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When digital capital is not enough: reconsidering the digital lives of disabled university students

Jane Seale

Abstract

The relationship that disabled university students have with both their technologies and institutions is poorly understood. This paper seeks to illuminate the relationship using the conceptual lens of digital capital. Results from a study that used participatory methods to explore the technology experiences of 30 disabled students studying in one university were analysed with a view to revealing evidence for both cultural and social digital capital. Analysis suggests that disabled students possess significant levels of both cultural and social capital, but that there are times when this capital is compromised or insufficient to enable students to fully benefit from technologies. Possessing digital capital does not appear to guarantee complete inclusion into university life.

Introduction

The focus of this paper is the relationship between disabled students, their technologies and the universities in which they study. The overarching aim of this paper is to explore the extent to which the concept of digital capital might illuminate this relationship. The technological abilities of non-disabled students have long been considered an important factor in shaping how universities develop their approaches to teaching and learning support. Initial work by Prensky (2001) and Oblinger (2003) for example, argued that the students of today were sophisticated “digital natives” of the “Net generation” who would expect sophisticated uses of technology as an integral part of their university learning experience.

Whereas the language surrounding ‘normate’ students and their technology use focuses on what non-disabled students can do, the discourses surrounding disabled students use of technologies focuses more on what they cannot do. This unobvious difference in focus and language positions the relationship that non-disabled students have with technologies and universities as largely positive; whereas for disabled students the relationship is conceived as largely negative. This over-simplistic view ignores the complexity of what both disabled students and universities do and achieve and how such actions and achievements are shaped by social contexts.

Disabled students and their relationship with technologies and universities

Technology has long been argued to be a tool for promoting the inclusion of disabled students in higher education (Ball, 2009). The impetus for this argument has come largely from the accessibility lobby which in turn was a response to changes in Disability Discrimination legislation (Seale, 2006). Research that has focused on accessibility of e-learning within higher education tends to position disabled students as oppressed victims of their universities, who are deprived of equitable access to important learning resources as a result of institutional non-compliance with legal requirements, or technical standards and guidelines (Steyaert, 2005) Rather than focusing on the technology skills and abilities of disabled students and the relationship they have with technologies; accessibility research focuses on their technology related access needs and seeks to audit institutions according to whether and how these needs have been met (e.g. Fichten *et al.* 2009). Arguments used to

urge institutions to address these needs range from: ‘because you must’ to ‘because you will make more money if you do’ (Foley, 2003). The relationship that universities therefore have with their disabled students in relation to technologies is therefore positioned as an externally driven one. There is little or no conceptualisation that universities might be genuinely interested in the technology skills, experiences and dispositions of their disabled students.

Research into disabled students’ general learning experiences in higher education gives some insight into the relationship between students and their institutions; as with the accessibility literature, this relationship is largely negative. Research reveals for example, that disabled students are using general and specialised technologies to support their learning (Mortimore & Crozier, 2006) but that there are difficulties including: barriers to using publicly available computing facilities due to poor location or lack of specialised software (Fuller *et al.* 2004); frustrations with the bureaucracy and speed of the funding and assessment procedures for obtaining assistive technology (Shevlin *et al.* 2004; Goode, 2007) and lack of support or training to enable disabled learners to become “fluent users” of assistive technologies (Shevlin *et al.* 2004). Whilst these studies reveal some insights into the technological relationships that disabled students have with their universities and associated funding and support mechanisms, they tell us little about the digital nativity of the disabled students and the relationships they have with technologies.

Scoping the relevance of digital capital to disabled university students

The concept of digital capital as articulated in this paper is rooted in Bourdieu’s notions of social and cultural capital and Putnam’s notions of social capital (Bourdieu, 1997; Putnam, 2000). Broadly speaking, cultural capital as expressed by Bourdieu can be understood as the possession of cultural competencies and knowledge that enable people to be cultural consumers in ways that are valued and expected in society. Social capital is understood as the actual or virtual resources and assets that individuals or groups are able to draw upon through their social connections and networks. Putnam (2000) refers to social capital as the connections among individuals, social networks and the norms of reciprocity and trustworthiness that arise from them. Putnam makes a distinction between bonding and bridging relationships in which bonding relationships form between people who share a common bond, while bridging relationships bring diverse people together. Both Bourdieu and Putnam were interested in what unites and separates people within the communities that they live, work and learn. For this reason, their ideas have been used to challenge social injustice and inequities and to explore issues of widening participation in Higher Education (Thomas, 2001; Riddell *et al.* 2005) as well as the influence of a lack of social capital on the academic success of disabled students (Harrison *et al.* 2009).

Digital divide researchers such as Rojas *et al.* (2004) and Selwyn (2004) have applied Bourdieu’s ideas to make connections between capital, technology use and exclusion. Writing in the context of ethnic minorities, Rojas *et al.* identify a set of ‘techno-dispositions’ which they argue reflect the techno-capital of ethnic minority groups. These techno-dispositions include individual and family histories of technology use and understanding among individual and community members about the potential value of technologies. Writing in the context of education, Selwyn offers a framework for identifying examples of technological capital that highlight the interactions between individuals and social structures of home, family and school. Technological cultural capital would be exemplified by individuals investing time in improving their technology skills, knowledge and competencies gained through informal and formal learning opportunities, as well as a socialization into

technology use and ‘techno-culture’ through family, peers and a exposure to technology related media. Technological social capital would be exemplified by the networks of ‘technological contacts’ and support that people have, which can be face to face (e.g. family, friends, tutors) or remote (e.g. online help facilities). This paper will explore the extent to which disabled university students possess similar technological cultural and social capital.

The study

In order to explore the inter-relationship between disabled students, technology and their universities through the lens of digital capital, this paper will re-interpret the results of an earlier study (see Seale *et al.* 2008a). The original study was underpinned by a conceptual framework of voice and participation. Its central aim was to use participatory methods with students in one English university to elicit powerful narratives of the strategies that disabled students use to enable them to benefit from the potential of technologies. The technologies of interest in this context fall into three categories: standard day to day technologies such as laptops, mobile phones, email and social networking sites; technologies used in universities to support learning such as Virtual Learning Environments and library databases; and specialist assistive technologies (AT) such as voice recognition software and screen readers.

The participatory aspect of this project has been described in detail elsewhere along with the detailed ethical protocol (see Seale *et al.* 2008b). In the first phase of the study an online survey was used to consult with disabled students about the relevance and utility of the proposed research questions and methods. In the second phase, participants were invited to share their technology experiences through an interview and the provision of additional information in a form and media of their choosing. In phase three, a focus group was conducted to enable students to contribute to the analysis of phase two data. Students were also involved in the design and content of the project website.

In phase one 56 students participated. In phase two, 31 students participated: 17 female and 14 male participants. The disabilities of the group were varied, with some declaring more than one disability. The most commonly declared disability was dyslexia (n=14). The majority of participants were aged 20 or under. In phase three, 15 students took part in the focus groups and advised on the initial website design and four students helped to design and program various elements of the website.

Data from the online survey were collected and analysed using Excel. Audio files from the stage two interviews were transcribed and transported into NVivo for coding. For the purposes of this paper, I have re-interrogated the data using a digital capital coding framework drawn from the ideas of Selwyn (2004) (see Table 1).

< Table 1 about here >

In search of digital cultural capital

Results indicate that disabled students possessed a significant amount of digital cultural capital. Many possessed what might be considered “technological know-how”, received the support and encouragement of family, school and college and participated in formal ICT education and training prior to university. Despite this cultural digital capital some disabled students made decisions not to informally invest in improving their technology skills and competencies when at university.

Evidence for technological 'know-how'

Results suggest that disabled students possessed high levels of “technological know-how”. The majority used instant messaging; participated in discussion forums; used social networking sites such as Facebook and uploaded videos or photos onto the Internet. All the participants used search engines such as Google, accessed online learning materials; used word-processors and spread sheets and contacted tutors using email. In addition, all the participants customised their computer; particularly toolbars and menu items and the print size on screen to suit their particular learning needs and preferences.

The most common types of strategy adopted by students to enhance their learning efficiency tended to be related to accessing computers or information and ways of coping with written work. These strategies therefore involved the use of both specialist assistive technologies (e.g. Inspiration or Dragon Dictate) as well as more generic technologies (e.g. mobile phone or Google). These strategies were often quite inventive, for example using three different assistive technologies together.

Many of the students demonstrated a sophisticated awareness of the pros and cons of using a wide range of technologies and were able to talk about which particular properties influenced their decisions to use technology. The two most frequently mentioned properties were: the efficiency offered in terms of time management, for example, organising essays, finding references and information quickly; and whether or not it the technology supported learning or socialising. As a group, the participants rated themselves as highly confident in using technologies. For some, high confidence levels appeared to be linked to comfort levels and familiarity. For others, confidence manifested itself in having no fear:

Chloe: I feel very confident. [...] I have no qualms about using them [...] I wouldn't find things daunting and would try it out.

Sarah P: I've had quite a lot of experience with it by now. It's generally quite easy to use. It doesn't faze me.

Stacey: [...] with Inspiration, no one showed it to me, I just picked up a leaflet in the Assistive Technology service. I thought: “I can do that”, and I did. It was fine. I had no fear of it.

Although some students had no fears about whether or not they were able to use technology, others expressed fears regarding the reliability of technologies, particularly concerning “technological crashes” and the consequences of losing work related to formally assessed assignments:

Elad: The only thing I'm afraid of is – by trusting the computer too much. Any little things happen to it and you've lost everything in one second. I lost all my references just by pressing 'delete' in the wrong place. I lost about twenty papers.

David: Aside from the Braille issue which if your computer goes down, then you're screwed basically because I can't hand in a piece of Brailled work where I've counted up all the words if no-one can transcribe that Braille [...]

Kim: I'm sorry, but if [...] the computer's crashed, and you have deleted something that you've spent the last three hours doing, you are very upset and then you go and try to get an extension, but they say: "Well, you should have backed it up." That's not helpful. [...]

This paradox of fearing and not fearing technologies perhaps reflects the many positive and negative feelings that students expressed about the role of technologies in their learning lives: for example, 18 students expressed an intense love of certain named technologies and 12 expressed an intense dislike. The fact that disabled students were willing to articulate both the positive and negative aspects of technologies also adds weight to Lewthwaite's observation that disabled students engage critically with technologies "expressing nuanced evaluative judgements; rejecting prevalent discourses that position technology as a value free tool" (Lewthwaite, 2011 p: 250).

Influence of family and school in offering early and sustained access to technology and encouragement to use technology

Examination of the technology experiences of disabled students before coming to university revealed both negative and positive influences of home, family, school and teachers. While the positive comments outweighed the negative ones, where students did report negative influences it was due either to limited access to technology or technology not being valued.

Ben: At school it was almost frowned upon.

Kim: Because my parents aren't very technology-anything, so I've never – I would have to stamp and scream to get a computer off them. I mentioned getting a laptop for my 21st, and they said I didn't need one.

Stephanie: When I was at school the only people that used computers were maths geeks in the after school class.

Many students reported positive encouragement from family and experiencing a very early introduction to computers, which sparked a sustained interest:

Andy L: Well, I had a computer at home for a long time, and fiddling around with computers and learning to program them – I started when I was about 6. [...] Having been doing it for so long, it's second nature for me.

Chloe: I was already more advanced than most people at school, because of my Dad [...] My cousins did their software development degrees, so there's something in the genes!

Sarah D: But the thing is, I have had a computer all my life [...] It has been in the house for the past 15 years, roughly. It was the first computer we got as a family.

Some students commented positively about a sense of being encouraged by their schools to use technology as part of their learning:

Kate: I've grown up with IT since secondary school, and the basic things from primary school. We were really encouraged to use computers [...] The assistive

learning centre there was hot on technology. I had palmtops for part of my secondary school, and a laptop while I was at 6th form lent to me by the school.

Jo: When I was at school, I was doing GCSE ICT and was actually encouraged by my teacher at that time to continue it on [...] It was something I was good at and could learn from.

Sarah B: [...] my interests in computers were nurtured when I was at school.

Participation in ICT education and training

Some disabled students reported how they had been encouraged (like all other students) by their colleges or sixth forms to undertake formal ICT qualification; typically GCE's or key skills programmes:

Gemma: At college, if you hadn't done a GCE in IT, you had to do a 'key skills' in IT, so they pushed me into using computers a lot more.

Paul K: When I was at college, they brought in a Key Skills programme. [...] We had 2 hours a week to work on things like Excel and PowerPoint, Word documents, presentations, etc.

Evidence for informal investment in self-improvement of technology skills and competencies

Despite the evidence for a significant amount of digital cultural capital amongst the disabled students, data analysis revealed examples where some made very deliberate decisions not to invest in spending time training to use specialist assistive technologies that could have benefitted them in the long term, for fear of how much time it would take away from their studies. Two interesting examples are Stephanie and Sarah B.

Stephanie had dyslexia and was a second year Physiotherapy student. It might be assumed that Stephanie had low levels of technological cultural capital given that she did not particularly talk about having high levels of technological confidence or competence and that she acknowledged being put off computers at school. Despite this however, Stephanie appeared to have a really positive pre-disposition to technology; she was one of only three students in the whole study who did not have one negative thing to say about technologies. Instead she stressed how important technologies were to her in terms of reducing her stress and making her life easier. In her first year, however, this seemingly positive technology disposition was not enough for Stephanie to sacrifice her immediate study time for long term study gain:

Stephanie: When I got all my software in autumn last year, and they said: "You need to have your training on this" [...] I did feel like I was doing two courses and that was, frankly, too much. I had to stay with my old bad habits because I just didn't feel I had the time to take out to learn something new [...]

Sarah B had developed RSI and therefore needed to be careful about not exacerbating her physical problems in the way she used technologies. Although using speech recognition software would reduce her amount of keyboard use, she expressed frustration that it took too

long to learn how to use the application, and that it reduced her typing efficiency and therefore slowed her down. Sarah B talks of how her interests in computers were nurtured at school and how she took A-level computing. Despite this apparent capital, Sarah B's pre-disposition or enthusiasm for technology was always muted or conditional. She argued that it should not be compulsory for students to have to use technologies and she explained that she never made an automatic decision to use technologies in her study. So, just like Stephanie, Sarah B declined to invest in learning how to use specialist software:

Sarah B: I never really got to grips with Dragon 8 too much, because it was quite good, but I didn't have the time. It was only now and then that I had an essay, and when I did have it, I had to get on and do it. I didn't really have time to learn it.

In search of digital social capital

Results indicate that disabled students possessed a fair amount of digital social capital, in terms of drawing on both online and face-to-face campus based networks. For some students, this social digital capital does not appear to have been sufficiently strong or extensive to enable them to confidently navigate the cultures and social structures within their universities.

Networks of face-to-face and online technological contacts

There was evidence that many of the students had networks of online contacts which they used as both a source of technical and study support. These online social networks incorporated message boards on company websites, Facebook, group specific discussion forums and professional networks such as LinkedIn:

Sarah D: People have helped me and taught me, and people are prepared to share their knowledge. But, if you go onto Microsoft Website .. well, not Microsoft, but a lot of companies ... you can get advice or help.

Kim: Myself and my friend use technology [...] to organise work on the course. FaceBook is actually quite a useful tool where we can create groups to share work, website links and photographs/drawings for group projects or any site visits or field trips we go on.

Reena: I use PhD Forum.com to support my work as lots of us go on there to discuss our problems and I use e-mail the whole time and LinkedIn which is more business like.

When talking about informal sources of support, the majority of responses focused on the value of face-to-face support. There was very little mention of this support coming from friends and family back home. Some of the support was from course tutors and other university support staff:

Ben: For Blackboard, there is a guy in our department, the same one who's written all that stuff, that gave us a tutorial on how to use Blackboard – he is the teacher that is fantastic.

Stacey: There was a guy there [Assistive Technology Service] – that if I had any difficulties – it’s not even that I needed to talk to him. Just the fact that he was there gave me confidence to try things by myself.

Tom: I had a little chat with a guy who helps with the sports studies course, based in the library. He was very helpful in terms of finding journals and methods of how to do search strategies [...] It’s great having someone in the room, there for questions and queries.

There appeared to be a preference however to seek support either from fellow students who were studying the same course or from students living in the same halls of residence (i.e. neighbours).

Kim: I have a lovely guy on my course called ‘P’ who helps me out so much. [...] I ring him up for advice [...] I am just starting to use Wikipedia, because I’d never heard of it before.[...] My friend introduced me to it.

Nikki [...] with Blackboard I just ask my friends ‘what do I do?’ [...] Yeah - If I didn’t live in Halls I’d be stuffed [...] We’re all in the corridors and [...] we’re all doing the same thing so we are all in the same boat, so that is where I get most of my information from.

The findings in relation to peer support differ from findings in other studies of disabled learners’ experiences which found that either disabled students tried to avoid dependency on friends, which exacerbated their sense of social isolation (Shevlin *et al.* 2004) or that support came predominantly from disabled peers (Roer-Strier, 2002). Paradoxically, despite evidence for a fair amount of digital social capital, a significant number of disabled students shared experiences that suggested that they could also experience rather uncomfortable, unsupportive relationships. For example, some dyslexic students voiced their sense of injustice about the perceived jealousy of peers regarding their right to access certain technologies:

SarahD: I was working in the library. Only the students with the password can ‘get on’, but if you think about it, people are looking at you knowing that you have special technology. It makes you reluctant to use them. They think “Why should you get it – just because you are dyslexic?” [...] You are given the technology, to make it all even, but sometimes it is making you ‘separate’ again.[...]

Stephanie: I find this – that you get stigmatised [...] but people are almost jealous of the facilities you have access to and they don’t. [...] they are almost jealous that you can sit at a PC there, there is specially for you- you have got all this software available to you..

This compromising experience also appears to be extended to university support services, which have a responsibility for assessing students’ technology needs. For example, some participants described a dislike of being recommended assistive technologies based on their disability “label”:

Reena: Yeah–it’s like if you have dyslexic people; give them a mind map- though it doesn’t work.

Andy J.: If people say: “You’re dyslexic, therefore you must use Inspiration” – that’s a pain.

The stigma of dyslexia and disability revealed here in the context of technology use; supports the findings of other non-technology related research, where disabled students have expressed concerns about other students’ perceptions of the allowances that were made for them (Mortimore & Crozier, 2006; Fuller *et al.* 2004; Shevlin *et al.* 2004).

Discussion: why is having digital capital sometimes not enough?

Overall, using the lens of ‘digital capital’ to interpret the results of a study exploring the strategies that disabled university students use to enable them to benefit from the potential of technologies has revealed that disabled students possess significant levels of both cultural and social capital, but that there are times when this capital is compromised or insufficient to enable students to fully benefit from technologies. This is evidenced by the critical observations that sometimes disabled students: choose not to use specialist assistive technologies; display significant fear or mistrust of technologies or can feel stigmatised by their use of technologies. In this section I will seek to explain why sometimes for disabled university students, possessing digital capital does not appear to guarantee complete inclusion into university life, and evaluate what implications this has for the relationships that disabled students have with their technologies and their universities.

Disabled university students and their digital cultural capital

The finding that disabled students possess a significant level of technological ‘know-how’ along with an ability to rigorously critique the value of technology is important in terms of encouraging university staff and services not to view all disabled students as helpless victims of exclusion. As Seale *et al.* (2010: p458.) argue: “Digital inclusion does not always have to be understood through the dual lenses of deficits and barriers”. Before coming to university many disabled students have experienced a supportive techno-culture where technology use is expected and encouraged. Disabled students have learnt that technology use matters. In this sense, disabled students are probably no different to the digital natives that Oblinger (2003) was describing. Universities should probably therefore seek to understand the needs and requirements of disabled students, not because the law demands it, but because disabled students themselves may demand it.

There is also evidence to indicate that on occasions, possessing digital cultural capital is not enough to support disabled students in making the decisions about technology that might reap long term benefits. One explanation for this observation may come from the work of Chaudry & Shipp (2005: p6), who writing in the context of visual impairment in India, argued that the digital capital required to use specialist technologies distances “many potential users from the technology and its undeniable rewards”. One problem with this explanation is that it focuses solely on the technology and ignores the contexts in which users might be attempting to use these technologies, for example universities. It therefore ignores any influence that this context may have in supporting disabled people to use specialist and ‘difficult’ technologies. Furthermore, it tends to assume that disabled users of technologies have no prior digital capital on which to draw.

A second explanation that focuses less on the relationship between student and technology and more on the relationship between student and university is offered by Goode (2007) and Lewthwaite (2011) who argue that at university a high cultural value is placed on independent study, which places intense academic pressure on disabled students that can force them to adopt utilitarian strategies. To be a “normal” student is to be a self-sufficient student. Perhaps disabled university students are rejecting assistive technology training therefore because they cannot jeopardise their image of self-sufficient normalcy by temporarily reducing the time they spend studying in order to undertake the assistive technology training, even though the outcome of that training in the long term might mean more efficient study. The existence of such normalising pressure is certainly recognised by Thomas (2001) who argued that there can be a continuum in the way that social capital is manifested in universities. At one end social capital can be embedded in liberal notions of empowerment and participation and at the other it can stick rigidly to traditional power relations; for example stipulating duties or responsibilities that all are expected to perform, particularly “those least well placed in the system”. Although there is nothing in the data to directly support the conclusion that the disabled students felt an academic pressure to be like a “normal student” and maintain an image of effortless self-sufficiency; this would be worth investigating further in terms of seeking to enhance our understanding of the impact of conflicting university systems or culture on disabled students use of technologies. On the one hand universities are offering assistive technology support services with access to technologies and training; on the other hand there may be a counter-culture that mitigates against disabled students seeking to benefit from them.

Disabled university students and their digital social capital

In his analysis of the positive and negative impact of computer-mediated communication on social capital, Putnam (2000) argued that the casual, anonymous nature of online communication discouraged trust and commitment and therefore discouraged the creation of social capital. For Putnam (2000: p 178) ‘real world interactions often force us to deal with diversity’ and are therefore a positive occurrence because they promote bridging capital. The findings in this study contradict this view to some extent. For example, the use that disabled students made of online social networks such as Facebook supports the findings of a study of disabled university students’ use of Facebook by Lewthwaite (2011) who observed that disabled students who were users of Facebook “traded” information about Facebook’s systems and capabilities around the network. Lewthwaite argued that the disabled students were accruing valuable social capital by using Facebook and that this capital was mainly bridging rather than bonding capital, enabling students to subsist beyond their close knit social groups and access campus based social resources.

Although evidence for bridging digital capital can be drawn from observations of the many ‘real world’ face to face connections that disabled students had with university peers and tutors; there was evidence for limited face-face- to face bonding digital capital in that disabled students did not appear to be connecting with other disabled student to marshal support for their technology use. In some fields, such as learning disability, too much bonding capital is considered a hindrance in that it signifies a difficulty in transcending segregation (Bates & Davis 2004). In the context of disabled students in higher education however, perhaps some bonding capital with other disabled peers might be beneficial; for example, in helping students make more informed decisions about whether undertaking assistive technology training would bring long term benefits. Furthermore, it is important to note that whilst the disabled students in this study appear to have a number of face-face-face

bridging relationships, there is perhaps a weakness in these relationships in that they do not appear to protect the disabled students from negative social experiences. For Rojas *et al.* (2004) techno-capital provides certain resources to enable people to interact and negotiate the political, cultural and social forces that exist within their “techno-fields”. The evidence from this study suggests however, that the resources of some disabled students are compromised by forces such as stigma, peer jealousy and labelling.

At the heart of social capital is trust (Putnam, 2000); for disabled students their experiences of stigma, jealousy and labelling potentially weaken such trust. If disabled students don’t always trust their technologies to be reliable, emerging evidence suggests that they equally might not always trust their universities to validate their right to use technologies to achieve, ‘normalcy’ and the coveted status of self-sufficient learner. Bates & Davis (2004) argue that an examination of trust brings with it a consideration of structural inequalities and power relationships. University cultures and systems may exert power over disabled students by contaminating the relationship they have with technologies. They may do this in a number of ways for example locating specialist assistive technologies in segregated spaces on campus (e.g. assistive technology centres); demanding that disabled students use technologies in ways that are dictated by pre-assigned labels; or querying disabled students’ differential access to technologies in order to achieve the same learning outcomes as non-disabled students.

Conclusion

The conceptual framework of digital capital challenges the restrictive rhetoric that tends to surround considerations of disabled students, technology and university learning and teaching support systems. A rhetoric that focuses attention on auditing unmet needs and mobilising universities to invest financially in the provision of new resources, learning spaces and support services. This may enable boxes to be ticked on accessibility and equality audits, but it does not guarantee improved learning experiences or outcomes for students. What a digital capital framework offers us is a reminder that we need to go beyond what Selwyn (2004:357) called “neat packaging of complex social issues”. The study reported in this paper suggests that for disabled university students the crucial issues of digital inclusion are not just technological (e.g. access to technology and training on how to use that technology) they are social (e.g. the diversity of formal and informal support networks that students are encouraged to maintain or cultivate) and cultural (e.g. the values and expectations regarding whether and how it is permissible for students’ academic performance to be enhanced or supported through technology use).

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Table 1: Scoping a digital capital coding framework

| Digital capital focused coding framework | | Related codes within the original coding framework |
|---|---|---|
| Digital cultural capital | Technological know-how | Learning and strategy choices |
| | Informally investing time in self-improvement of technology skills and competencies | |
| | Participation in ICT education and training | Past learning environments and experiences |
| | Influence of family and school in offering early and sustained access to technology and encouragement to use technology | |
| Digital social capital | Networks of face-to-face technological contacts (e.g. friends, neighbours and tutors) | Sources and nature of technology related support |
| | Networks of online technological contacts | |