

Differences in the digital home lives of young people in New Zealand

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Abstract

Digital technology is changing every aspect of life from how we communicate to the way we learn. International trends would suggest that digital access is becoming increasingly widespread in developed countries. But general trends may hide the fact that some households still do not have access to the internet for a variety of reasons. Differences in digital access and use, particularly along socio-economic lines, may be less visible but are still present. This paper reports on a two-phase study that explores home digital access and use of young people (16-17 years old) from a range of socio-economic backgrounds across New Zealand. Phase one sought to establish what home access is available, while the second phase explores what kinds of digital technologies are used and for what purpose among a subset of young people. Results indicate that differences in digital access do exist among young people from different socio-economic backgrounds. These differences include the number of digital devices in the home, the types of devices available, and whether the device(s) are shared or individually owned. These findings are particularly important in light of the finding that these young people perceived that digital access and use at school is inadequate and lagging behind everyday use. This suggests that there is still a considerable way to go to ensure equal digital opportunities for all.

Introduction

Technology is changing every aspect of life from the way we shop, to how we communicate, and even when, where and how we learn (Selwyn, 2011). In the age of technological ubiquity, digital expertise is now considered an essential life skill (Bunker, 2010). Governments from various countries are now actively engaged in strategic policy development focused on digitally upskilling their populations. While much of this activity is economically driven, digital access and literacy also have important benefits for individuals (Bunker, 2010).

People who have digital access and the necessary digital expertise are able to express agency in various areas of their lives (Snyder & Prinsloo, 2007). Conversely, lack of access, knowledge and skills can create divisions among people. This is true for young people as well as adults, even though the popular view holds that all young people are 'digital natives' (Prensky, 2001) by virtue of when they were born. However, research shows that young people do not have inherent digital abilities (Bennett & Maton, 2010; Davies & Eynon, 2012) but that these need to be developed (Livingstone, 2009).

While earlier research indicated that the digital divide existed due to people's differing abilities to access computers (Haythornthwaite & Andrews, 2011), contemporary views acknowledge that the digital divide is more complex and encompasses more than computer availability alone (Tondeur, Sinnaeve, van Houtte, & van Braak, 2011). More recently, the divide is seen as a spectrum which includes other important considerations such as: internet access particularly via high speed connections, cell/mobile phone use, and differences in usage in rural compared to urban environments (see Haythornthwaite & Andrews, 2011).

The socio-economic group a young person belongs to is influential in determining where they sit on the digital spectrum. Young people from lower socio-economic groups are less likely to have their own internet accessible device. This often results in a process of continual negotiation as they try to gain access from a shared device at home (Greenhow, Walker, & Kim, 2010; Robinson & Schulz, 2013).

Furthermore, a person's socio-economic status has also been found to influence the way in which they perceive the internet. This, in turn, impacts upon how the internet is used (Luu & Freeman, 2011; North, Snyder, & Bulfin, 2008). Young people from lower socio-economic groups are more likely to take part in online activities for social and entertainment purposes (Pasnik, & Llorente, 2012; Wright, 2010). Those from higher socio-economic groups have a greater tendency to participate online in actions that benefit their education, such as

collaborative and knowledge creation activities (Hargittai, 2010; Livingstone, 2009) as well as for social and entertainment purposes. These differences in usage suggest that members of higher socio-economic groups become more confident and better able to use the internet for meaningful and productive activities. In turn, these attributes are more likely to be helpful towards developing skills to support learning (Helsper & Eynon, 2010). In this way the digital divide can be seen to increase the gap between socio-economic groups (Hargittai, 2010; Snyder & Prinsloo, 2007).

In light of this, schools have an important role to play in offering access and providing opportunities to students to develop their digital literacy skills (Livingstone, 2009). But despite this, research shows that young people predominantly learn and develop their digital skills away from the school environment, either in their own homes or from peers (Greenhow, et al., 2010; Meneses & Mominó, 2010). Therefore, students with limited or no digital access at home are further disadvantaged (Livingstone, 2009).

International trends would suggest that digital access, namely internet access, is now widespread in developed countries such as New Zealand (Greenhow, et al., 2010; Livingstone & Helsper, 2007). However, recent census data indicates that more than 200,000 school-age children do not have internet access at home (Statistics New Zealand, 2013). Young people from lower socio-economic groups, in particular, may not fit the picture of young people immersed in their use of technology (Walshaw, Andrews, Bell, Butler, & Tawhai, 2012) and may find themselves on the wrong side of the digital divide. The present study was motivated by a desire to more fully understand young people's digital access and use in their everyday lives across New Zealand.

Method

A mixed methods approach was used in this investigation (Creswell & Plano Clark, 2011). The basic premise of such an approach is that the combination of both quantitative and qualitative methods "provides a stronger understanding of the research problem or question than either by itself" (Creswell, 2014, p. 215). There are several different types of mixed methods design (Creswell & Plano Clark, 2011). This research project is most similar to an explanatory sequential mixed method design, where quantitative data is collected in the first phase and used to plan the second qualitative phase (Creswell, 2014). The strength of this study is that it does not rely solely on quantitative survey data. The follow-up interviews with young people allowed their digital experiences to be explored in some depth which is needed to gain a richer understanding of these experiences (Ólafsson, Livingstone, & Haddon, 2014).

Data collection comprised a national online survey followed by semi-structured interviews. The survey, conducted late 2011 and distributed to all secondary schools that teach Year 12 students (predominantly 16 and 17 year olds), was a wide-reaching investigation exploring young people's perceptions of national identity in New Zealand (Walshaw, et al., 2012). This included a section on their use of technological communications in everyday life. The results reported here relate to questions that asked respondents a) if they had a computer at home, b) if they had internet access at home, and c) if they owned a cell phone. Follow-up semi-structured interviews, conducted with a subset of survey respondents, provided an opportunity to gain in-depth views of their use of digital technologies in their everyday lives both at home and at school. Their home use is the predominant focus in this article.

Participants

In total, 787 Year 12 students from 56 schools across New Zealand participated in the survey. In terms of gender mix, 64.2% were female and 34.8% male. The schools were evenly spread across deciles (typically five or six schools from each decile ranking), with slightly more decile 10 schools (n=9), and slightly fewer decile 8 schools (n=3). A school's decile rating is an indication of the degree to which it draws students from low socio-economic communities, with decile 1 schools having the highest number of students from such backgrounds (New Zealand Ministry of Education, 2014). Comparison with Ministry of Education figures for 2011 indicated that the participating schools were representative of all the New Zealand schools with enrolled Year 12 students in 2011. Purposeful sampling was then used to identify 28 students (18 females and 10 males) from schools across a range of deciles who were subsequently interviewed late 2012/early 2013 (9 from decile 1-3 schools, 11 from decile 4-7 schools and 8 from decile 8-10 schools). At the time of the interviews, participants were in their last formal year of schooling or, in some cases, had left school. Therefore, in some cases, participants were reflecting back on their experiences of technology use in schools. In the context of this study, decile is used as a proxy for socio-economic status.

Data analysis

Each participant's responses to the survey questions: a) do you have a computer at home, b) do you have internet access at home, and c) do you have a cell phone were coded into one of the three categories based on the decile grouping of the school they attended in Year 12 (i.e. low decile = 1-3, medium decile = 4-7 and high decile = 8-10). Pearson chi-square (χ^2) tests were calculated to determine if there was a significant relationship between the responses to each question (yes/no) and the decile grouping. All calculations were performed using the SPSS statistical software package (www-01.ibm.com/software/analytics/spss/).

Analysis of qualitative data involved reading and re-reading all interview responses to determine the breadth of themes and sub-themes. Responses were coded to one or more sub-themes depending on whether single or multiple ideas were identified. The qualitative analysis software package NVivo (www.qsrinternational.com) was used to facilitate this process.

Results

Surveys

In response to the question "do you have a computer at home?", 92.2% answered yes while only 7.1% answered no. To investigate the relationship between having a computer at home (yes, no) and decile grouping (low, medium, high), the number of young people falling into the resulting six categories was analysed and are summarised in Table 1. These frequencies were analysed with a chi square contingency test. The results were significant, $\chi^2(df = 2, n = 780) = 41.5, p < .001$. Young people in the low decile grouping were less likely to have a computer at home, while young people in the high decile grouping were more likely to have a computer at home. The strength of the relationship indicates a relatively small association (Cramér's $V = 0.23$).

Table 1 here

In response to the question "Do you have internet access at home?", 87.9% answered yes and 11.6% answered no. Table 2 summarises the relationship between having internet access at home (yes, no) and decile grouping (low, medium, high). The chi square results were significant, $\chi^2(df = 2, n = 781) = 89.9, p < .001$. Young people in the low decile grouping were less likely to have internet access at home, while young people in the high decile grouping were more likely to have internet access at home. The strength of the relationship indicates a medium association (Cramér's $V = 0.34$).

Table 2 here

In response to the question "Do you have a cell phone", 92.5% answered yes and 6.7% answered no. Table 3 summarises the relationship between having a cell phone (yes, no) and decile grouping (low, medium, high). The chi square results were significant, $\chi^2(df = 2, n = 779) = 20.7, p < .001$. Again, young people in the low decile grouping were less likely to have a cell phone, while young people in the high decile grouping were more likely to have a cell phone. The strength of the relationship indicates a small association (Cramér's $V = 0.16$).

Table 3 here

Overall, results indicate that that 93% of young people have access to a computer at home, 88% have internet access at home and 93% have a cell phone. While on the surface these results tend to support the view that technology is ubiquitous for young people (Davies & Eynon, 2012), further analysis reveals a more nuanced picture with young people from low decile schools (i.e. low socio-economic backgrounds) being less likely to have a computer at home, access to the internet at home and own a cell phone. At the same time, young people from high decile schools were more likely to have access to all of these technologies. This association was strongest for access to the internet at home.

In order to develop a greater understanding of how these differences were experienced at an individual level, follow-up interviews (28 in total) with a range of young people across the three decile groupings asked more probing questions about their use of digital technologies in their everyday lives.

Interviews

Young people across all decile groups reported having access to a range of devices at home including desktop computers, laptops, phones and, in some cases, gaming consoles and music devices such as iPods. The main devices available were laptops: "we have a laptop that we use all the time" (Student 5, low decile) and phones: "I have my phone which is a phone that I text on and do a lot of visual media on" (Student 1, medium decile).

Overall, these devices tended to be used most often for keeping in contact with friends and family on social networking sites: “when I use a laptop I might go on a social network site [such as] Facebook” (Student 6, high decile), as well as via texting and phone calls “after school I will text my mum to let her know if I’m coming home late or I’m finished now, can you come and pick me up” (Student 23, low decile). This was closely followed by internet browsing/seeking information “I also use it a lot for social networking and searching random stuff like just general, if I think of something I just look it up” (Student 11, medium decile), and schoolwork/research: “if I need to do school work I grab the laptop and do my school work on that, so essays and all that type of stuff” (Student 12, medium decile). When asked what was involved in doing schoolwork and research at home, some students offered more information, for example: “research, reports, writing assessments, yeah pretty much researching and reports and documents” (Student 7, low decile).

While the reasons for using these devices were similar across groupings, there were differences in terms of whether the devices were individually owned or whether they were shared with other family members. Young people from the medium and high decile groupings talked of having access to their own device(s), whereas young people from the low decile grouping did not. The following comments highlight these differences: “We each have our own one. They’re laptops. ... [There are] four of us” (Student 17, medium decile); “we [including the student’s brother] both have a laptop and we both have a smartphone” (Student 21, high decile); “Interviewer: Is that a laptop that all the family uses? Student 2: Yep” (low decile); and “She [mum] uses it [the laptop] every single day too, we take turns. ... it’s actually shared a lot” (Student 23, low decile).

Because access to the main device (usually a laptop) was frequently shared at home, young people in the low decile grouping often focused their usage on schoolwork, with some social networking if there was time. Less time was spent just browsing the internet, as the following comments indicate: “It’s mostly used for schoolwork and studying” (Student 25, low decile); “I come home, I go and sit on the couch and go straight to the computer because I’ve got assignments and all that to do” (Student 5, low decile); and “when I finish my study I go, okay mum [your turn]” (Student 23, low decile).

A further noticeable difference was access to the newer smart devices that medium and high decile young people talked about, which was less evident for low decile young people. For example, Students 1 and 4 talked about having their own iPads: “I pretty much use ... my iPad or my laptop” (Student 1, medium decile); and “usually I would get up and one of the first things I do is check the news and my emails on the iPad” (Student 4, high decile). This contrasts with low decile young people like Students 5 and 7 who don’t have smart devices: “Interviewer: Do you have a smart phone? Student 5: No, no we [her family] haven’t”; and “Interviewer: Do you have an iPad or anything like that? Student 7: Oh no we don’t”.

The differences in home access and use are particularly important given that the young people across all groupings felt that digital technology use at school was limited and lagging behind their everyday use, even when that everyday use was limited. The following comments highlight these views:

A few classes have better technology but in the few, it’s still kind of old (Student 2, low decile).

I feel that while I have it in other areas of my life I should have it available to me at school as well and I don’t just at the moment (Student 10, medium decile).

I certainly feel like it is a bit disjointed, the experience I have at home with technology and the role it plays at school ... and it’s always, like you know there’s not enough computers to go around at school (Student 19, high decile).

The young people talked about variable use of digital technologies in their classes, which was frequently dependent on the teacher. The following statements are indicative of those made by the young people across the decile groupings: “some are fairly old school, they [teachers] don’t use technology at all” (Student 5, low decile); “[the teachers] mostly use handbook stuff and PowerPoints, very few people actually bring their own devices to school” (Student 4, high decile); and “last week at school a couple of classes used an OHP [overhead projector] which I thought was quite old fashioned” (Student 15, medium decile).

Discussion and conclusions

This study provides an insight into the continuing existence of the digital divide and how it plays out in the everyday lives of young people in New Zealand. Similar to findings from Robinson and Schulz’s (2013), the socio-economic status of these young people was influential in determining where they sat on the digital spectrum. Young people from lower socio-economic groups were less likely to have a computer and internet

access at home, own their own cell phone and often needed to share access to internet-capable devices with other family members compared with youth from high socio-economic groups. Furthermore, young people from medium and high socio-economic groups had greater access to newer smart devices. The extent to which these young people were able to exercise autonomy (i.e. control) over their internet use, a critical dimension of digital inequality (DiMaggio & Hargittai, 2001), was influenced to some extent by how many and what types of devices were available to them. Apart from issues associated with negotiating access and control over their internet use, this has other potential implications as limited digital access at home has been found to be important in the development of internet self-efficacy (Zhao, Lu, Huang, & Wang, 2010).

Students from all decile groups indicated that schoolwork and associated research were important aspects of their digital home usage. Interestingly, findings highlighted how young people (i.e. senior school students) from lower socio-economic groups prioritised their schoolwork when online because of the need to share access among family members. This finding is somewhat different to other research that found less focus on educational activities among young people from low socio-economic groups (North, et al., 2008). One reason for this may be that the young people interviewed for this study were older (i.e. 16-17) and had made a commitment to completing their schooling. With limited digital access at home, schoolwork was seen as a priority.

Notably, these results were set against a backdrop where all those interviewed perceived teachers (and schools) to be lagging in terms of digital technologies access and use. Digital technology does not make a difference on its own. The importance of the teacher in determining the extent to which technology uptake occurs within the classroom environment is well-known (Selwyn, 2011). While there is evidence to suggest that teachers have increased their professional uses of digital technologies over time (Johnson, Hedditch, & Yin, 2011), high levels of effective technology use have not yet been achieved on a large scale (Mueller, Wood, Willoughby, Ross, & Specht, 2008). This has implications particularly for lower socio-economic status young people.

Contrary to popular views that assume all young people are digital natives (Prensky, 2001), this study has shown that variable access and use at home because of socio-economic factors, coupled with limited use at school may further disadvantage these young people. Given the increasing shift towards more flexible ways of learning (Benade, 2015), such as flipped curriculum approaches that encourage ongoing learning outside of the classroom requiring students to engage with online resources, activities and discussions, the re-examination of home digital access and use is important and timely. Policy makers, school leaders and teachers need to be cognisant of these differences and continue efforts to improve digital learning practises in schools and beyond to mitigate further disadvantaging lower socio-economic status young people due to limited out-of-school access. It also highlights the ongoing need for programmes providing access and training for families in low socio-economic communities (Computers in Homes, 2014) in addition to initiatives that support student ownership of their own digital device in low decile schools (see for example, "Laptops bringing schools forward", 2014).

Not only is it necessary to ensure all young people have access to the technologies they need when they need them, they also require an understanding of how to use them for educational purposes. If this knowledge is not learned at school, as was the case here, then students are reliant on their own existing skills sets as well as those of other family members. Given that low-socioeconomic status young people shared devices at home, which impacted on everyone's access, it would not be unreasonable to conclude that other family members have similar or more limited skills and are unlikely to be a source of support and expertise that young people require for their learning. Recent research which found that over half of 15-16 year olds felt that they knew more about the internet than their parents lends indirect support to this view (Livingstone, Mascheroni, Ólafsson, & Haddon, 2014). The same research also concluded that the skill level of young people was possibly lower than expected given the effort by educators in more recent times. It highlights the need for further research in New Zealand that looks in depth at the digital skills and experiences of young people, their families and teachers to determine whether noticeable differences exist along socio-economic lines.

It is important to note that since this study was undertaken, the roll-out of ultrafast broadband and associated network upgrades to New Zealand schools is nearing completion; the Virtual Learning Network (VLN), an interactive resource allowing teachers to connect and network around common areas of interest, has been established; more extensive provision of professional learning and development for teachers and schools is underway (New Zealand Ministry of Education, 2015); 1:1 digital device policies are gaining momentum (New Zealand Ministry of Education, n.d.-a); and the teacher-led innovation fund (TLIF), part of the recent government initiative on investing in educational success, to support the development of innovative practices within schools (such as learning with digital technologies) has commenced (New Zealand Ministry of Education, n.d.-b). Focused on building e-learning infrastructure and capacity within the schooling system, these

initiatives are set to play an important part in ensuring all students are able to access and effectively use these digital services with support from well-trained teachers and, in doing so, help close the gap between socio-economic groups. Such initiatives, in conjunction with those focused on improving home access, are particularly important for lower socio-economic young people in light of the findings from this study.

As with all research this investigation has several limitations. Primary among these is that the survey and interview data is self-report in nature and did not investigate young people's actual use of digital technologies at home. Following on from this, an in-depth investigation of the students' social, entertainment and educational uses at home was not undertaken as this was beyond the scope of the project. Therefore, it is unclear how sophisticated was their school focused home use (e.g., did research involve more than accessing Wikipedia), and whether differences existed among the socio-economic groups. Furthermore, given the introduction of various initiatives subsequent to this investigation, a follow-up study exploring whether students' perceptions of teachers' (and schools) use and practises have changed in the intervening period would be a fruitful area of future research. Exploring what, if any, the impact of such changes may have had on use at home would be a central consideration.

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Statements

- a. **Access to data:** Access to the interview dataset is available on application to, and with the permission of, the author on a case by case basis. Access to the survey data is available with the permission of the national identity and cultural diversity survey team, on a case by case basis, on application to the author.
- b. **Ethics:** The survey and interviews phases of this project were assessed using Massey University's Human Ethics screening questionnaire and judged to be low risk by the researchers involved. They have been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committee (survey, 2011; interviews, 2013). The following statement was included on all public documents as required by university policy:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by the of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz".

Survey respondents were anonymous except where participants indicated they were willing to be interviewed. In these instances, respondents were asked to provide their name, email address and a phone number where they could be contacted. This information is stored within a database that has secured access. All participants who provided this information were contacted and those who accepted were interviewed. Pseudonyms were assigned to interviewees so that individual participants could not be identified in subsequent the analysis and reporting phases.

- c. **Conflicts of interest:** There are no potential conflicts of interest in the work reported here.

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