rarely as seen in Figure 5.33.

Figure 5.33. Mean responses by students to Item two (f): I have used email to communicate with other students.

Similarly with Item Two: (g) “I have used email to communicate with my teacher” the mean score for Cohort A increased significantly (One-Way ANOVA,
p < 0.01) from the first year (2.9 ± 0.3) to the third year (3.4 ± 0.2). The mean score of Cohort B’s email communication with their teachers increased significantly (One-Way ANOVA, p < 0.01) between the first year (2.8 ± 0.2) and the third year (3.1 ± 0.2) as shown in Figure 5.34.

Figure 5.34. Mean responses by students to Item two (g): I have used email to communicate with my teacher(s).

The following examples are drawn from the first year and the third year of the study from Cohort A student responses to Question Eight of the annual interview: “How do you use your laptop for communication?”:

I don’t usually communicate with my laptop. Usually I just talk to people over the phone. I sometimes use email, but not very often. (A032010)

Communication would be more on email if I’ve got a task in, and I’m handing it in a little bit earlier, usually email whatever teacher I’ve got for that task by emailing it to them and to see what they think of it so I can do better. (A092011)

I would use e-mail more than I would do in Year Five because we’ve got more homework to complete, like, the teacher would say e-mail it to you, so we would have to check what they send us and then e-mail it back. (A082012)

Students from Cohort A in the first year had a limited understanding of the term electronic communication. Of the 10 students interviewed from Cohort A, seven said they either did not use email or had not used a form of electronic communication. Of the three students who indicated they used electronic communication, their level of competency was basic. For example:
Q: Can you give me an example of an activity in which electronic communication was really helpful, and tell me how it worked?

A: I really enjoyed learning how to use email and everything. I used to not know how to send emails, or do anything like that. It’s actually very useful, because you don’t have to dial in the numbers on the phone, you don’t have to go around and chat to them, you don’t have to write a letter, you can just do something that is ten times faster. (A062010)

By the second year, students in Cohort A had become more accustomed to electronic communication. This was highlighted when all 10 of the interviewed students mentioned using email, and applications such as Skype and social media (e.g., Facebook). By the third year of the study, four students from Cohort A reported using Facebook to communicate on their laptops:

I usually go on Facebook to chat with my friends. (A072012)

Thirteen students from Cohort B conveyed their preference to communicate with students via Skype rather than email:

I was doing an assignment with my friend and he was sick on the certain day that we had the subject so I was able to actually, when I went home I was actually able to get on Skype and talk to him about the project so I could tell him if you want to do this and I’ll do this. We were able to get together later on and finish the project, so that helped out. (B162010)

Skype mainly. I generally just have that open just in the background and if I'm doing something, someone, like, messages me, and generally I would tell them, like, ‘Sorry, I'm working,’ but I always keep it open because I have like a superstition that someone’s going to say something important, and I don’t want to miss it. (B192012)

Facebook was another mode of communicating with laptops for Cohort B. Seventeen students indicated using Facebook by the third year of the research. As popular as Facebook seemed, using Skype was seen as the alternative method of online communication by Cohort B. Students reported enjoying using Skype through conversation, instant messaging or video. The second part of Question Eight of the annual interview was “Can you give me an example of an activity in which electronic communication was really helpful and how it worked?” Twenty-four of the 30 students involved in the annual interviews from both cohorts (Cohort A = 7 and Cohort B = 17) reported using Skype to communicate for personal and school related purposes. According to both cohorts, the use of Skype was a well-liked method of electronic communication compared to that of email:
Well, last week we had an assignment, group assignment, and we were using Skype to see what we could do, like, sharing each other’s information. (B242011)

Often if my friend and I are working on a project together we’ll go on a Skype call, a video call, and we’ll just discuss and figure out what we need to do and how we need to tackle the project, and we can work through it, like, ask each other questions, that kind of thing. (B162012)

Fourteen students from Cohort B were beginning to increase their use of email with teachers. Twelve students, all from Cohort B, had recognised that email was the preferred and primary mode of electronic communication used by teachers at the School:

I mostly use my laptop to communicate by using e-mail quite a bit. I do not use many of those social networking sites on my laptop, so it is most of the time by phone. Yeah, I would mainly say email with the teacher as this is the only way I have used my laptop to communicate with them. It is really the only thing they use when it comes to communicating with our laptops. (B182012)

Because now it’s becoming, like, more of a need with the teachers contacting you through it. We need to check it regularly to keep up with, like, exams and work being sent out. (B172012)

Both cohorts of students had increased their use of email between the first year and the third year of the study. However, students preferred using Skype and Facebook amongst each other for electronic communication.

5.6.1 Social media: Facebook

Item 17 of the annual questionnaire was concerned with students’ use of social media. Myspace, Facebook, Club Penguin, Twitter and Bebo social media sites were relevant for the age groups involved at the case study school (ACMA, 2013). Students could select any of these sites or I don’t use any. In the first year, 31.5% of Cohort A used social media; by the third year, this had increased to 39.2%. Similarly, for Cohort B, in the first year 70.2% used social media and by the third year, this had increased to 91.0% (see Figure 5.35). The rate of use of social media in Cohort B is consistent with research from Europe where 82% of 15-16 year olds use social media (Livingstone et al., 2012).
Figure 5.35. Student participants who did not use any form of social media.

Facebook, over the duration of the study, recorded a rise for both Cohort A and Cohort B. In the first year, 18.5% of Cohort A used Facebook; by the third year, this had increased by 20.7 percentage points to 39.2%. Whereas for Cohort B, in the first year, 70.2% used Facebook and by the third year, this had increased by 19.3 percentage points to 89.5% (see Figure 5.36).

Figure 5.36. Student participants’ reported use of Facebook between the first year and third year of the study.

With this difference between the cohorts now apparent, a theme emerged through the annual interviews about the changing interests between the two cohorts. Four students from Cohort B indicated that over time, their interest shifted from gaming to the use of social media:

In Year Seven I would play games a bit during some lessons and now not at all. I have kind of moved away from games. I spend more time using Facebook. (B172012)
The following excerpt is taken from a Gaming Forum held in the third year of the study with Cohort B participants (GF42012) demonstrating this shift:

**Q. Have you moved away from games, like, in Year 7 through to Year 9?**

A. I don’t play games.

**Q. What about social media?**

A. I think it’s more Facebook.

A. More Facebook.

A. I think, like, the one time I play games is when I'm, like, no access to the Internet, and then the only thing to kill time is play games, but when I'm at home, and I have access to the Internet, I will go to Facebook instead of playing games.

Facebook was an activity students took part in off the School site. There were limited references to Facebook being used during class, as it was a blocked site on the School network. The next section discusses the reported use of Facebook on the School site through mobile phones.

**5.6.2 Mobile phones, hot spots and tethering**

Student ownership of mobile phones increased during the study. Students had a greater capacity to use their mobile phones to circumvent the network and enter blocked sites such as Facebook by using their mobile phones as a ‘hotspot’ - a wireless access point. Mobile phones, prohibited during class time, tended to be out of sight during lessons. However, there were reports of students using their mobile phones to access the Internet and Facebook:

They just go on their phone. Because it doesn’t get monitored and the app on your phone, for your iPhone, you click on it and it takes you straight there and you could just flick through, check stuff. I’ve sat next to people who are on Facebook. There’s only, like, one or two people in our class that do it. (GF21012)

In response to Item 15: “Do you own a mobile phone?” 82.3% of students in Cohort A and 95.5% of students in Cohort B said they owned a mobile phone in the third year of the study. Mobile phones could be problematic for schools that attempt to monitor their students’ online usage as students have the ability to bypass networks with their own hotspots or personal networks.
5.7 Applying Social and Ethical Protocols and Practices when Using ICT

5.7.1 Acceptable use of ICT

To ascertain some of the social and ethical issues experienced during the implementation of the laptop program interview, Question 12 asked students “What is it like having a classroom with each student having their own laptop, and explain student behaviour?” Initially in the first year, 11 students, who were all from Cohort B, reported a mix of behavioural and operational issues when using laptops in classrooms. Eleven students from Cohort B also commented on being attracted by the laptop, which increased the potential for off task behaviour:

Sometimes it’s good, sometimes it’s not because you could be working in a group, and one person could be on the computer finding out some info while you could just be typing and they could just be reading it aloud and you could just change the words around and it’s a lot quicker. But, there are also disadvantages if the person next to you decides not to cooperate and plays games and you’re trying to do the work, which annoys people. (B252010)

Well, it’s just sort of like tempting because, you know, you’ve got your dashboard on the computer and you can just sort of click in and click out really quickly, and there is like lots of little gadgets almost sort of things, like, just little things that you can, you know, play with. (B162010)

Six students from Cohort B and one from Cohort A reported that by the third year of the study, the device had lost its initial appeal. It appeared the novelty factor was no longer as strongly connected with the 1:1 laptop program:

I guess Year Seven it was a lot different, they were a new toy, it was great fun. Now everybody, I guess, the novelty’s worn off, so it’s a lot better, everybody’s using it more effectively. (B282012)

It’s normal now. Before everyone used to be shocked and, you know, like, amazed that they got a laptop, but they used to, like, be so excited they used to use it all the time but now it’s considered as normal. You know, no one really cares much, they just use it normally, like, how you guys expect us to. (B262012)

Twenty students (Cohort A = 5 and Cohort B = 15) reported increased chances of off task behaviour occurring and causing disruption to learning at the start of the 1:1 laptop implementation. These 20 students identified the lure of a new laptop heightened the potential to lose focus and impact on classroom behaviour and learning. However, as the students progressed through the subsequent year levels of
schooling, examples of how they had improved and developed as responsible and ethical users of their laptops became apparent:

It’s gone from projects to class homework and projects, so yeah, it’s been a different change, but yeah. I think I am more responsible in how I use the laptop. I'm better at web searches and how I use this information. (A012012)

Now it’s just a normal piece of equipment. People, like, got their heads around saying, ‘Alright, I’ve actually got to really focus now and work. I can do this whenever I want, really.’ (B262012)

Twelve students from Cohort B and one from Cohort A confirmed their shift from the device being a source of distraction to better focusing on learning. With the lure of distractions or the temptation with the laptop reduced, there appeared to be a more sophisticated attitude towards the use of the device as a learning tool, also noted by Won Hur and Oh (2012).

5.7.1.1 Searching for information

Question four of the annual interviews was: “When you used a web search for information, how did you decide which was the most important information?” Students from both cohorts reported six methods of deciding if the information was important. Responses included the credibility of the website (e.g., the URL’s domain included .edu or .gov), guidance from teachers, and reading and comparing information between websites. Responses also included the topic relevance, website statistics (how many times had the website been accessed or used by other users) and interestingly Wikipedia (see Figure 5.37).
Both cohorts reported that the preferred method of deciding on appropriate information from websites was to read and compare information between websites. All 10 participants’ information from Cohort A and 12 from Cohort B reported reading many websites and comparing to see what was most important:

I normally go on various websites to, like, see if they’re accurate and see if they come up with the same answers. (A072012)

I just read through them and see which one’s more detailed. Maybe go to, like, three different sites, and if they all have different information then I know that they’re not right until I find three sites that have the right information. (B172012)

Credibility of the website was the second highest reported criteria of deciding on the most important information. Four Cohort A students and nine students from Cohort B believed the credibility of the selected website was important:

I always look at more than one source and if the same things keep popping up on different sources then you get the idea that it should be correct and so if it’s just ... like, everyone says don’t trust Wikipedia and so you look at other sites and if everything seems to, like, mesh together and be the same sort of stuff then you know it should generally be the accepted point of view. (B192012)
I usually just skipped Wikipedia and went to the government websites, so I knew they were reliable. (B142012)

First of all I look at the names of the links, and I click on them and see if ... see what kind of website it is like .com and .uk and stuff, and I read through it quickly to see if it’s the website I want and then I read through it properly if it is. (A032012)

According to the responses, students from both cohorts rarely checked if information was authentic with either their parents or teachers. Four students from Cohort B and one student from Cohort A reported checking with teachers. One student from Cohort A mentioned checking information with his parents. Cohort B did not report using their parents as a method of checking their information. Students from both cohorts had demonstrated attempts to validate the information. The approaches used showed a reliance of self checking websites and reading information.

5.7.1.2 Educational games

Boys’ perceptions of educational games largely equated to Mathletics, possibly because of the inbuilt competitive nature of this tool. Mathletics was commented on by both cohorts and 25 students (Cohort A = 9 and Cohort B = 16) indicated there was a place for games in education if they served a purpose:

The first thing that comes to mind would be Mathletics, and I think that really helped me with my maths, like, my speed and just basic arithmetic. Yeah, that really did actually help me, so yeah, I think that games help. (B162012)

Well, I guess it kind of depends on the game. If you do one of those shooting games where you just shoot people it’s obviously not helping you to learn but if it’s a game where you’re versing your friends and trying to do mathematics on it – a game like Mathletics. (B252012)

Mathletics was the most frequently mentioned educational game used at the School. With a range of literature available about the opportunities of games and learning (Gee, 2011; Gresalfi & Barab, 2011; Steinkuehler, Squire, & Barab, 2012), Chapter Eight will discuss the potential of gaming as innovative practice.

5.7.2 Unacceptable use of ICT

A theme, which emerged throughout the study, was the changing nature of the classroom with a variety of differences between a classroom in the first year compared to the third year. At the implementation, five students from Cohort B
mentioned a surge in playing leisure-orientated games and utilising the applications and widgets located on their laptops during class time:

I do have a small comment. It’s the fact that the spread of games. When a person, one person buys a game off the net or something everyone sees him playing it, and it’s like that’s new, that’s good, let’s copy him. And then they see it, and he gives it to his friend, he gives it to his friends and then it’s just a wild fire, and it spreads through the entire school and nothing can stop it. And then the teacher’s blinked, turned around to scratch something on the whiteboard and next thing they know the entire class has gotten a new game and is talking animatedly about it. (B112010)

A typical junior (primary) school is different to a middle school (secondary) setting. A junior school predominately has one teacher in one classroom for the duration of the day. Whereas, in a middle school, students move from class to class for each period. Participant 01 of Cohort A describes the classroom dynamics in a junior classroom when asked Question Twelve of the first year interview: “What is it like having a classroom with each student having their own laptop?”:

It can get a bit noisy sometimes because a lot of us are just really excited that we’re using a laptop heaps. I know, I’m feeling this but I’m not sure if a lot of people feel this way, it’s better than just sitting under a whiteboard all day and getting the teacher to do all the things. With this, you get to actually interactively do the stuff. (A012010)

The following second year excerpt from participant 19 in Cohort B is an example of unethical use of ICT occurring in classrooms. The participant indicated that computer games and other ‘stuff’ distracted him from his learning.

Q: What is it like having a classroom with each student having their own laptop?
A: 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.

Q: Do you think you are more focussed as a student with your own laptop, and explain?
A: Most of the time, yes, but sometimes you can get distracted.

Q: So can you tell me about those distractions?
A: A lot of people have been passing around dashboard games, and a lot of people can flick to their dashboard and then, like, as soon as the teacher comes round, they can just press a button and all the games, like, close instantly and go back to the normal.

Q: So how do they flick these dashboard games around?
A: There’s a button you click. There’s, like, a dashboard and you can get all these widgets. You can get weather, time, and all this stuff and, like, games and everything. And you just open them, because when the dashboard opens, like, the screen goes all dull and then it opens up your dashboard and then you can just go to this site and download different widgets and everything and people tend to play games a lot. (B192011)

Four students from Cohort A and nine from Cohort B reported that this subversive behaviour made the role of the teachers increasingly demanding. Teachers faced an added burden of dealing with distraction on a scale not previously experienced at the School:

I think definitely because knowing that when laptops came in, knowing that kids could play games and do all different things on their laptops, not doing their work, teachers will have to be more observant of the class to see what it looks like when kids are not doing work, and what it looks like when kids are doing work. (B182011)

Well, for the teachers it is probably a little bit harder because you do not always know if a student’s doing the right thing or the wrong thing. (A062012)

Two students from Cohort A and six from Cohort B suggested practical solutions to minimise these behaviours. These eight students believed it was necessary for the teachers to be active and engage students in learning when using laptops. An example of this was:

More interactive teachers that really engage in the conversation and try to teach you something instead of just giving you work and then sitting back down at their desk. (GF42012)

I think the teachers need to, yeah, walk around the class more because they’re just leaving them to their own devices. (B232012)

Six students from Cohort B reported being confused about why some teachers did and did not use laptops for learning. These six students shared a view that teachers were cautious and on guard when using laptops in their classes. Some teachers went as far as repositioning the desks in their classrooms to have a better view of the laptops:

Well, it depends on the teacher a lot of the time and what students in the class are like. Some teachers almost make it slightly uncomfortable because, like, they make you turn the desks around, and then they act like everyone is some sort of criminal, that they’re just waiting to do something wrong on the laptop. Then there’s some people who do something wrong on the laptop, and then if they get caught then the teacher gets even more superstitious and then everything just snowballs up to, like, ... yeah. Teachers just don’t trust us. I think that’s an aftermath of what we did in Year Seven [First Year]. (B192012)
The introduction of the 1:1 laptop program had altered a range of aspects in the classroom as indicated by the feedback from the students. Students presented a range of suggestions for consideration when teaching in a 1:1 laptop or mobile device class. Section 5.8.1 discusses these student perceptions about teachers.

This section defines gaming as computer based games found on laptops and played during class without the permission of the teacher. Approximately half the students from both cohorts (Cohort A = 4 and Cohort B = 10) believed gaming in the classroom was a distraction:

A lot of people have been passing around dashboard games, and a lot of people can flick to their dashboard and then, like, as soon as the teacher comes round, they can just press a button and all the games, like, close instantly and go back to the normal. (B1920101)

Gaming decreased during the first year and continued to fluctuate throughout classes over the course of the three year study. Nine students (Cohort A = 4, third year and Cohort B = 5) reported the use of games such as Minecraft. The following excerpt from an interview in the third year of the study is of Participant 02 from Cohort A discussing the topic of gaming:

A: It’s a fair bit quieter because I think everyone’s a bit more engaged now that we have laptops. But a lot of people in my class are getting distracted on the laptop, like, through offline games.

Q: What type of stuff are they doing?

A: The big popular one is Minecraft, and before in this year there was Motorbike.

Q: So how are they playing Minecraft now, is it just off the network?

A: Off server so no one can track it.

Q: But how are they doing it in class if a teacher’s teaching?

A: It’s often when we’ve started work, and because the desks are facing away from the teacher they can’t see what’s happening on the laptop. A022012

During interviews, 13 students (Cohort A = 3 and Cohort B = 10) mentioned Call of Duty (COD). These 13 students said that they had either played it or seen it being played during a lesson in the first year. However, post the first year of the study it emerged that the use of this particular game by the students had ceased.
Q: Has the tendency to be on-task improved from last year to this year?

A: Yes, it has. Last year kids played COD, and this year no-one plays Call of Duty because of the monitoring of the system, and kids will get in trouble. (B142011)

Other games that seemed to have resonance with the students (Cohort A = 5 and Cohort B = 7) were the Visual Boy Advance (VBA) and Flash designed lightweight style games. These games were offline games that were similar in design to that of Game Boy (Nintendo – hand held gaming device); relatively low in file size and designed for playing on computers. Students indicated that VBA and flash games such as Pokémon and Motorbike were quite novel in appearance and game complexity, and classified as a ‘surge’ style of game. Both cohorts believed that VBA games did not last for a long time, and were more of a short-term fad or trend:

It goes in surges, you’ve got a surge of recent games and then it drops off and another one takes its place but they kind of stick around. You’ve got Minecraft, the Flash games, the VBA that just came around recently ... (GF42012)

Item 20 of the annual questionnaire required students to respond to the Likert item: “I play online games” part of a Likert-type scale: 1 (never), 2 (once a month), 3 (every two weeks), 4 (two to three times a week) and 5 (everyday). Figure 5.38 shows the mean scores over the three years of the study for Cohort A and Cohort B.

Figure 5.38. Three year mean scores for student participants’ frequency of playing online games.
Students from Cohort A recorded a stable mean score of about 2.9, situating student Cohort A in the ‘Once a month and every two weeks’ options. Student participants from Cohort B recorded a mean of 3.0 ± 0.3 in the first year, and falling significantly (One-Way ANOVA, p < 0.01) by the third year to record a mean score of 2.4 ± 0.3. This decrease indicates students from Cohort B had significantly reduced their frequency of playing online games. However, with students from both cohorts indicating spending a proportion of time playing online games it gave an insight into the possible effect gaming could have on learning. How students managed themselves away from school with the distractions of playing games could impact on learning. Without a teacher to supervise or direct students to stop playing games and complete work, students were required to self regulate their use of the laptop. Chapter Eight will discuss the impacts of gaming and the associated issues that arose over the three years of the study.

5.8 Overall Student Satisfaction of Laptop Program

Question 30 of the third year interview asked students: “If you were in a position of power would you keep the 1:1 laptop program or remove it?” All 30 student participants from both cohorts indicated keeping the 1:1 laptop program. Using laptops for learning was enjoyable according to the 30 students. Both cohorts believed that the laptops were an efficient way to learn and were important for their development:

Because a lot of people are more interested. They are more intrigued in learning now. (A042012)

I think it’s really important to keep with the times, kind of thing, and when we do go out into the workplace a lot of it’s going to be computer based and a lot of the work we do will be computer based, so I think it’s important to have the skills that we need when we go out into the workplace. (B162012)

With recognition of the related distractions since the introduction of the 1:1 laptop program, students believed the laptop program should remain. Regardless of the issues encountered, students remained positive about the 1:1 laptop program.
5.8.1 Students’ perceptions about teaching and laptops

In a generation where technology is no longer optional (Murphy, King, & Brown, 2007), students’ perceptions about the types of teachers who are effective and how they could engage a class or even control a class with laptops was another theme to emerge. Students from both cohorts were able to describe, in their view, effective teaching styles and teacher traits reducing off task behaviour. Four students from Cohort A and seven from Cohort B held the view that teachers who were able to deliver a style of education tailored to their needs was necessary in increasing their chances of learning. Rayment (2010) shares a similar view about how differentiation allows students to work towards one aim in many different ways. These 11 students were articulate in defining the attributes of an effective classroom teacher in a 1:1 laptop environment. Teachers who were mobile and active were far more popular and well respected than those who set work, then sat at a desk behind their own laptops. This mode of teaching and learning appeared to disengage the students and also increased the chance of off task behaviour. The following reflects what the 11 students classified as a highly effective teacher:

- Mobile teacher (meaning that the teacher is constantly moving);
  
  Some teachers go and sit down at their desk; it depends which teacher you have, I guess, like, Mr Jordan [Pseudonym] probably the best maths teacher I have had in the whole of my time at this school because he is always moving around, you can not get off task. (B252012)

- Engagement (a teacher who provides stimulating tasks and conversations involving the class members); and
  
  More interactive teachers that really engage in the conversation and try to teach you something, instead of just giving you work and then sitting back down at the desk. (GF32012)

- Discipline (a teacher who sets boundaries and followed through with warnings was deemed to be a teacher where the incidence of off task behaviour decreased).
  
  If the teacher isn’t as strict as some of the other teachers then boys would tend to kind of push the boundaries about, but obviously if the teacher’s stricter and more consequences for acting out then they’re not going to push the boundaries and talk and disrupt the class. (B162012)
The 11 students shared a common view about these three components of an effective teacher within a 1:1 laptop program. Students believed teachers who moved around regularly made it extremely difficult for students to partake in frivolous patterns of behaviour that would affect their learning. Student engagement was also important as it increased the potential to stay on task and ensure a deeper understanding of the teaching content. Teachers who sat at their desks for long periods of time reduced the potential for engaging learners and increased the chances for off task behaviours. The 11 student participants reiterated teachers in 1:1 environments can ill afford to sit at their desks for extended periods of time. These views are aligned with the study conducted by the Australian Council for Educational Research (ACER), ‘Boys in School and Society’ (Cresswell et al., 2002) and a range of specific strategies listed by MacDonald et al. (1999, pp. 18-19) to support learning for boys:

- highly structured instructions and lessons;
- greater emphasis on teacher directed work in the classroom in preference to group work;
- clear objectives and detailed instructions; explicit criteria for presentation of work;
- short-term, challenging tasks and targets with frequent changes of activities; and,
- planned program of differentiated personal and social development.

Another view conveyed by students at the third year interview, was the need for clear and defined boundaries within a learning environment. According to these students, teachers who set clear boundaries about expectations and requirements, and at the same time who are decisive in their behaviour management had a greater inclination to gain the respect and control of their students, and keep them on task:

I think the problem at the moment is kids have done it once and then there’s been no punishment or no follow through, they haven’t been found out so they just keep on doing it. So maybe if they had harsher penalties and, like, more following through. (GF12012)

This study does not proclaim an authoritative regime with draconian behaviour management consequences, but more an agenda promoting students to take
responsibility for their actions with clearly defined consequences. This approach put into action when required, could increase the teachers’ ability to gain the position of authority in a 1:1 mobile device environment.

The following excerpt in Table 5.10 provides dialogue with Student Participant 11 from Cohort B in response to questions about how laptops were being used at school. It demonstrates a trend where teachers initially were selective in their use of the laptop, but over time, became increasingly confident, allowing students to use laptops across classes.

Table 5.10

<table>
<thead>
<tr>
<th>Year</th>
<th>Interviewer</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>How have you used your laptop at school?</td>
<td>Well, so far with the laptop it's been primarily for work that isn’t, like, logical. For example, things like society and environment and ICT literacy, yeah, we’ve been using our laptops a lot for that sort of stuff but for more logical things like Maths, for example, we don’t really. So it’s a bit of a mixed bag.</td>
</tr>
<tr>
<td>First</td>
<td>Now that the first year draws to a close, how have you used your laptop for school?</td>
<td>Well, it’s been interesting because it’s at the same time beneficial and negative because in the beneficial way it’s a lot faster to do things than in handwriting because typing’s three, four times faster than handwriting in general. And, copying out stuff is easy; you just copy and paste it. There’s the ability to easily get immediate access to fast amounts of information. And it’s more the fact of speed more than anything else.</td>
</tr>
<tr>
<td>Second</td>
<td>How have you used your laptop at school in the last 12 months?</td>
<td>The laptop program has been ... it’s been sort of concentrated to certain areas. Some teachers seem to despise the idea of using laptops in their classes or some teachers seem more open about the idea.</td>
</tr>
<tr>
<td>Third</td>
<td>How have you used your laptop at school in the last 12 months?</td>
<td>At school, the primary focus has been probably Internet searches. The teachers have been getting more and more into using it for assignments and the like, but it’s still primarily used for Internet searches.</td>
</tr>
</tbody>
</table>

5.8.2 Views about enjoyment, questions and difficulties

This section of the questionnaire was concerned with: whether students enjoyed using their laptops, if there was something else they wanted to know about the laptops and did they have any difficulties using their laptops. Firstly, Item Six of the annual questionnaire required students to respond either yes or no to: “Is there
something you really enjoy about using your laptop?” Both cohorts recorded a decrease in their enjoyment of using a laptop as shown in Figure 5.39. Cohort A decreased by 10.1 percentage points to 84.3% by the third year, and Cohort B fell by 16.7 percentage points to 68.4% by the third year. These data suggest that the enjoyment levels with the use of laptops over the three years gradually declined, as learning with laptops became standard for students.

![Figure 5.39. Enjoyment levels using laptops over time.](image)

Students from both cohorts were requested to indicate in Item Seven whether there was something they would like to know more about when using a laptop (yes, or no). Students from both cohorts wanted to know more about their laptops from the first year to the second year. There was an increase of 7.1 percentage points for Cohort A (first year 35.2% to second year 42.3%), and an increase of 6.8 percentage points for Cohort B (first year 18.4% to second year 25.2%). However, in the third year, Cohort A decreased by 22.7 percentage points to 19.6% and Cohort B decreased by 10.2 percentage points to 15.0% (see Figure 5.40). Questions identified by both cohorts related to general use about applications and programs, ways to solve Internet connectivity issues, and how to troubleshoot for themselves.
Figure 5.40. Student participants wanting to know more about the laptop.

Item Five of the questionnaire was concerned with finding out whether the student participants had any difficulties in using their laptops (yes, or no). Cohort A increased by 3.8 percentage points over the three years indicating 35.3% had a specific difficulty in using the laptop by the third year. Figure 5.41 shows that Cohort B had a decrease of 2.8 percentage points from the first year to the third year, with a total of 22.6% of students reporting a difficulty by the third year.

Figure 5.41. Student participants’ reported difficulties in the use of laptops.

Responses within the survey questionnaire were examined in finer detail in the third year of the study. From the 108 (28 Cohort A and 75 Cohort B) responses to the questionnaire in the third year, the most frequently reported difficulties were related
to the age and operability of the device including battery related issues. An example of this issue is shown by the view of the following student participants:

The battery is getting bad and it doesn’t last very long. (B472012)

The laptop is excellent at doing everyday tasks; no extra things need to be added. The only main problem would be slowing of the laptops as they are almost three years old now. (B242012)

These difficulties suggest that schools implementing 1:1 laptop programs need to be aware of the possible maintenance issues related to the ‘wear and tear’ of any device over a three year period. In the third year the School undertook a battery audit of each laptop for both cohorts to determine diagnostic use information of each device.

5.9 Summary

Students enjoyed using laptops for learning and identified the laptop program as being an important part of their daily lives. The elements of the ICT capability continuum that rated highly were managing and operating, investigating and creating with ICT. There was evidence of students using ICT to communicate with teachers and peers for learning, yet it was predominately used outside of the School. Students demonstrated an increasing ability to use ICT for accessing information and developing knowledge. Students also reported a greater independence for learning with the use of laptops. These findings are consistent with the findings from other research (Hatakka et al., 2013; Lowther, Ross, & Morrison, 2003; Penuel, 2006; Won Hur & Oh, 2012).

Students believed classrooms had changed in a range of facets, primarily the access to ICT for learning, dealing with distractions, less collaboration and the variability of teaching styles when using laptops for learning. Understanding the specific transitions from both cohorts, demonstrated characteristics such as the cognitive and social development of young males. As Cohort A transitioned the level of distraction fluctuated whereas Cohort B reported the need to focus and stay on task. The novelty factor of the laptop had diminished and in turn reduced the level of distractions:
Back in Year Seven and Year Eight, it did not seem like a big issue but now when we are in Year Nine we start to get the bigger picture and understand that if we do not do well then it is going to impact on us. (GF52012)

Students in the third year of the study demonstrated a higher level of proficiency in ICT competencies than in the first year according to the student questionnaire. Evidence of forms of higher order digital design mentioned during the annual interviews and observations further confirmed the higher level of ICT competencies. Students exhibited a strong reliance on the Web to research and solve problems, with Google being utilised the most. Web searching resonated with the students and removed the attitude of students finding excuses to not find information:

Probably just having the laptops there and all the information that you need for it accessible rather than you’ve got to go – I don’t know – ask your parents or wait to get the answer to find it somewhere else. You can just get it there on the Internet. (B122012)

Students exhibited a reluctant attitude towards asking adults for help and believed they had a superior skillset; further highlighting the theme of parent alienation. Students believed parents could not help and rarely sought help for laptop related issues. Students reported that the type of teacher providing a lesson determined the effectiveness of the 1:1 laptop program. Students perceived a combination of factors that had placed pressures on the effectiveness of the 1:1 laptop program and suggested a range of essential traits for a teacher in a 1:1 laptop classroom. These traits are discussed in Chapter Eight in discussing possible improvements for 1:1 laptop programs. The next chapter will focus on the views of parents in the 1:1 laptop implementation.