Exploring the Relationship between Sanctioned and Unsanctioned Laptop Use in a 1:1 Classroom

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ABSTRACT

The research reported in this article explores and discusses students’ use of laptops in a 1:1 setting. A problem experienced by teachers is that the laptops are possible distractors and tempt students to engage in use that is not in line with the teacher’s idea of what would be suitable in relation to the current assignment. Three annual surveys in combination with interviews and classroom observations were carried out in two Swedish secondary schools during a phase of the implementation of 1:1-laptops. The results show that there is not a reciprocal correlation between sanctioned laptop use and unsanctioned laptop use. The findings also show that the students’ unsanctioned use of laptops was relatively high, but stable throughout the duration of the three years. Furthermore, results show that the number of students who do not game or chat at all has increased every year. The findings have implications for the discussions concerning the use of personal laptops in secondary schools.

Keywords

Laptop, 1:1, Education, Computer, K-12

Introduction

“Surveillance software? No way! We’ll take the discussion – if it is needed.”
“Problems with unsanctioned use? Maybe they occasionally do things I don’t want them to do. But, on the other hand, I think they did that prior the laptop as well.”

(Excerpts from an interview with a secondary school teacher)

In a 1:1-classroom (i.e., the students are each provided with a laptop), teachers are confronted with constant tension between two parallel agendas: either promoting laptop use that is desired and sanctioned, or preventing laptop use that is not welcome nor sanctioned (Fried, 2008; Kay & Lauricella, 2011; Trimmel & Bachmann, 2004). Results from earlier research revealed a preconceived belief among teachers that there is a reciprocal relationship between the two agendas (Tallvid, 2010). The idea originates from the presumption that the more students engage in activities they are not supposed to, the less they are likely to harvest the potential benefits from using the laptop the way they should and vice versa. However, there is no earlier research that can confirm or confute this relationship.

We will report on a study of how students in two Swedish secondary schools used their laptops in their everyday educational activities. The use of laptops in these schools is regulated by discussing norms for use, rather than by introducing formal rules or technical restrictions. The data does not focus on laptop use as being part of specifically designed educational tasks, but rather on the everyday use of the laptops. This includes taking notes, or listening to music during class, as well as use that is not sanctioned by the teachers, such as playing games or chatting.

The purpose of the study was to examine how a 1:1 laptop initiative in two schools affected student use of laptops. Our intention was not to evaluate a particular technology or method for using ICT, nor to investigate if students learn more or less with their mobile devices. In our perspective, the laptop and other tools in a classroom are culturally and historically situated, and thus we need to understand and study this context to appreciate the circumstances surrounding the use. In such a perspective, the laptops are tools and are part of what constitutes a social practice. Therefore, questions about the character of the tools, how they are employed in practice, what knowledge is needed to be able to use them, how such knowledge is learned, and how they need to be negotiated into the day-to-day practice are of interest. Hence, the methods to study the implementation of ICT in schools have to be adapted. We consider it essential to conduct studies of day-to-day use of ICT, in order to understand the consequences of the use (Selwyn, 2011). Experimental studies focusing on the introduction of new technologies certainly have a place, but we also need to look more into the non-experimental, routine, and present use of technology by students.
Two research questions were investigated.

- What is the relationship between sanctioned and unsanctioned laptop use in a 1:1 classroom, where use is regulated by discussing norms for use, rather than by introducing formal rules or technical restrictions?
- How does the students’ use of laptops in a 1:1 classroom change over time?

**Laptops in the classroom - relevant research**

Laptops connected to the Internet offer several opportunities for use in the classroom. Potential benefits and pitfalls have been studied since laptops were introduced in educational settings, and educational reformers have presented wireless laptops as the next great educational innovation (e.g., Brown & Petitto, 2003). However, laptops have also been described as a possible reason for a decreased academic performance (Hembrooke, 2001). Apart from how the use of laptops relates to learning a particular content, it has also been suggested that laptops promote collaborative working-methods and project-based instruction, and also develops the students’ skill in the use of technology (Smart, Kumar, & Kumar, 2004). It has also been described how an implementation of laptops were affected by culture and gender (Saunders & Quirke, 2002). While many of these earlier efforts focused on higher education, we now see how laptops are becoming increasingly important in K-12 settings, in particular in so-called 1:1 programmes.

1:1 programmes are mainly motivated by the possibilities to improve student learning in general, and to prepare them for participation in the knowledge society; sometimes articulated as 21st century skills (Cogan-Drew, 2010; Rosefsky & Opfer, 2012). Research shows how laptop programmes have positive effects on student achievements in general, and how laptop use enhances learning and promotes interactions between students (e.g., Barak, Lipson, & Lerman, 2006; Bebell & Kay, 2010; Warschauer, 2006). The use of laptops in the classroom can increase students’ motivation, and their ability to gain understanding, and can also increase their overall educational achievements (Samson, 2010; Wurst, Smarkola, & Gaffney, 2008). In comparative studies, studies involved in 1:1 programmes improved their educational outcomes, compared to students without personal laptops (e.g., Bebell & Kay, 2010; Bebell & O’Dwyer, 2010; Zucker & McGhee, 2005).

In contrast to the research that emphasizes the benefits of 1:1, some research has also reported on the setbacks. Rather than questioning the potential benefits of using the laptop for educational activities, these studies focus on the unwanted activities. The main problem experienced by teachers is that the laptops offer distractions and tempt students to engage in use that is not in line with the teacher’s idea of what would be suitable in relation to the current assignment (e.g., Aguilar-Roca, Williams, & O'Dowd, 2012; Fried, 2008; Gaudreau, Miranda, & Gareau, 2014; Kay, 2012; Kraemer, Dedrick, & Sharma, 2009; Lauricella & Kay, 2010; MacKinnon & Williams, 2006; Reynol, 2012; Weston & Bain, 2010; Wurst et al., 2008; Yamamoto, 2007). Hu (2007) reported on schools abandoning 1:1 initiatives due to misuse of the laptops by the students: cheating on tests and playing on-line games during class. Some would call this “off task-use” (Gulz, Silvervarg, & Sjödén, 2010; Hofer, 2007; Wood, Zivcakova, Gentile, Archer, & De Pasquale, 2012), that is, use that is considered to break classroom norms and to have negative consequences on students’ learning (Guribe, 2005). Conflict concerning the use of laptops in classrooms is not surprising. When introducing new technologies into educational settings, or for that sake into any practice, there will be conflicting views on the benefits of the new tools, and a need for negotiation of how these tools are to be used (Lundin, 2005).

However, as proposed by Mifsud and Mörch (2010), a dichotomous view on suitable use of the laptop is problematic. Apart from clearly abusive use, there are a number of less easily defined uses and they suggest that the term “off task” should be reconsidered. A range of research shows that learning activities often are multifaceted and that it is complicated to pinpoint what can be considered to be an “on task” or “off task” activity (Björkvall & Enblom, 2010; Cismaru, 2011; Fried, 2008; Maybin, 2007). Tallvid, Lundin and Lindstrom (2012) exemplify how the students sometimes elaborate tasks given by the teacher. The elaboration is not always within the teacher-defined task design, but it can be inside the curriculum and learning goals of the student.

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This has led to discussions regarding if and how students’ use of laptops can be monitored and regulated by rules and/or software filtering (Owen, Farsaii, Knezek, & Christensen, 2006; Warschauer & Grimes, 2005). Due to the temptations offered by the wireless, Internet-connected laptop, and, in particular, how these can distract the individual student or disturb the collective use, some teachers tend to restrict or ban the use of laptops in the classroom (Young, 2006). Activities that are understood as problematic and disturbing to teachers are by no means unfamiliar to scholars or teachers. Classroom discipline has always been a problem, and research shows that teachers repeatedly report that teaching is disturbed by students’ disruptive behaviour in general (Akiba, LeTendre, Baker, & Goesling, 2002; Veenman, 1984).

The case setting

The data in this article is part of a larger data set collected over a three-year period during a 1:1 project in two schools. The laptop programme was introduced in 2007 and was the first, large-scale initiative with 1:1 in municipal schools in Sweden. The implementation phases have been described in evaluation reports (Hallerström & Tallvid, 2008; Tallvid, 2010; Tallvid & Hallerström, 2009). The initiative for the 1:1 project was taken by the two headmasters in the participating schools, together with two representatives from the municipality. Together they formed a steering group and set up goals for the project. This article focuses on laptop used by students that have unrestricted access to Internet in the classrooms. The steering group made a recommendation concerning their use that was clear and concise: the students were responsible for their own use. No software filters should be installed and there should be no restrictions, with the exception of illegal activities, to the use of the Internet. The overall attitude and rule was articulated as: “the filter should be in your mind – not inside the laptop” (Tallvid, 2010, p. 14). Both schools had wireless networks and unrestricted access to the Internet. The students had access to their laptops twenty-four hours a day, even during weekends and holidays. They were not allowed to leave the laptops at school and they had to take responsibility for keeping the computers updated and for making their own back-ups.

During the initial phase of the 1:1 project, some teachers expressed doubts concerning the ways the students were using the laptops. Two of the teacher-teams (one at each school) were not content with the “absence of rules postulated by the steering-group” (quote from interview with teacher) and tried to introduce their own, more restrictive, rules and guidelines. They wanted to have the possibility to confiscate the laptop if the student used it for playing games during class, for illegal file sharing or for downloading copyright-protected material. The steering group reacted strongly on this attempt to establish restrictions, and instead of allowing the teachers to ban the laptops or to introduce stricter rules; they urged the teachers to discuss the ethical questions more intensely in the class. The steering group emphasized that the laptops should be considered as tools for learning and consequently, should not be removed from the students. Apart from this occasion in the initial phase of the 1:1 implementation process, the teachers had only minor concerns about rules for laptop use.

The students used the laptops on a daily basis. As in most Swedish secondary school classrooms, the teaching methods were a mixture between teacher-centered and student-centered approaches (Håkansson & Sundberg, 2012).

Method

Data from 500 students and 60 teachers was collected through an annual web-based questionnaire (2007 – 2010), supplemented by interviews with teachers, students and representatives of the steering group, and by regular observations in the classrooms (60 hours). To make it possible to distinguish changes over time, the selected data used in this article originate from the same group of students over the three years, starting in 7th grade (year one) and ending in 9th grade (year three).

The interviews with the students were semi-structured and performed in groups of eight. The interviews were digitally recorded and notes were taken. The field notes were written shortly after the interviews. Classroom observations were conducted weekly during the three years of the 1:1 project and four observations were video recorded. The first survey was conducted after three months of laptop use, when the respondents were in 7th grade. The two following surveys were conducted during spring-term when the respondents were in 8th grade and 9th grade.
The questionnaire investigated a set of demographic variables (e.g., gender, age, and school), respondents’ attitudes to using laptops, and the nature and frequency of laptop use. The categories were derived from analysis of the initial classroom observations.

An annual survey was conducted to measure the different types of laptop use. The questionnaires to teachers and students had an identical core, with a few minor exceptions and additions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sampled n</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (2010)</td>
<td>137</td>
<td>76%</td>
</tr>
<tr>
<td>2 (2009)</td>
<td>142</td>
<td>80%</td>
</tr>
<tr>
<td>1 (2007)</td>
<td>114</td>
<td>67%</td>
</tr>
</tbody>
</table>

The survey investigated the frequency of use (Many times every day, Occasionally every day, Occasionally every week, Occasionally every term, and Never/almost never) of the laptops for the following activities: information search, word processing, downloading films or music, chatting (without permission from teacher), playing games (without permission from teacher), surfing on Internet (without permission from teacher), preparing or performing presentations, sound recording, listening to music, and using the laptop’s camera.

**Results**

Based on interviews with teachers and classroom observations it was possible to determine two main categories of laptop use: “sanctioned use” and “unsanctioned use”. The first use-category contains activities that are allowed by the teacher and were usually initiated by the teacher, for example, activities in which students were asked to use the Internet to find facts and prepare a digital presentation or in which they were asked to write an essay and send it to the teacher. This category also included use that was not initiated by the teacher. Occasionally, students used the laptop for listening to music without an explicit suggestion from the teacher. This was widely accepted during individual work, such as reading and doing mathematics. These kinds of uses are defined as “sanctioned use”.

In contrast, the second use-category was clearly neither accepted nor tolerated by the teachers because the activities were either noisy or in other ways challenging the prevalent norms of how students should behave in a classroom. For example, it was clearly against the norms to engage in playing games or browse the web without a relevant educational purpose. These kinds of use are defined as “unsanctioned use”. Table 2 provides a list of indicators of sanctioned and unsanctioned laptop use.

Some of the use-categories demanded a certain level of activity and engagement, whereas other categories required less engagement from the students. Furthermore, the observations in the classrooms made it possible to study the teachers’ different reactions concerning the students’ laptop use.

<table>
<thead>
<tr>
<th>Use category</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanctioned use</td>
<td>Use of word processor, Information searching, Preparing presentation*, Digital recording*, Music listening (using earphones).</td>
</tr>
<tr>
<td>Unsanctioned use</td>
<td>Chatting, Playing games, Off-task surfing*, Downloading.</td>
</tr>
</tbody>
</table>

*Only measured in 8th and 9th grades*

Many of the students' laptop activities in a 1:1 classroom occur either in convergence with the common teacher-formulated activity or in divergence from these activities, thus distracting attention from them (Brown, McGregor, & Laurier, 2013). Furthermore, many of the activities occur simultaneously and consequently, it is difficult for the teachers to monitor them, even though teachers might have different levels of acceptance. Observations and interviews revealed a shared understanding among teachers at both schools concerning what types of laptop use teachers consider as counter productive to learning.
Sanctioned use

The sanctioned use of the laptops increased during the three years. At the introduction of the 1:1 project, less than half of the students (43%) used the laptop on a daily basis to search for information. By the end of the project, the daily use had increased to 90%. The use of a word processor to take notes and work on assignments had a very similar development, from low use to daily use in three years.

![Graph: Information searching - daily use](image1)
![Graph: Word processor - daily use](image2)

*Figure 1. The increase of information searching for the same group through the different grades*

*Figure 2. The use of a word processor during class for the same group through the different grades*

Not surprisingly, 90% of the students use the laptops for information search and word processing every day. These results correlate well with earlier research (OECD, 2009; Pelgrum & Law, 2003; Penuel, 2006), and are activities used in tasks initiated and sanctioned by the teacher.

In Figure 3, we present the sanctioned laptop use as reported in the final survey (9th grade). After three years, information searching and use of word processors are the dominant fields of laptop use, whereas most students did digital recording of sound and took photos/film occasionally. The use of the laptop as a tool for assignments to make presentations or demonstrations seems to be very common, as almost 60% of the students prepared presentations on daily/weekly basis.

![Graph: Sanctioned laptop use](image3)

*Figure 3. How often do you use your laptop during class for the following purposes? (9th grade)*

The data from the final survey have also been examined for correlational relationships between different user patterns (see tables 4 and 7).
Unsanctioned use

Unsanctioned use includes web surfing as well as downloading music or movies, playing games and online chatting, all being potentially disturbing activities. Playing games and chatting was surveyed over the three years, web surfing only over the two last years.

Students' game playing was an often-discussed topic among the teachers. The interviews revealed different opinions, including whether it should be allowed at all. If game playing were to be allowed, the arguments concerned what different types of games that should be sanctioned at school. Discussions were common concerning whether it was feasible for teachers to teach about behaving in an ethically correct manner, and subsequently to allow students to play violent war games.

![Playing games during class](image)

**Figure 4.** How playing games changed from 7th to 9th grade

Figure 4 shows that the proportion of the students who never played games during class increased over the years (from 23 % in 7th grade to 45 % in 9th grade), while a stable proportion (approx. 25 %) of the students continued to play games daily over the years. The increasing percentage of students that never played games comes mainly from the group of students that played occasionally. This group decreased from 49 % in 7th grade to 29 % in 9th grade. It is worth noticing that it was asked for how many times a day the students engaged in playing games, not the amount of time playing games took.

![Playing games during class - gender](image)

**Figure 5.** Frequency of playing games during class (9th grade), divided by gender

Figure 5 shows how, in the ninth grade only, just over 13 % of the students played games several times during the school day. It also becomes apparent that most of the playing games is done by boys. In fact, out of the boys almost half (47%) played computer games daily during class. According to recently published statistics from Sweden (Findahl, 2012), digital playing games differs substantially between boys and girls when it comes to Internet-use at home. However, 37 % of boys between the ages of 12-25 play games on a daily basis, compared to 11 % of the girls.
In our study, a similar pattern seemed to be maintained at school, but the difference is even more significant. Only 5% of the girls played games every day during class, but almost 30% of the boys did. Noticeable is the increase in the number of students that did not play games at all. In the first year, 23% of the students in 7th grade reported that they never played games during class, while in the 8th grade, this rose to 36%. In the last year, 44% of the same group reported that they never played games during class.

![Chat in class](image)

Figure 6 shows the results for chatting during class. Chatting shows a trend similar to playing games. Around half of the students chat during class (which is a higher proportion than those who play games during class). At the same time, the percentage of students that never chat during class increases over the three years (from 11% in 7th grade to 26% in 9th grade). The increasing percentage of students that never chats comes mainly from the group of students that chats occasionally. There were no noteworthy differences between boys and girls concerning chatting during class.

**Passive use**

Two of the use-categories mentioned in Table 2 stand out from the others: “Music listening” and “Down loading.” Firstly, listening to music, which was not initiated nor always officially encouraged by the teachers, was still allowed as long as the students used earphones and did not disturb their peers. Listening to music was a very common activity. Just above 80% of the students were engaged in this on a daily basis. As soon as there were opportunities for students to work on their own, for example, when studying mathematics, they used the laptop as a music player. Secondly, they used the laptops as a tool for downloading files, such as music or movies, an activity that goes on mainly in the background and does not require any attention from the student. Even though this use was not disturbing, nor did it interfere with other activities, it was still not allowed by the teachers. These kinds of activities are performed while doing other things and can be either sanctioned or unsanctioned. We define them as "passive use." As described below, there are small, but significant, correlations, mainly between the unsanctioned activities.

<table>
<thead>
<tr>
<th>PEARSON CORRELATION</th>
<th>Music listening</th>
<th>Down loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information search</td>
<td>.233**</td>
<td>-.082</td>
</tr>
<tr>
<td>2. Word processing</td>
<td>.162</td>
<td>-.140</td>
</tr>
<tr>
<td>3. Presentations</td>
<td>.148</td>
<td>.163</td>
</tr>
<tr>
<td>4. Digital recording</td>
<td>.126</td>
<td>.248**</td>
</tr>
<tr>
<td>5. Playing games</td>
<td>.179*</td>
<td>.265**</td>
</tr>
<tr>
<td>6. Web surfing</td>
<td>.387**</td>
<td>.171</td>
</tr>
<tr>
<td>7. Chat</td>
<td>.398**</td>
<td>.293**</td>
</tr>
<tr>
<td>8. Music listening</td>
<td></td>
<td>.221**</td>
</tr>
<tr>
<td>9. Down loading</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.01-level (2-tailed).
**Correlation is significant at the 0.05-level (2-tailed).
While listening to music may distract the students somewhat, downloading film or music is even more passive. It is done in the background while using the laptop for other purposes and does not include the actual use or consumption of the downloaded material. Nevertheless downloading was considered as obtrusive and was clearly against the rules. Downloading was forbidden as it was considered as illegal; the students needed illegal software (file sharing software) to be able to download the files. Almost no students engaged in downloading during class; on average, less than 5% of the students did this on a daily basis.

The correlation between these two categories of use and the other use-categories is unreliable and there is no noticeable correlation pattern, to some extent because the amount of use (80% of the students listened to music every day, while 5% downloaded files) is so different.

Mean values of laptop use

To be able to discriminate possible differences between the participating schools and differences between genders, we calculated mean values and standard deviation for both sanctioned and unsanctioned use. The alternatives in the survey (Many times every day/Occasionally every day - Occasionally every week – Occasionally every month – Never/almost never) were given a value between 4 - 0, where the lowest value represents never engaging in the activity and the highest number represents daily use. The unsanctioned uses are web surfing, playing games and chatting.

Table 4. Average and SD for unsanctioned use in 9th grade, divided by schools and gender
Survey alternatives were assigned values between 4 – 0 (4 representing daily use and 0 representing never engaging in the activity).

<table>
<thead>
<tr>
<th>Average and SD</th>
<th>µ Web surfing (σ)</th>
<th>µ Playing games (σ)</th>
<th>µ Chat (σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>3.23 (1.46)</td>
<td>1.61 (0.97)</td>
<td>3.06 (1.61)</td>
</tr>
<tr>
<td>Boys</td>
<td>3.37 (1.46)</td>
<td>3.05 (1.53)</td>
<td>3.25 (1.57)</td>
</tr>
<tr>
<td>School 1</td>
<td>3.19 (1.44)</td>
<td>2.38 (1.55)</td>
<td>3.12 (1.59)</td>
</tr>
<tr>
<td>School 2</td>
<td>3.44 (1.47)</td>
<td>2.38 (1.41)</td>
<td>3.20 (1.60)</td>
</tr>
<tr>
<td>Total</td>
<td>3.31 (1.45)</td>
<td>2.38 (1.48)</td>
<td>3.16 (1.59)</td>
</tr>
</tbody>
</table>

We see only marginal differences between the two schools, as well as marginal differences between boys and girls concerning their unsanctioned use. However, as mentioned above in Figure 5, there is a significant difference between boys and girls concerning their engagement in playing games (highlighted in Table 4).

Table 5. Mean values and SD for sanctioned use in the 9th grade, divided by schools and gender

<table>
<thead>
<tr>
<th>Average and (SD)</th>
<th>µ Internet search(σ)</th>
<th>µ Word processing(σ)</th>
<th>µ Prepare presentations(σ)</th>
<th>µ Digital recording(σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>4.28 (0.83)</td>
<td>4.47 (0.73)</td>
<td>2.80 (0.98)</td>
<td>1.94 (0.97)</td>
</tr>
<tr>
<td>Boys</td>
<td>4.45 (0.83)</td>
<td>4.36 (0.90)</td>
<td>2.84 (1.04)</td>
<td>2.14 (1.07)</td>
</tr>
<tr>
<td>School 1</td>
<td>4.42 (0.76)</td>
<td>4.52 (0.73)</td>
<td>2.82 (1.08)</td>
<td>2.11 (1.0)</td>
</tr>
<tr>
<td>School 2</td>
<td>4.31 (0.91)</td>
<td>4.28 (0.92)</td>
<td>2.81 (0.92)</td>
<td>1.97 (1.05)</td>
</tr>
<tr>
<td>Total</td>
<td>4.37 (0.83)</td>
<td>4.41 (0.83)</td>
<td>2.82 (1.01)</td>
<td>2.04 (1.03)</td>
</tr>
</tbody>
</table>

Similarly, as described in Table 6, there are very small differences in sanctioned use between schools as well as in differences due to gender.

Correlations

In order to explore the relationships between the different types of use, both sanctioned and unsanctioned, correlation analyses were performed.

Table 6 shows that there is no or very low correlation between sanctioned and unsanctioned use. This means that it does not matter if the sanctioned use of the laptop increases – the students still use the laptops for unsanctioned
activities to the same extent. This refutes the teachers’ preconceived perception of the reciprocal relation between sanctioned and unsanctioned laptop use. Data show a significant ($p < 0.005$) correlation (between 0.239 and 0.611) between all sanctioned uses. There is also a significant ($p < 0.005$) correlation (between 0.421 and 0.505) between all unsanctioned uses.

Table 6. Correlations between different types of use in 9th grade

<table>
<thead>
<tr>
<th>PEARSON CORRELATION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information search</td>
<td>.611*</td>
<td>.327**</td>
<td>.239*</td>
<td>.129</td>
<td>-.004</td>
<td>.044</td>
<td></td>
</tr>
<tr>
<td>2. Word processing</td>
<td>.293*</td>
<td>.247**</td>
<td>.002</td>
<td>-.032</td>
<td>.084</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Presentations</td>
<td>.306**</td>
<td>.052</td>
<td>.089</td>
<td>.142</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Digital recording</td>
<td>.206*</td>
<td>.001</td>
<td>.239**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Playing games</td>
<td>.444**</td>
<td>.421**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Web surfing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.505**</td>
<td></td>
</tr>
<tr>
<td>7. Chat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.01 level (2-tailed).
** Correlation is significant at the 0.05 level (2-tailed).

Discussion

We have provided empirical evidence that there is not a reciprocal relationship between sanctioned and unsanctioned use of laptops in a 1:1 classroom and we cannot find a correlation between sanctioned and unsanctioned use. Hence, the teachers’ assumption that those students who are playing games and web surfing in a 1:1 classroom are the ones that are using the laptop less for schoolwork can be questioned.

Many activities in a 1:1 classroom, as well as in any classroom, may be disruptive and considered as counter-productive to student learning. Students do not always do exactly what is expected, and they do not always follow the teacher’s task design exactly. Laptops connected to Internet in the classroom provide students with opportunities to develop and elaborate tasks. Thus, student behaviour is not only a question of rules and regulations enforced by teachers, but also a matter of collectively developing an educational practice in which laptops are integrated. The design of a task in a 1:1 classroom is complex and must take a range of various components into consideration, all depending on the specific context. There is a need for reformulating and re-designing traditional tasks as a consequence of technical devices being accessible in the classroom all the time and more or less taken for granted. The teachers have to reflect on the students’ abilities, the time constraints, the learning goals, the demands of the curriculum, and the technical issues. Every situation in the classroom is unique and to solve the problems the teachers have to integrate pedagogy, content, and technology. To merely regard them as separate components is a “real disservice to good teaching” (Koehler & Mishra, 2008, p. 25).

The study shows that students’ daily, unsanctioned use was at the same level throughout the three years. However, as the survey only measured the frequency and not how much time that was spent, we cannot say how much of the students' time was used on a particular activity, for example, playing games.

The rather high level of engagement in unsanctioned use also raises a question about the teachers’ reactions. What is defining the teachers’ opinions about whether an activity is considered unsanctioned or not? If a student, for example, listens to music using personal earphones while working on an assignment, this is usually considered as a sanctioned activity, but still not within the task. However, it is seldom considered as obtrusive or iniquitous as long as it does not have any disturbing effect on other students. Neither are activities, such as playing games or watching Facebook sanctioned. However, teachers apprehend these kinds of use differently to listening to music, mostly because they are considered as disruptive and provoking, and hence, they are often banned or limited. The teachers’ common reaction is that, from their point of view, the unsanctioned use of the laptop is similar to other forms of misconduct. As long as the behaviour does not disturb classmates, it seems that the use is accepted. Furthermore, it is apparent that students gradually elaborate a pattern of conduct that is adapted to the current circumstances. Most of them distinguish between when it is accepted or not accepted to take a micro pause, and a kind of mutual implicit agreement is developed between teachers and students. The question of the extent to which the unsanctioned and passive use has negative consequences for the individual student is still to be answered.
The article deals with the rarely explored routine use of technology in today’s classroom and contributes to the ongoing dialogue about how the classroom norms change over time. The results indicate the need to go beyond looking at unsanctioned use in isolation, and beyond considering it only as a disturbance, and rather to consider unsanctioned use in terms of the circumstances and the relational processes in the classroom.

The results in this study are partly dependent on self-reported data from the students, which can be considered as problematic. There is also a possible bias, because the students were the first in the municipality to get personal laptops, and some students reported that they had a feeling of being responsible for the successful implementation of the 1:1 project. Hence, they did not want to jeopardize the project by being unenthusiastic. The discussion concerning self-reported data and common method bias is well known (Conway & Lance, 2010). However, the usual assumption that common method bias inflates relationships between variables measured by self-report is questioned. For example, Spector (2006) reported that correlations among self-reported variables are near zero. Because we wanted to perform the study in an actual educational setting over an extended period of time, there were no possibilities of using control groups or an experimental setup. Evidence of construct validity in this article is provided through the use of mixed methods (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003). The observations, interviews, and surveys paint an unequivocal picture of the laptop use. Due to an agreement made with the parents, it was not possible to discriminate the students on an individual basis. Hence, we could not follow changes on an individual level, which could be an issue for further research.

Conclusions

Two research questions were formulated. First, what is the relation between sanctioned and unsanctioned use in a 1:1 classroom, where student-use is regulated by discussing norms for use, rather than by introducing formal rules or technical restrictions? As has been shown in the results, there is no reciprocal correlation between sanctioned and unsanctioned use of the laptop. Students tend to use the laptop more for both sanctioned and unsanctioned use as the project continues. The results revealed that the percentage of students that never chatted or played games during class was increasing and the percentages of students that chatted or played games daily were stable at the same level during the three years. As has been shown in figure 4 and in figure 6 the percentage of students who never chatted or played games during class increased from 11% to 26% and 23% to 45% respectively over the three years. On the other hand, the percentages of students who chatted or played games daily remained at a similar level during the three years, between 49% and 52%, and 26% to 28% respectively.

The second question concerned how the use of laptops changes over time, for both sanctioned and unsanctioned uses. At the outset of our research, we expected to see how students, over time, would learn how to use their laptops in their everyday educational activities in an increasingly meaningful way, and that this would mean reduced activity in playing games, chatting and similar use. What we found was rather the opposite. When students increase their use of laptops and hence increase their skill, their use of the laptops extends from use promoted by the teachers to a clearly unsanctioned or even forbidden use. Increased competence and longer experience seem to correlate positively with the activities in all types of use.

Finally, the issue concerning rules and regulations surrounding laptop use in classrooms is highlighted in this article. The students in the study did not have strict rules and the teachers were obliged to have ethical discussions about the use rather than forbid or restrain the laptop use. The results show that the unsanctioned use was relatively high, but on the other hand, it was stable and did not increase throughout the years. In addition, the number of students who did not game or chat at all increased every year. Further research is needed to investigate the relationship between rules and students’ use of laptops in the classroom.

References


