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## Understanding students' use and value of technology for learning

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### Abstract

Despite significant research in the field of educational technology, there is still much we do not fully understand about students' experiences with technology. This article proposes that research in the field of educational technology would benefit from a sociological framing that pays attention to the understandings and lives of learners. Within a broader study that aimed to investigate students' use and value of technologies guided by Bourdieu's sociological theory, this article reports on qualitative embedded case study data of 12 students in years 9 and 10 from two Australian secondary schools. The article provides detailed accounts of students' experiences with technologies in various contexts with consideration of the milieu in which technology use occurred, illustrating the heterogeneous and complex network of influencing factors on students' technology practices. The findings and discussion augment the application of Bourdieu's concepts of field, habitus and capital as a tool to view and understand students' varied and complex experiences and relationships with technology.

### Keywords

value, understanding, learning, students, technology

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# Understanding students' use and value of technology for learning

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Despite significant research in the field of educational technology, there is still much we do not fully understand about students' experiences with technology. This article proposes that research in the field of educational technology would benefit from a sociological framing that pays attention to the understandings and lives of learners. Within a broader study that aimed to investigate students' use and value of technologies guided by Bourdieu's sociological theory, this article reports on qualitative embedded case study data of 12 students in years 9 and 10 from two Australian secondary schools. The article provides detailed accounts of students' experiences with technologies in various contexts with consideration of the milieu in which technology use occurred, illustrating the heterogeneous and complex network of influencing factors on students' technology practices. The findings and discussion augment the application of Bourdieu's concepts of field, habitus and capital as a tool to view and understand students' varied and complex experiences and relationships with technology.

Keywords: sociological theory; Bourdieu; student perspective; technology

## Introduction

Significant government investment to resource schools with digital technologies has occurred on a global scale. Infrastructure developments, such as resourcing schools with computers and internet access, has been a focus world-wide (Balanskat and Garoia 2010; iN2015 Education and Learning Sub-Committee 2006; New Zealand Ministry of Education 2013; OECD 2010). In Australia, the federal governments' commitment to digital learning was demonstrated by the implementation of the Digital Education Revolution, a \$2.1 billion five-year (2008 – 2013) initiative to provide infrastructure to schools through access to high-speed internet, digital learning resources and teacher professional development (AICTEC 2013). This initiative included the Laptops for Learning Program (DEEWR 2008) to achieve a one-to-one ratio of computers to students in the upper years of secondary school.

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Despite investment in technology in schools, empirical research demonstrates that the current state of education systems is far from the revolution promised by such initiatives (OECD 2010; Shaw et al. 2013). For example, 2009 Programme for International Student Assessment (PISA) data of 15-year-old students from 65 countries indicated no correlation between frequency of computer use at school and student test performance (OECD 2011). This suggests that, despite investment over past decades, there is little evidence that technology has had an impact on student learning experiences and outcomes (OECD 2011, 2013). Research into students' perspectives can provide insights into the complexities of students' experiences to improve the ways technology is integrated in school (Selwyn, Potter, and Cranmer 2010). To date research has provided little in-depth understanding of students' experiences with technology for learning from the perspective of students. And, perhaps due to the atheoretical nature of the research, findings often raise more questions about students' technology use than answers (Bennett and Maton 2010; Crook et al. 2013).

A small number of quantitative studies exploring students' perspectives have begun to provide an empirical basis for understanding students' perspectives (Crook et al. 2013; Ellis et al. 2011). Studies that have adopted mixed methods, including interviews, observations and questionnaires to garner students' perspectives, have demonstrated the valuable insights gained through more in-depth inquiries (Brown 2012; Conole et al. 2008). For example, a large-scale study of over 600 UK primary-aged students used interviews, surveys and student illustrations to explore students' perspectives (Selwyn, Potter, and Cranmer 2010). The exploratory nature and corroboration of data revealed new insights and exposed contradictions to widely held views about students' use of technologies.

Bourdieu's sociological theory has been taken up by some researchers to investigate the social nature of technology for learning, acknowledging the social and cultural milieu in which technology practices occur. This relatively small body of research has used the theoretical constructs to consider the influence of students' socioeconomic and sociocultural backgrounds and familial practices on students' practices with technologies. For example, Bourdieu's concepts were key to research on teenage technological experts to conceptualise their formal and informal learning experiences with technology and the implications for the school field (Johnson 2009a, 2009b). While other studies have focused on particular elements of Bourdieu's theories, the concept of habitus was used to study the relationship between young people's digital tastes and social class (North, Snyder, and Bulfin 2008). The case studies of

25 Australian 15-year-olds suggested a strong link between technology use and class. It was reported that the capital of their family informed the dispositions of the young people, thus impacting on their engagement with and interest in technology. A small number of studies have too used Bourdieu's concept of capital, demonstrating associations between familial capitals and how the social

class of parents informs the perceived potential of technologies for learning (Hollingworth et al. 2011, Sutherland-Smith, Snyder, and Angus 2003), and primary students' use of technologies for homework (Cranmer 2006). Through the use of Bourdieu's sociological constructs these studies were able to illustrate narratives of practice, providing an understanding of the circumstances and experiences that presuppose practice. These studies demonstrate the worth of sociological framing and in-depth investigation of students' learning lives. Yet, despite their contribution to understanding students' relationships with technologies, studies such as these with a sociological approach are not common.

The study reported in this paper investigated the relationships secondary school students have with technologies both at school and in their everyday lives. The study was guided by Bourdieu's (1986) concepts of field, habitus and capital. Specifically, it explored the way students experience technologies at school, in their homes, at work and in other social contexts. Ultimately, the study was aimed to investigate the nexus between these contexts with the aim of informing an approach to teaching and learning that considers students' varied experiences, knowledge, perspectives and backgrounds. This study advances knowledge by investigating young peoples' technology use through their perspectives, and taking into account the milieu in which technology use occurs guided by the sociological theory.

## Methodology

This paper draws on the student case data of a broader multiple embedded case study of students in two Australian secondary schools. The aim of the study was to investigate the broader milieu of students' technology practices, through listening to the students' perspective, to demonstrate the complex network of contextual and circumstantial influences on students' technology practices.

The two schools participating in the case studies were both regional schools with socio-educational values slightly lower than the Australian average (ACARA 2012). Census data of the two communities indicate that the area of the Northern high school had a median family income higher than the Australian median, while the area of the Southern high school was below the national median (ABS 2011). Households connected to the internet in both areas were lower than the Australian average (80%), with the northern region (77%) slightly more connected than the south (65%) (ABS 2011). Thus, the two schools represent polarity of the Australian household averages of income and internet access.

The study involved two class cases from each school, with a total of 64 students. From within each of these class cases, three students were selected as cases (Figure 1). Student cases were selected through purposeful maximal sampling (Creswell 2007), based on data from the background questionnaire, administered with the class cases, with the aim to include variation in students' family backgrounds and, access, use and perceptions of technology.



Figure 1. Study design depicting class (4) and student cases (12) within the two secondary schools.

The 12 student cases provided in-depth descriptions and insight into students' technology practices through a series of rigorous and exploratory data-collection activities that spanned over a 10-week period. Firstly, students participated in an initial one-on-one structured interview with the aim to discuss students' practices with technology at school but more importantly to begin to uncover more detail about their background, dispositions and the value they place of specific technologies and why. Students then recorded all technology they used over a two-week period in a technology diary. These diary records provided a snapshot of technologies used over a period of time, but also served as a stimulus for discussion in the final semi-structured one-on-one interview, during which the participant's technology use was discussed in depth and in relation to the contexts in which it occurred.

The data-collection tools were central to the aims and design of the study. Interviews can be one of the strongest methods to explore young people's interpretations of their lives and to demonstrate how they make sense of and contribute to processes of society (Eder and Fingerson 2002). However, the imbalance of power between student and researcher can impede discussion. Hence, the use of student background information (questionnaire responses) and patterns of technology use (technology diary) served as a catalyst for students to be active in the data-collection process and provided stimulus for in depth and authentic discussions about technology use. The exploratory nature of the interview questions allowed students to offer their perspectives on a range of issues that were of importance to them and their practices.

### Theoretical framing

The study design and analysis were guided by Bourdieu's (1986) sociological theory to gain a critical understanding of students' use and value of technology

in school and everyday life. Bourdieu's concepts of habitus, capital and field, which he describes as his 'thinking tools', provided a lens in which to view practice (Bourdieu and Wacquant 1989, 50). Formally, Bourdieu summarises

this relation as: '[(habitus) (capital)] + field  $\frac{1}{4}$  practice' (1986, 101). This equation, put simply, means that practice results from relations between an individual's dispositions (habitus) and their material and symbolic assets (capitals), and position in a field within the current state of play of that social arena (field) (Maton 2008). The concise equation highlights the crucial significance of Bourdieu's approach: the interlocking nature of the three elements.

In order to achieve a holistic understanding of student's technology practices, their practices cannot be adequately understood without consideration of the milieu from which young people cannot be separated. Thus, Bourdieu's concepts provide a theoretical lens with which to understand students' practices. More specifically, Bourdieu's concept of habitus guides discovery of dispositions of the student; their capitals and ability to manoeuvre and utilise these; in light of the various fields in which students operate provide insights into their perspectives and practices with technology.

The theoretical framing guided the design of data-collection tools, including the questionnaire and interview questions, as well as being a crucial element in data analysis. The initial interview, technology diary and final interview data were coded according to Bourdieu's concepts of habitus, capital and field. Categorical aggregation was used to establish themes and patterns within these coded concepts to form a second level of analysis (Creswell 2007). The findings are presented according to themes that emerged from the data, whilst the discussion explores the findings through a Bourdieuan lens and reflects on the theoretical contribution to our understanding of students' experiences with technology.

## Results

Data were collected from the schools during the third school term of 2012. Both schools received resources and funding as part of the Digital Education Revolution and Laptops for Learning program (DEEWR 2008), hence each student in years 9 and 10 had possession of a laptop issued by the school. This paper reports on the student case data set; specifically, data from the 12 student cases in the form of records from technology diaries and interview data conducted before and after the completion of the diaries. A broad overview of student use of technologies in everyday life and at school is presented first, followed by detailed accounts of students' experiences with and perceptions of technology.

### Technology use outside of school

Students' technology use outside of school was dominated by communication and interest-driven activities. Students used a range of applications to

communicate with peers, family and friends, including social networking sites (SNS), mobile phones for calls and text messages, Skype and email. These communications were predominately used for everyday life purposes, and occasionally for communicating about school-related tasks. Playing games, listening to music, watching videos online and general internet browsing were also frequently performed outside of school.

Generally students' use of these technologies was habitual, performing very similar activities each day; and basic or passive uses, using the most rudimentary

features of the applications. For example, Michael watched videos on YouTube everyday, however, did not use other features of the site like creating an account to subscribe to users or upload videos. He explained, 'I don't have an account yet because I don't understand how to do it' (Final interview).

Students reported that they had few restrictions, by their parents, on their technology use at home. As Kylie explained: 'Well they know that I'm on Facebook but they don't really have any rules. I used to when I was younger; they used to tell me 'Twenty minutes and you're off' but now they just let me do whatever' (Initial interview). One student's parents had forbidden her to use SNS before she was the required age, and one student had downloads limits.

Most students' parents used technology in the home, with only 2 out of 21 parents not using technology, as reported by students in the interviews. Half of the parents used technology for social purposes, seven for work-related uses, five for leisure uses and four parents used technology for paying bills.

Technology uses outside of school for non-education-related purposes were more frequent than those for educational purposes. Students' use of technology for education-related purposes was largely extensions of work at school and for organisation. Figure 2 depicts the most frequently used technological applications for education-related purposes outside of school.

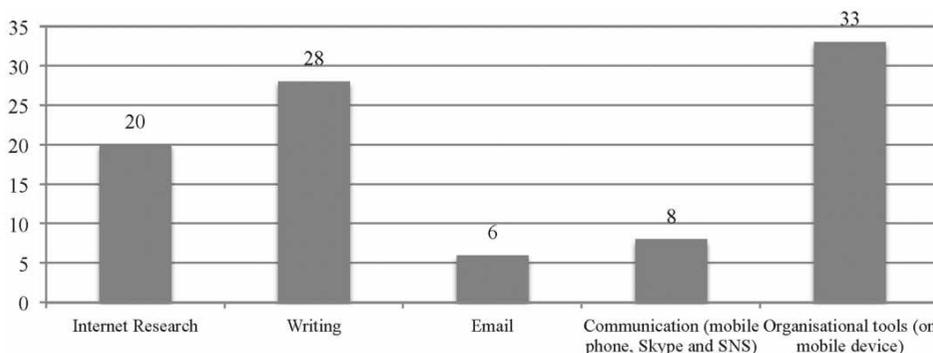


Figure 2. Frequency of use of technological applications outside of school for education-related purposes over a two-week period, from 12 student cases, student technology diaries.

Note: Applications with fewer than 5 uses among the 12 participants over the period have been omitted in this figure.

The most frequently used application related to education was the use of organisational tools, particularly by year 10 students, including alarms to wake up for school and a timetable application to plan and prepare for the day's classes. Writing and internet research tasks at home were predominantly extensions of schoolwork either not completed during the school day or set as homework tasks or assignments by the teacher.

### Technology use at school

A diverse range of digital devices were used at school including laptops, inter- active whiteboards (IWBs), digital projectors (connected to laptops and hand- held computers), desktop computers, video conferencing and smart devices including iPods touches<sup>w</sup> and smart phones. Through further discussion with students, it became evident that many of these technologies were seldom used and in fact school laptops were the most commonly used device for edu- cational purposes, with students reporting that they used their laptops at schools most days.

Students used their laptops for a range of applications. Figure 3 presents data from students' technology diaries of the frequency of such applications. Writing and online research were unanimously the most frequent uses of technology at school reported by students, and supported by records in students' technology diaries over a two-week period.

Data from student technology diaries provide evidence that students predominantly used technology for the consumption of information, rather than creation and publishing tasks. Tasks in which students interact, create and publish using technologies were rare. One student recorded in their technology diary creating a website and two other students making PowerPoint presentations.

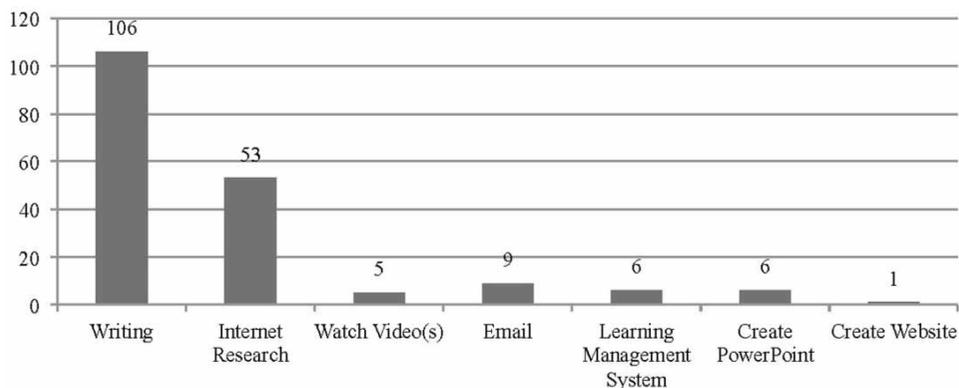


Figure 3. Total number of times students used technological applications at school for education-related purposes over a two-week period, from 12 student cases, student technology diaries.

While data on the kinds of technology and frequency of technology use at school provide a relevant snapshot of the current state of play, alone they are insufficient to describe the nature of technology practices. Thus, the subsequent findings explore the implementation of technology for learning at school from the students' perspectives.

### Learning with technology

Students' access to the internet, through the use of laptops, was the most common topic of discussion during interviews; other uses of digital technologies also provide detailed accounts of technology use for learning.

### Students' go online

One of the main affordances, described by students in this study, of one-to-one laptops in class was access to the internet. All students in the student cases described conducting online research as part of their lessons at school, including locating information to answer questions provided by the teacher, finding pictures and diagrams to accompany notes taken in class or for assignments.

They usually just write instructions on the board; in science at the moment we're learning about fossils so they might give you a list of fossils and they just say 'Research how old they are, put a picture' – that kind of stuff. (Kylie, Final interview)

Laptops in the classroom provided students with a means to access the internet and thus access information. Students expressed that they valued this activity; they liked having instant access to information and the ability to locate information from a range of sources and perspectives. As Bryon described, 'I like the internet because instead of having to go through the textbook and find it all you can just quickly type it in and you have the answer straight away' (Byron, Final interview).

Students also reported that they believed access to the internet for information was the main reason they were issued laptops as part of the governments' one-to-one laptop program. As one year 10 student explained: 'well I reckon it's used for finding information – that's why they have them so you can just type to find information' (Lawson, Final interview).

The use of the internet, for both educational and everyday purposes, was a key point of discussion throughout the interviews. Access to the internet was of great value and importance to these students and it seems connectivity had the greatest impact on their day-to-day classroom activities since receiving the school-issued laptops. The subsequent activities reported by students demonstrate the use of technology with impact on their learning experiences. It is important to note that these findings were not widespread in the data, but rather reported by a small number of participants or reported as infrequently occurring at school.

## Personalised learning

Students discussed how they used technology to support their learning in class through personalising their learning experiences by supplementing their learning with online research. Three students explained that they experienced difficulties comprehending concepts being taught in class. In these cases, students described how they used the internet and videos, either in class if time was provided for online research, or at home, to clarify these concepts. These students described using the internet as a method to access information from a range of perspectives and visual representations to suit their personal learning needs.

My teacher – he teaches us we have to listen and write down notes and sometimes . . . I'm not very good at listening so I . . . might go home and research DNA and stuff like that so I can understand it better and then I just might try and get ahead and try and understand concepts better. (Alice, Initial interview)

Unfortunately, students' descriptions suggest that teachers did not encourage personal variations, such as these, during lessons. None of the students described using technology in the classroom for educational purposes unless being instructed to. All technology used for learning in the classroom was directed by teachers, often with minimal options for students' personal choice. This suggests that their learning environments offer few opportunities for independent or personalised learning.

## Increased variety in the classroom

Students reported that they used technology more frequently since receiving laptops compared to previous occasional visits to the computer lab. The data suggests that teachers too used technology more frequently, adopting a range of technologies to present lesson content, including the use of IWBs; laptops and handheld computers and projectors; and learning management systems like Moodle and Edmodo.

Students mentioned that teachers use IWBs, where available, and digital projectors connected the laptops or handheld computers in class to present lessons. However, most students had a passive role in these lessons: 'It's that

kind of new thing that the teachers have been experimenting with over the last couple of years. Normally it's the teachers using it' (Lawson, Initial inter- view). Only 2 students from the 12 student cases stated that they had actively used the IWB while at high school.

Watching videos was also identified as a technology adopted by teachers. Seven of the 12 students reported that teachers used Clickview and YouTube to present videos in class. Students described videos as an engaging, relevant and visual means of learning.

I'd prefer if they used YouTube a bit more to give you examples of what's going on. There are plenty of examples on YouTube like instead of just telling

you about it they can show you how it actually happened. (Lawson, Initial interview)

Lawson continued, describing the effect of videos on his generations' attention, advocating the incorporation of YouTube at school as a method to engage students,

Every time you see the screen [students] automatically look up at it. Like at assemblies, when someone has a movie thing going on and the projector comes down, everyone has all eyes towards it; it just gets people's attention. (Lawson, Initial interview)

Two-third of student cases reported that teachers used learning management systems including Moodle or Edmodo to deliver lessons to students in the form of lists of questions to answer, hyperlinks or worksheets to download, or use them for students to submit their completed work for teachers to mark. For example, Byron explains, 'Sometimes for geography the teacher sets work on [Moodle] and we just download it and do it' (Byron, Final interview).

While Moodle and Edmodo provide opportunities for interactivity, students did not report using these features. Students' description of these activities begs us to question whether this is fundamentally different from a printed version of the same task on a piece of paper. Furthermore, data from students' technology diaries demonstrate that these social tools were used infrequently.

### Students' perspective

#### Students' value of technology

Students described a range of technological devices and applications that they valued, although being connected was one theme that emerged as the most valued use of technology. Half of students reported that mobile technologies, including iPod<sup>w</sup>, iPod touches<sup>w</sup> and mobile phones, were devices that they could not live without. They described these devices as a way to be constantly connected to broader networks of peers, family, friends and information, through communication and access to the internet. As Drew and Michael described: 'Well I like to always look at stuff and then I can see what's going on around me' (Drew, Final interview); 'Just the dependence of it like communication. Because we're brought up with technology it would seem practically impossible to connect with people without it' (Michael, Final interview).

#### Students' value of technology for learning

Students commented that technology is a part of modern society and thus a necessity for them for learning and in preparation for the future. Ten out of 12 student cases described technology as being an invaluable source of

information that had important affordances for their learning. On a more practical level, two-thirds of student cases described using technology for efficiency. As Drew described, '[It's] quicker and we can research stuff quicker and we can get through the subject quicker' (Final interview).

Three quarters of students expressed that using the internet and laptop made tasks 'easier' and 'quicker' to complete. Students described being able to find information online quickly, and then easily copy the information into their own work without typing. It is important to note that writing and online research were overwhelmingly the most frequent activities completed at school.

Of possible concern, four students explained that they felt typing had a negative impact on their learning, reporting that they felt they did not effectively remember lesson content when using their laptops to type, compared to using pen and paper. Abbey described her concerns,

It's like I'm paying attention more to what I'm writing [when using a book] and it's just easier to remember. It's more manual work than just typing it up on a laptop and forgetting it. It's more like you're copying something; you're not actually learning it. (Initial interview)

This suggests that when students type notes or complete 'copy and paste' activities in class they do not feel they are engaged in deep or meaningful learning. One-third of student cases supported this point, stating that the nature of class work, often teacher-directed online research or writing tasks, allowed easy completion so they could have free time at the end of the lesson.

The use of school-issued laptops, both at school and in their everyday lives, was a recurrent topic of discussion during interviews, and more importantly a topic with mixed responses. The data indicated that some students valued school laptops more highly than others. Interestingly the students who had access to fewer technologies at home, Tilly, Alice, Kelvin and Kylie, described the school laptops as being very valuable to their learning.

Probably my school laptop because I've got all my work on that; it's got direct access to all the school websites – you can get onto ClickView and stuff like that quite easy. The home one is not really connected with all that stuff. (Alice, Final interview)

While those students who had access to a greater variety of technologies in the home, used their school laptops only at school and seemed to focus their descriptions on the downfalls of the school laptops, as Amber describes,

Mostly I use the home laptop because everything is blocked on the school laptops anyway. I can't even do most of my assignments or homework on there because it's blocked ... The laptop is just quicker; it's easier to use than my school laptop. Pretty much I only use my school laptop when I'm typing up an essay or I'm just getting an assignment off my normal laptop onto my school laptop to use at school. It's hard to use at home, the school laptop. (Amber, Initial interview)

These mixed reviews of the school laptops suggest that not only are students' perspectives diverse, but are also influenced by a number of contextual factors, both at school and in their everyday lives that impact their use at school.

## Discussion

The aim of this paper was to highlight students' practices with and perspectives of technology, situated within the broader milieu of their technology use. In this discussion we will consider students' descriptions of technology use through the lens of Bourdieu's three key concepts: field, capital and habitus.

### How do students use technology in different fields?

Field is a spatial metaphor used by Bourdieu to define the structure of the social arenas and the individuals that occupy them. He describes fields as structured systems of networks of social connections, where individuals of varying positions manoeuvre, vying for stakes, resources and access (Bourdieu 1990).

Field is a crucial concept considering technology as a social tool that cannot be removed from the structures, cultures, practices and relations that constitute its use in a particular field (Selwyn 2012). The various fields in which students use technology is of significance as recent PISA data suggests that there is a stronger correlation between students' educational performance and their computer use at home, rather than their computer use at school (OECD 2013). Thus, an understanding of students' practices in various fields, including the home, provides valuable insights to their technology practices at school for learning.

The findings in this study primarily comprised two fields: school and students' homes. These fields each had defining objectified and embodied aspects that mediated students' technology practices. Thus, in order to conceptualise practices within these fields, generalised definitions of these two categories of the field will be presented.

Generally, students' home fields were contexts where the family members determined the physical technological resources available and culture of technology use. Within the home, a majority of students reported themselves and their siblings as the primary users of technology. The findings also suggested that students had a relatively higher position in the home field, compared to the school field, in relation to technology use: with frequent use and generally few rules imposed by their parents. Thus, students' home fields were sites where they were autonomous in their technology use, using it when and where they like, for social and leisure uses. Students also used technology at home, to a lesser extent, for education-related purposes. While many students used technology to complete tasks set by the teacher, some students self-directed their learning at home, using organisational tools such as digital alarms and

timetables to prepare themselves for school, as well as extending their learning from school.

Members within these home fields seemed to share in a common belief or opinion of the place of technology. Bourdieu termed this shared belief, *doxa*, an adherence to which determines membership of the field (Bourdieu 1990). Students expressed their belief that technology was an essential part of their lives. It is inferred that this belief was shared among the members of their home field through students' access to varied, but nonetheless adequate range of technologies, flexibility of access and some shared practices between members, most commonly for social and leisure. This belief mediated their independent use of technology, usually within the home field, where social and leisure uses of technology were frequent.

Conventionally, the school field is an institution with a long history of conservative practices and policies. The school field symbolises authority, where teachers occupy a higher position of power than the generally subservient students. The culture of technology use is bound by rules and practices of the school institution, which are well entrenched doxical practices by years 9 and 10 of schooling. This was demonstrated in the findings where teachers largely dictated students' practices with technology, with many limitations enforced, including what classes they used their laptops, what programs were used, as well as the restrictions on online content accessible due to internet filters imposed by the education system. Students had few opportunities to make decisions or options for personalised learning.

Overall, the doxical practices and culture of technology use between school and home fields were generally very different. According to Bourdieu, as an individual moves between fields their ability to succeed is determined by the congruence of their habitus and capital with that of the dominant within the field, and their ability to utilise or gain capital in the field. While the finding that students' technology practices at school and home are different is well established in the literature (Lee and Levins 2010), Bourdieu provides a means to understand these differences, as outlined above. Another researcher (Johnson 2009a) also used Bourdieu's theory of field to investigate students' informal and formal learning across fields. Johnson's study revealed tensions between students' and educators' understandings of what constitutes learning and the place of technology in this process. These rich narratives and understandings have significant implications for practice that extend beyond superficial pedagogical modifications.

These findings add detail to the growing body of research that investigates the nexus between home and school fields (Lee and Levins 2010). However, rather than advocating the amalgamation of technology uses between contexts, we aim to understand students' practices in these fields, what skills and knowledge they bring to school (capital) and how this may influence their perception and practices at school (habitus).

What capital do students bring to and gain at school?

For Bourdieu, capital is the currency or power of the field, although does not relate exclusively to economic power, but instead encapsulates all forms of power, whether they are material, cultural, social or symbolic. Individuals and groups draw upon their economic, cultural, social and symbolic resources in order to assume and enhance their position in a field (Grenfell 2009).

An understanding of the 'knowledge and assumptions students bring to academic contexts from other aspects of their lives' (Bennett and Maton 2010, 326) is critical to understanding students' practices and informing teaching and learning. This section of the discussion will consider students' capital in terms of their use of and experiences with technology in various fields. While it is acknowledged that Bourdieu details four kinds of capital, social, cultural, economic and symbolic, the scope of the student case study data allows for analysis of only social and cultural capital.

Cultural capital is a form of power gained through socialisation into practices, skills and knowledge and qualifications (Everett 2002). In our case studies, students used and acquired cultural capital through developing competencies with technologies through use and interaction with agents of socialisation.

Students developed their cultural capital within the home field through investing a large amount of time in a range of technology-based skills and knowledge. This training included creating and maintaining social networks through the use of SNSs, email and other forms of communications, and developing skills and knowledge required for gaming and internet browsing. The time invested in these practices provides students with cultural and social capital through technological skills and knowledge and relationships formed. In schools, attempts have been made to utilise students' cultural capital within formal learning through the use of learning management systems like Edmodo, to mirror SNSs. However, our findings indicate minimal uptake by students and impact on learning. This suggests that students do not profit, or perceive the benefit from the use of such technologies in the school field.

The findings highlight a number of potential problems associated with students' cultural capital as they moved between home and school fields. The data demonstrated how students' varied cultural capital had the potential to both reproduce inequalities and enhance success.

Students' socialisation of technology use through exposure and interactions with peers, family and teachers was generally basic demonstrating reproduction of students' cultural capital. The findings indicated that students' use of technology in their everyday lives and at school, while generally very different, could both be characterised as basic and habitual. Most students' technology diary records and interview data described practices in both fields as routine, following a similar pattern each day and week; and generally engaging in low-level skills and knowledge. Findings reporting students' use of technology at

school was dominated by consumption of information and rather than the creation of content. Similarly, findings on students' use of technology in their everyday lives, while centred on participatory media, suggest it is used in a fairly limited scope. This finding supports current research that indicates that participatory technologies are a large part of students' everyday lives (Manca and Ranieri 2012), but also challenges widely held beliefs that students demonstrate sophisticated skills and knowledge with technology (Prensky 2001). This finding supports a growing body of literature that suggests many students' technology use is quite elementary (Kennedy et al. 2010), but also demonstrates that students' socialisation, or exposure to technological experiences in both fields was overall basic.

In our case studies, students also described concerns that online research tasks had a negative impact on their learning. Students' descriptions of their 'copy and paste' practices when completing online research suggests that they do not possess the skills and knowledge, or cultural capital, required to critically engage in the task. Using a Bourdieuan lens to understand students' engagement with tasks, contributes to a growing body of research that suggests students' use of the internet for information seeking can be influenced by a range of factors including socioeconomic status and networks of support (Eynon and Malmberg 2011). For students who do not possess the cultural capital required to complete these tasks, the gap between them and their capable peers is perpetuated. And according to Bourdieu, one's capital can be further magnified by their social capital.

Bourdieu defined social capital as a symbolic form of capital manifested through resources linked to social networks of contacts and support (1990). Social capital only has currency when acknowledged and valued by those of the network in the specific field. Moreover, social capital magnifies other forms of capital (Grenfell 2009).

As discussed previously, many students invested a significant amount of time creating and maintaining online networks of contacts and supports. For some students these networks were a means to enhance their social capital through staying connecting, improving relationships and gaining information. However, it could also be inferred, that for other students, having fewer contacts or being excluded from these networks has the potential to magnify the inequalities in their capitals.

Students' use of their laptops at school to access the internet is an example of the connectedness of these forms of capital and how social capital can magnify cultural capital. Indisputably, in this study, the biggest impact upon students' learning experiences at school and cultural capital was the ability to connect to the internet in the classroom. Students described how access to the internet provided them with connection to vast amounts of information, perspectives and modes of learning; and moreover their access was something they valued highly for educational and other purposes.

In a society where 87% of households are connected to the internet and a growing number of people are accessing the internet via mobile devices (Ewing and Thomas 2011), it is no surprise that the state of being connected is valued over the particular device that supplies the connectivity (OECD 2012). However, the importance of connectivity reaches beyond the ability to access information online, but more importantly opens opportunities for individuals' 'seizing the opportunities that connectedness offers' (OECD 2012, 15). With this in mind connectivity can be viewed as a form of cultural capital acquired through practice and training, and as a form of social capital (Bourdieu 1986) as individuals may profit on a social level through networks of contacts and supports. Thus it is important to consider, the state of being connected does not necessarily result in a gain in capital. Without the skills and knowledge or training required to effectively (to utilise and possibly gain capital) use the internet, or the support networks to provide assistance, one would not have the capital to benefit from connectivity. Thus, educators have a role to play in supporting students through a thorough understanding of the successes and challenges students experience when engaging in online tasks.

How does habitus shape students' practices?

Habitus is one of Bourdieu's most commonly adopted concepts, and one that is often misused in empirical research and highly criticised (Maton 2008). Habitus is defined by Bourdieu as the 'durably inculcated system of structured, structuring dispositions' found within a field and embedded within the individual (Bourdieu 1990, 52). Habitus is 'structured' by an individual's past and present circumstances, such as family background and educational experiences. It is 'structuring' as an individual's habitus helps to shape their present and future thoughts and practices (Maton 2008).

The concept of habitus is bound to the field, thus both the field and the social agents within the field and how they contribute to and evolve the field is crucial to establishing an understanding of an individual's habitus (Maton 2008). Interviews with students offered insights into their circumstances and past and present experiences with and without technology at school and in everyday life. The findings presented in this article can be used to reflect upon how they may shape students' habitus, that is, their perceptions, value of and practices with technology. While habitus encompasses more than just experiences and perceptions, the scope of the study and the data-collection methods limit the definition of the habitus of these students, highlighting challenges associated with analysis of habitus (Maton 2008). Rather, descriptions of students' dispositions towards technology use and learning with technologies are offered.

Students' circumstances including their access to technologies within their homes were varied. The findings indicated that students with access to fewer technologies in their home field exceedingly valued their school-issued

laptop. Therefore, the material resources available in students' home fields impacted upon their habitus and practices with their school laptops.

The range of students' technology practices in their everyday lives demonstrates that their dispositions towards technology for leisure and socialising are varied. Students had different preferences for the kinds of technologies they used (or preference not to use technology) based on their interests. Furthermore, through discussion of what technologies students valued they first and foremost perceived and valued technology as a social or leisure tool over a learning tool. Students' doxa and past and present experiences with technology in the home field, where social and leisurely use of technology prevailed, could explain students' dispositions.

Overall, the most commonly valued and use of technology was for socialising, using phones and computers to communicate with peers and family. Half the student cases described this use of technology as something they could not live without. The use of technology for communication for these students and perhaps for society, in general, is a unifying cultural code or collective habitus (Everett 2002).

Students' perceptions of technology use and recollections of their use at school provided insights into how their habitus has been structured. Students recalled relatively basic uses of technologies used over their time at high school, which centred on teachers' presenting materials and occasional visits to the computer lab. Considering these past experiences with minimal use of technology at school, it could be inferred that these have shaped students' doxa, how they perceive and used their newly acquired laptops in the classroom. Students' present experiences with laptops at school continue to shape students' perceptions of technology. One example of this is Lawson's understanding of the purpose of the laptop initiative, to provide access to the internet, perhaps shaped by the prevalent use of laptops for online research in the classroom.

Students' also expressed clear, yet varied, dispositions towards the use of technology for learning. The most common preference shared among the 12 student cases was the use of videos for learning. Students described videos as an effective and relevant means of learning. Significantly, watching videos was a technology that traversed school and everyday life fields. Thus, it is a technology that aligns with students' habitus. Students also had mixed preferences for the use of technology to write and store their schoolwork. Some students enjoyed the efficiency of using their laptops for these tasks, while others preferred traditional means and perceived the use of technology to type as too difficult or problematic. Another Australian study of secondary school students (Johnson 2009b) investigating dispositions towards technology for learning also found variance between students' habitus. Students' varied habitus has implications for learning at school considering the findings depicted generally restrictive and controlled learning experiences at school. This leads us to question whether students' learning preferences are being considered in the school field, and the implications for students' learning.

An understanding of students' habitus, how their perceptions and preferences for technologies and learning have been formed by their past experiences and by their circumstances can provide an understanding of students' current and perhaps likely future practices with technology. In understanding Bourdieu's concept of habitus, it is important to note that habitus is not set, but evolves. Individuals' current circumstances and perceptions (at any time) are a product of their experiences. The decisions that we make are a product of our habitus, for our habitus has shaped our vision. Our choices then, in turn, shape our future possibilities. Experiences at school are one example of experiences that may shape a students' habitus. With this understanding of habitus as capable of evolving, it becomes evident that education may have a role to play in transforming students' habitus and bridge students' digital inequalities.

### Implications for learning

Before considering the implications of these findings, we must acknowledge the limitations. Care must be taken when considering the implications for practice due to the reliability of the self-reporting nature of the data; however, these were largely overcome through the triangulation of multiple data sources (Creswell 2007). Issues of generalisability may arise due to the small sample size, although, the in-depth descriptions of case schools and student provide sufficient detail to allow for similarities and differences to be drawn.

The findings of this study highlight the value of in-depth investigation of students' practices through the students' perspective, to understand the complex relationships students have with technologies in their everyday lives and at school. This understanding is crucial to uncovering the successes and challenges arising from students' experiences with technology (Ellis et al. 2011) and to ultimately inform teaching and learning experiences that meet the needs of learners.

Of possible concern is that education policies and schools are overlooking the opportunity for schools to expand students' experiences with technology in formal learning contexts (North, Snyder, and Bulfin 2008). Learning experiences that build students' cultural and social capitals, more specifically to socialise students into technology use that is different from their practices at home, that expose them to skills, knowledge and a techno-culture to expand their horizons and prepare them for their futures were absent in the study. Moreover, providing students with capital and shaping their habitus may allow them to be capable and competitive in the digital society.

The findings of this study have demonstrated the worth of investigating students' perceptions of their technological practices in order to highlight the subtleties and complexity of their relationships with technology. Research that further investigates students' from varied backgrounds and exploring their family background and use of technology outside of school could contribute to the body of research from the student perspective.

The study embraced Bourdieu's theoretical constructs as a theoretical, methodological and analytical tool. Although, as demonstrated in the discussion the scope of data collection, that is students' self-reporting and conducting the data collection within school contexts, limited the analysis of some elements of Bourdieu's theory. In order to more deeply engage with the theory, research that collects data from the fields in which practices occur and from other social agents within those fields would provide deeper understandings of a broader picture of students' technology practices. Furthermore, research informed by sociological theory would add to our understanding of applying Bourdieu's concepts to students' practices with technology.

## Conclusion

The investigation of students' perspectives of their technology use through a sociological approach has explored the nexus between students' everyday life and school fields. We propose that an understanding of students' experiences through a Bourdieuan lens may help to shape a new approach to teaching and learning that considers students' experiences, knowledge, perspectives and backgrounds. It is acknowledged that technology has not revolutionised education, but rather shows evidence of an evolution (Selwyn 2011). While government education policies worldwide have envisioned the place of technology in schools as a transformative tool for learning, research has indicated that this is not being reflected in schools. We argue that school share a role to play in bridging student inequalities by building students' capitals and shaping their habitus (i.e., what they see as possible) through learning experiences with technologies. Ultimately, the culture of technology use within schools needs to change, to better prepare students for their current and future digital lives.

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