Chapter 6
The Digital Divide and Higher Education

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Introduction

As higher education moves to blended learning environments, a digital divide is emerging in the Australian higher education sector. This divide is predicated on differing digital skills and usage patterns, not access to digital devices. In turn, many students transitioning to university do not have the necessary digital skills required to participate in a digital setting.

Is the use of learning technologies contributing to inequity in higher education, an inequity due to differing digital experiences, digital resources, and usage patterns? COVID shone a spotlight on this inequity that is the digital divide. The move to remote learning saw an expanse of this divide sometimes referred to as digital poverty. Students lacking digital skills, access, and devices were further disadvantaged during remote learning (Bashir et al. 2021; Pentaris et al. 2021; Summers et al. 2021). If the digital divide is to be overcome, universities cannot continue to assume the digital fluency of commencing students.

Using a quantitative approach, the chapter provides an analysis of the digital divide in Australian higher education, examining how differing digital fluency stages influence perceived preparedness for university study. The chapter conceptualises the growing inequalities arising from a widening digital divide, by investigating impacts on the student experience, digital fluency, and secondary schooling digital opportunities. Reporting on the research question: "What is the relationship

This chapter is dedicated to the memory of our dear friend, colleague and mentor Lynne Eagle.

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between socioeconomic, sociocultural/geographic indicators and the digital divide?" empirical data on the digital divide provides an examination to determine the link between digital fluency, socioeconomic status, sociocultural capital, digital identity, and student self-reported preparedness and digital skills. About 409 first-year business students were surveyed at regional and urban Australian universities. See Appendix 6.1 for the study questionnaire.

Our proposition is that digital fluency is predicated on prior digital experiences and that socioeconomic and geographic indicators influence the attainment of digital fluency, influences which subsequently impact perceived preparedness for university study.

Background

The digital divide is defined as a gap in digital knowledge and a gap in opportunity, ability, and efficacy (van Deursen and van Dijk 2011; Warschauer et al. 2010). This digital divide is not based on access to digital devices only. Though inequitable access to digital resources creates a disadvantage (van Deursen and van Dijk 2011), in this study, access was not the primary issue as numerous Australian secondary schools offer a school-issued laptop scheme. This scheme was anticipated to level the playing field for students from disadvantaged backgrounds.

As stated above, the digital divide emanates from different levels of digital fluency. Digital fluency is defined as the ability to use digital technologies to interpret, problem-solve, create, and reformulate knowledge (Wang et al. 2013). Briggs and Makice (2011) define digital fluency as "an ability to reliably achieve desired outcomes through use of digital technologies" (p. 64). In this chapter, digital fluency is defined as the ability to successfully move with ease in a digital environment. In simple terms, digital fluency is to create rather than consume in a digital environment.

Digital fluency is an important skill for a twenty-first-century workforce. In a constantly changing digital environment, university graduates need to be digitally fluent to be competitive in a future workplace. Digital fluency assists in future-proofing graduates and builds resilience for entry to a post-COVID disruptive workforce.

Pre-COVID concerns were being raised about the relationship between digital technologies usage and inequality. An increase in youth disengagement and alienation from formal institutions was noted (Broadbent and Papadopoulos 2013; Caluya et al. 2018). Broadbent and Papadopoulos (2013) announced being part of the digital divide in the twentieth century disconnects you from a part of your world that now exists for others. This disconnect was distinctive during the COVID pivot. As some students struggled with online exam platforms, online lectures, and navigating the digital learning space in overcrowded home environments (Bashir et al. 2021; Pentaris et al. 2021).

The COVID pivot has changed how we deliver education forever. Therefore, the need to deliver digital learning environments which are fair and equitable begins

with the digitally fluent student. A review of the literature demonstrates many hurdles to achieving digital fluency. Beginning at secondary schools, if teachers are not provided with access to professional development or technical support staff, they are reluctant to engage with learning technologies (Warschauer et al. 2010). No teacher wants to be in front of a class having technology issues. Caluya et al. (2018) noted a relationship between social economic status (SES) and differences in digital skills and knowledge. Multiple researchers have found digital fluency inequities to be socio-economically driven (OECD 2021; Radovanović et al. 2015; van Dijk 2006; Warschauer et al. 2010). Mominó et al. (2008) and Castaño-Muñoz (2010) established private schools produced students with higher digital fluency even with lower technological resources than their state school counterparts. This led to their contention that high levels of technological resources did not equate to higher digital skills of students but rather schools' ineffective use of the curriculum (Mominó et al. 2008; Castaño-Muñoz 2010).

Methodology

A convenient sampling technique was used for the study which was conducted at a regional Australian university and an urban Australian university across the 2017 and 2018 1st year business student cohort. A total of 259 questionnaires were distributed at the regional university in marketing and management lectures with 236 returned completed: a 91% response rate. At the urban university, 179 questionnaires were handed out in marketing and management lectures with 173 questionnaires returned completed: a 96% response rate. The high response rates could be contributed to the questionnaires being handed out in paper form and collected in the lectures. Students were informed they did not have to participate in the survey and were entitled to hand back a blank questionnaire. A combined total of 409 participants were thus surveyed. The survey instrument was paper based with data then recorded in an SPSS (v.25) data file that was subsequently used for quantitative analyses.

The study participants were surveyed to determine whether disadvantage indicators impact digital fluency and contribute to a digital divide in higher education. Survey questions centred on each respondent's beliefs about the importance, motivation, constraints, and opportunities of technology. The survey questions were based on a 5-point Likert scale. Self-reported digital literacy skills, information fluency, and the respondents' online enrolment experiences were measured to find the level of digital fluency. Based on these indicators, the measurements were assessed against demographic factors and access to digital devices. The definition of who is from a disadvantaged household is from the Australian Bureau of Statistics Socio-Economic Index For Areas which ranks areas in Australia in terms of their relative disadvantage with those households in the bottom 25% of the state classed as 'Low socio-economic status'.

Descriptive analysis was used to examine students' demographic features, digital access, and digital fluency indicators. Pearson's Chi-Square tests for association were performed and a Cramer's V test was executed to assess the strength of association where the testing involved two or more categorical variables and one-way ANOVAs were used in the instances where testing involved examining continuous and categorical variables. The results presented in this article are only in cases where tests indicated significance at the 95% confidence level, that is, p values from the tests were less than 0.05.

Results

Table 6.1 below illustrates the respondents' demographic characteristics and school background.

Survey questions designed to measure access to digital devices during secondary schooling established 51% had a school-issued laptop, 73.9% had a personal computer/laptop, and 92.6% responded they had used computers/digital technologies throughout secondary schooling.

Table 6.1 Demographics of respondents

Variable	Category	Distribution	
		Frequency	Percentage (%)
University	Urban	173	42
	Rural	236	58
Gender	Male	151	43
	Female	202	57
Age group	School leaver (<20 years)	226	65
	Post-school leaver (20–24 years)	114	32
	Mature aged (>24 years)	10	3
Socioeconomic status	High	33	13
	Medium	154	62
	Low	62	25
First in family	First in family	141	41
	Not first in family	207	59
Geographic location	Urban	62	19
	Regional city	145	43
	Rural	60	18
	International	68	20
Secondary school type	Private independent	63	17
	Catholic	91	24
	State (government)	132	35
	International	88	24

Questions relating to access to digital technologies sought to determine whether participants had access to a digital curriculum during their secondary schooling and 53% of respondents had access to a school LMS, which suggests a digital curriculum. The presence of an LMS at a respondent's secondary school was revealed throughout the analyses to be strongly related to the development of digital fluency, more so than a school-issued laptop, socioeconomic or sociocultural status apart from students' parent's use of digital resources at work and home.

Analysis of the survey responses revealed the correlations between the origin of students and disadvantage indicators as well as the presence and quality of school LMS's. These rural and regional participants were more likely to be from medium-low socioeconomic backgrounds, first in family, and have attended a State or Catholic school in comparison to their urban counterparts (Fig. 6.1).

Access to an LMS in secondary school recorded the highest variance in the study against all disadvantage indicators and perceived digital ability. School LMSs contributed to students' perception of preparedness for university study (Fig. 6.2): 89% of respondents with a school LMS agreed to be well prepared for university-level study, whereas 79% of respondents that did not have a school LMS felt they were well prepared.

The chart (Fig. 6.3) illustrates the differences in LMS access across geographic and school categorical variables. Of note is that urban schools were much more likely to have an LMS than regional, or rural schools regardless of school type. Furthermore, Fig. 6.3 illustrates that private schools were more likely to have an LMS than State schools, apart from those in rural areas. Within regional and rural areas State schools were less likely to have an LMS, and regional city schools overall were more likely to have an LMS than rural schools.

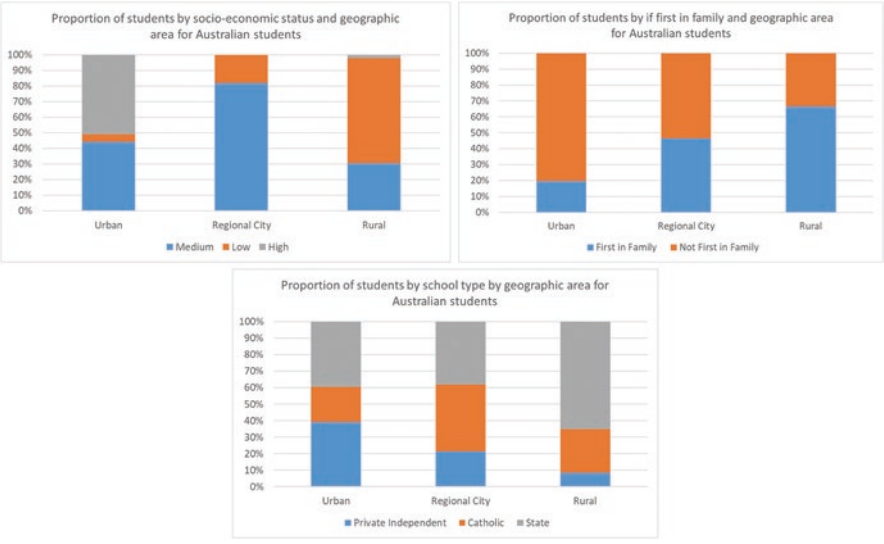

Fig. 6.1 Socio-economic background and if first in family at university by geographic area for Australian students

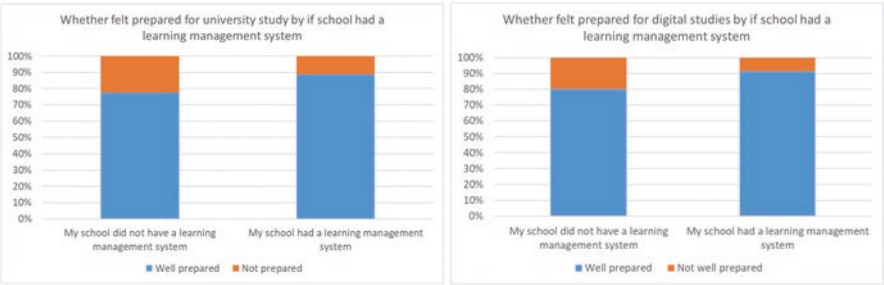

Fig. 6.2 If felt well prepared for university and digital studies by whether attended a school with a Learning Management System

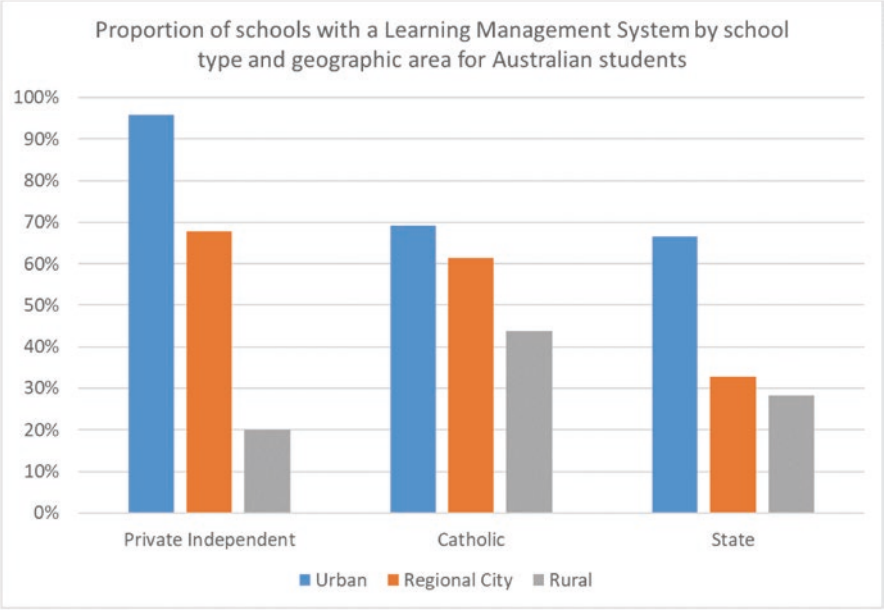

Fig. 6.3 Proportion of schools with a learning management system by school type and geographic area

Participants who required assistance to enrol online ($p < .003$) or contacted the university for enrolment assistance ($p < .015$) or had difficulty setting up their class registration ($p < .001$) were more likely to disagree with preparedness for university. These other indicators of digital preparedness were found to differ significantly based on geographic location, where 68.1% of regional and rural participants required assistance to enrol online compared with 50% of urban participants ($p < .024$). A further 75.8% of regional and rural participants had difficulty setting up their class registration compared with 17% of urban participants ($p < .005$). Furthermore, participants from regional and rural schools consistently rated

themselves lower on a scale of 1–5 for digital literacy proficiency than urban school participants.

The presence of an LMS was a critical factor but the impact on their sense of preparedness was mediated by other factors. Multiple disadvantage indicators were related to preparedness e.g. geographic area, school type, SES, and sociocultural factors, as well as the presence of an LMS. An LMS is more likely to be present in an urban private school which in turn is more likely to be populated by non-first in family and higher socioeconomic students. Consequently, while the results indicate access to an LMS in secondary school enhanced students' sense of preparedness for university study, the results do not definitively support an LMS as able to overcome all challenges to developing digital fluency in the presence of the disadvantage indicators.

The relationships between the variable "perceived preparedness by secondary school for university study" and students' demographic and educational backgrounds are of great interest. Respondents who disagreed with the preparedness variable were more likely to be female, from a regional or rural location, have attended a State or Catholic school, be first in the family, not have access to a school LMS, required help to enrol online, and contacted the student centre for enrolment assistance. As observed earlier the 'disadvantage indicators' are correlated and also more present with students from rural and regional areas.

Analysis of socioeconomic status and access to an LMS during secondary schooling illustrates 33% of participants from a low SES background had access to an LMS, compared with 91% of high SES background participants ($p < .001$) (Fig. 6.4). These results were reiterated in students that are first in family at university and the access to an LMS, with 59% of first in family not having access to an LMS ($p < .001$) compared with 37% in not first in family. This narrative continued across all disadvantage indicators including geographic location, with 68% of rural participants not having access to an LMS at secondary school, compared with 21% of their urban counterparts ($p < .001$). A further 60% of State school participants did

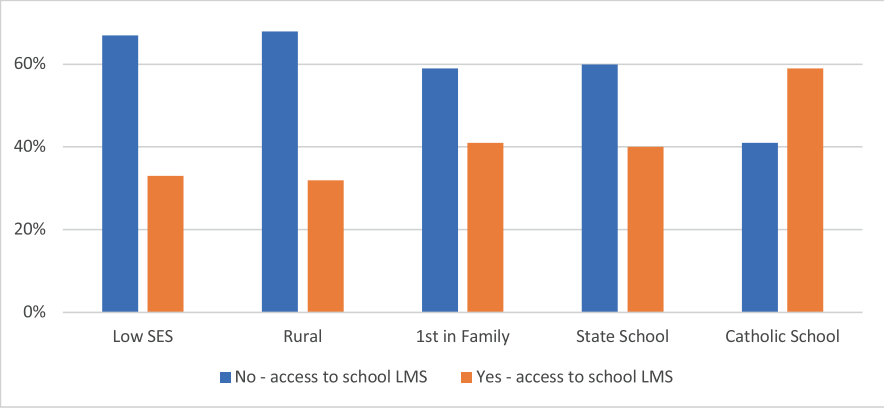

Fig. 6.4 Access to a School LMS with disadvantaged indicators

not have access to an LMS compared with 25% of private independent school participants ($p < .00$).

Geography appears to play a role in attenuating differences in the presence of LMS's in schools observed for students from different socio-cultural backgrounds. For example, while students from low socioeconomic backgrounds generally attended schools that were less likely to have an LMS than students from high socioeconomic backgrounds, students from medium socioeconomic backgrounds were less likely to have attended a school with an LMS if they were in a regional city (54%) than in an urban area (74%), and less likely again if they were in a rural area (40%). The same pattern holds true for students that are first in family (FiF) at university, with 67% of FiF students from urban areas attending schools with an LMS compared to 41% of FiF students from regional cities and 34% of FiF students from rural areas (Figs. 6.5 and 6.6).

So how do all these factors interact in relation to students' preparedness? While the presence of an LMS at their school was related to their sense of preparedness for university and digitally based studies, the Australian students' perception of their preparedness for digital studies was most strongly related first to their parents' degree of use of digital devices in their work and home and their parents keeping up with the latest technologies (combined as a measure 'parental influence digitally') (Fig. 6.7). Only 5% of those who reported their parents had high (strong) use of digital technologies felt unprepared for digital studies at university compared to 20% of those whose parents used digital technologies less. For the second group, the presence of a learning management system at their school appears to help students feel better prepared for digital studies as 10% of those whose school had LMS felt unprepared compared to 27% of those whose school had no LMS. For students whose parents had high digital technology use, the type of school they attended

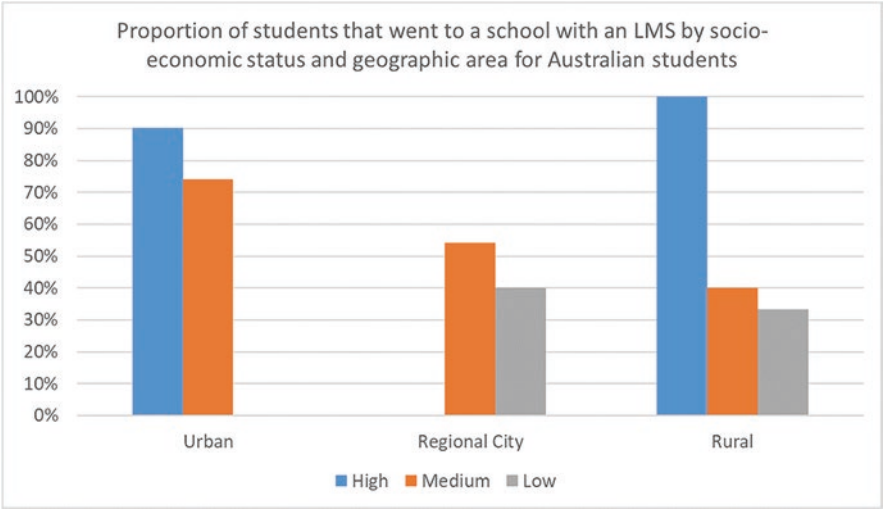

Fig. 6.5 Proportion of Australian students who attended a school with a LMS by geographic area and socioeconomic status

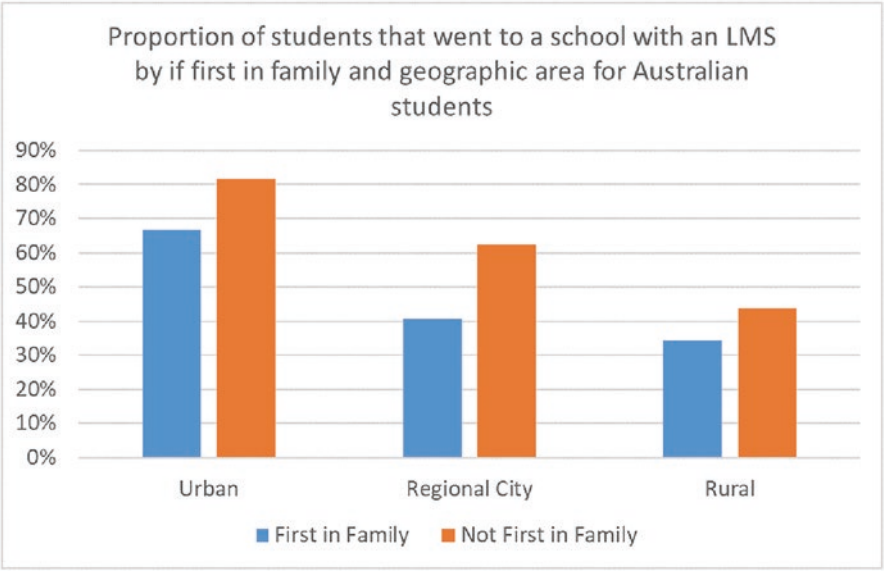

Fig. 6.6 Proportion of Australian students who attended a school with a LMS by geographic area and if first in family at university

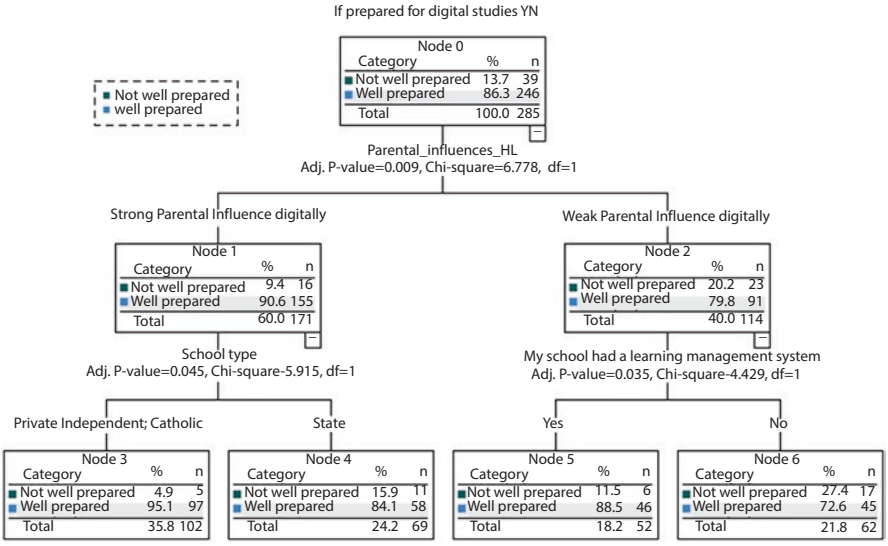

Fig. 6.7 CHAID decision tree of factors related to differences in Australian students perceived preparedness for digital studies

differentiated between them, with 5% of those at private independent or Catholic schools feeling unprepared compared to 15% of those who attended state schools.

No access to a school LMS had a significant impact on digital skills. Proficiency levels were consistently rated lower by participants without access to a school LMS in Outlook Calendar or equivalent, online tests and quizzes, editing video and sound recordings, postings to blogs, forums, and wikis, posting to social networking sites, and uploading videos to social networking sites. These participants were also less likely to critically evaluate information for fairness, validity, and currency.

Digital attitude, mindset, and perceived digital skills were found to be statistically significant against the categorical variables of access to an LMS, geographic location, access to a school-issued laptop, enrolment assistance, and first-in family.

Gender played a role as well, with 81.6% of females and 68.7% of males agreeing they were well prepared ($p < .002$). Participants who scored low in digital fluency indicators such as online enrolment issues also disagreed that they were well prepared ($p < .003$). Lower proficiency levels in Adobe also equated to reports of not being well prepared ($p < .037$). Participants who rated themselves as underprepared consistently rated themselves lower in proficiency in all the digital literacy platforms, for example, Excel, Outlook Calendar, but the results were not statistically significant. This was again evident in questions relating to parental digital skills and self-rating of digital technology skills. Participants who rated themselves and their parents as lacking digital technology skills were also more likely to disagree that their school prepared them well for university-level study.

Discussion

What does this mean? The narrative that has unfolded has illustrated key differences in how school influences, digital experiences and access to digital technologies have influenced study participants' perception of their digital fluency and perceived preparedness for university studies. These digital influences and experiences, when linked to disadvantage indicators such as socioeconomic/sociocultural capital, geographic location, and school type, indicate a relationship between access and application of digital resources and the development of digital fluency.

The findings demonstrate that digital fluency is pronounced in individuals from higher socioeconomic status and sociocultural capital, who attended schools with an LMS, and who had greater access to family or friends who could assist with digital issues. These students were more likely to be digitally fluent and report being well prepared for university-level study These findings that the provision of support builds digital fluency reinforce the work of (Caluya et al. 2018; Devlin and O'Shea 2012; Warschauer and Matuchniak 2010). The need for higher education to create inclusive and supported digital learning environments is clear from the results.

The overall results indicate a digital divide which reflects wider society has emerged in higher education. The design of university digital learning environments assumes students are digitally fluent, especially school leavers who had access to school-issued laptops but these laptops/access to resources in themselves are not sufficient to develop digital fluency.

Digital proficiency and the distribution and application of digital resources appears to be the major contributing factor to the developing digital divide. Research into the link between SES factors, school digital resources, and the digital divide and its impact on Australian higher education is not well-developed as yet; however, the results from this study indicate that digitally underprepared students participating in higher education could be further disadvantaged if unsupported in a digital learning environment.

Students identified as not digitally fluent were more likely to consider not being prepared for university or learning in a digital environment. The research has also shown certain conditions have to be met before digital fluency can be achieved. To use a metaphor, in research on keys to smallholder forestry, Byron (2001) refers to finding a key to unlock the greatest potential gain. Byron (2001) states conditions under which outcomes can be reached are like "a door with many locks", and all locks have to be opened before potential can be realised. Byron's metaphor can be applied to the development of digital fluency in secondary school graduates. In order to unlock the door to digital fluency, four keys are needed. If any of the keys are missing, the secondary school graduate would struggle to achieve digital fluency. The four keys or conditions that have to be met to be digitally fluent are:

1. Access and experience in a digital environment
2. Opportunities to learn in a digital curriculum
3. Experiences in creating, not just consuming, digital knowledge and
4. Constructing a technical and social identity through digital immersion

Therefore, the research has determined that digital fluency was achieved through experience and immersion in a digital environment. Figure 6.8 illustrates the cycle of maintaining digital fluency. Similar to language acquisition, digital fluency requires immersion in a digital environment and practice of digital skills. Therefore, the digitally fluent can move up and down the scale accordingly to their immersion, opportunity to practice, and experience.

The research established that perceived preparedness for university-level study was impacted by commencing students' digital fluency. Therefore, if immersive digital experiences foster digital fluency, the pivot to online learning during COVID should lead to increased levels of digital fluency. However, there is evidence COVID has broadened the digital divide in education. This evidence is captured in the extra services required to support university students during online examinations (Montenegro-rueda et al. 2021).

Figure 6.9 proposes considerations for building digital fluency in commencing university students who may not be digitally prepared to study in a digital learning environment. Building digital fluency in a university student requires an awareness of the student's past experience. Universities have to immerse students in a digital environment which may be a foreign environment for the student therefore supports are required. The university student must be provided with opportunities to practice within a supportive environment. These opportunities help to instill resilience and proficiency and will most likely lead to digital fluency.

The design of many digital learning environments assumes students are digitally fluent. Therefore, the preparation of students to study in a digital learning

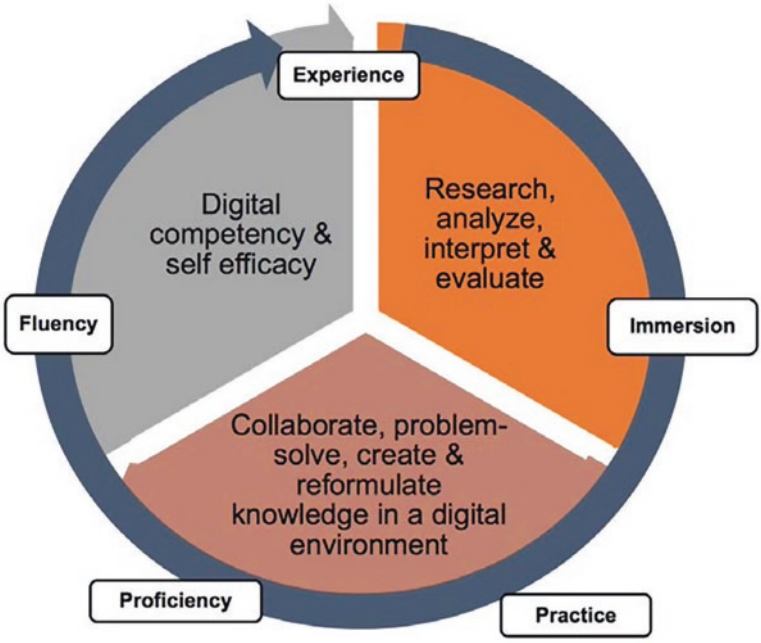

Fig. 6.8 The cycle of digital fluency

Fig. 6.9 Considerations for building digital fluency

environment is paramount. Of greatest importance is the need to orientate, scaffold, and support the digital experience. The higher the level of complexity, the higher support required.

If universities are preparing business students to take their place in an ever-changing digital world, universities need to produce graduates who can create, interpret, and evaluate information, who move with ease in a digital environment to solve problems and create and generate knowledge. Universities need to graduate digitally fluent.

Implications for Theory and Practice

A digital divide based on digital proficiency is present in Australian schools and universities. The study established a relationship between disadvantage indicators and levels of digital fluency. This relationship has clear implications for theory and practice in that digitally resourcing disadvantaged schools does not increase digital fluency. However, digitally resourcing schools combined with clear curriculum direction and teacher professional development in digital pedagogies would likely increase digital fluency and perceived preparedness for university study. If change is not instigated, digitally underprepared students entering higher education could be further disadvantaged and underprepared to study in a digital learning environment.

Limitations and Future Work

The over-reliance on self-reported digital skills is a limitation of the study. Participants may have been likely to rate their digital skills higher than their actual digital skills. Self-reported school identity also contributes to the limitations of the study. The inclusion of secondary school inputs would have strengthened the study. Secondary school interviews and reviews were not included in the studies due to constraints in the research design.

A further limitation is that self-reported digital skills were not linked to academic performance. It would be of great interest to identify whether a lack of digital fluency impacts negatively on academic performance. There are many threads in the research that could not be explored in depth. Further research areas could include:

- A large-scale digital fluency study in Australian higher education.
- Digital fluency impacts on the preparedness of disadvantaged and underrepresented students for university study.
- Digital curriculum/LMS implications in secondary schools.
- Building teacher capacity in digital pedagogies in secondary schools.
- Business student academic performance and digital fluency.

Conclusion

The preceding research demonstrates a link between access to a learning management system (LMS) or digital curriculum during secondary school and disadvantage indicators. Access to a school LMS consistently produced higher self-reported digital skills than those without, even when disadvantage indicators were present. The issue of perceived preparedness for university study and/or a digital learning environment was also linked to participants who had access to a school LMS. The results indicate discrepancies in how participants perceived their preparedness for

university study and could be indicative of systemic problems with the Australian education system. Rural, regional, low socioeconomic, low socio-cultural capital, and state-school participants were less likely to have had access to a digital curriculum during secondary schooling and were less likely to report preparedness for university study. Conversely, these disadvantage indicators were moderated if participants had access to an LMS or digital curriculum.

The digital divide in higher education is emanating from the distribution, use, and allocation of secondary schooling digital resources and prior experience. The resourcing of secondary schools with school-issued laptops did not increase digital fluency or perceived preparedness for university study in itself. However, the implementation of a digital curriculum or LMS produced significant outcomes in the development of digital fluency. These findings illustrate the influence of digital immersion in the formation of fluency. Resourcing schools without a clear digital curriculum does not increase digital fluency. Schools' level of development of their LMS's also followed a gradient whereby the better-resourced private schools had better-resourced LMS's in terms of equipment, maintenance, and training of the teachers using the system compared to State schools that had LMS's in general. A poorly developed and maintained LMS would offer little benefit to students compared to well-resourced and run LMS's.

The COVID pivot highlighted the need for educational institutions to create supportive digital learning environments. Learning environments that are fair, equitable, and responsive to student needs (Nordmann et al. 2020). Now, more than ever, creating an intentional digital learning experience built on the knowledge of students' digital needs will ensure equity (Bashir et al. 2021). If the digital divide is to be conquered, universities cannot continue to assume the digital fluency of commencing students.

This divide is impacting students' sense of preparedness and their learning experiences. Our proposition that the digital divide is predicated on digital proficiency has been supported by empirical data on the link between digital skills, SES, sociocultural capital, and self-reported preparedness for university study. Unless effective support structures and curriculum design that build digital fluency are embedded in education, inequity will continue to grow. Further investment is required to build educators' digital skills to facilitate learning environments that promote digital fluency and prepare students for a globally disruptive post-COVID workforce. The OECD first reported a link between the digital divide the internet usage in 2001 (OECD 2001). Twenty-one years later, the time has come to stop talking the talk and begin working towards a fairer educational system that builds digital human capital and levels the playing field. If education is to be transformative, it needs to be supportive and accessible for all.

Acknowledgements The authors would like to acknowledge Lynne Eagle and David R Low. Their valuable guidance, imitable support and insight led to the development of our research.

Appendix 6.1: Questionnaire 6. The Digital Divide and Higher Education

Student number or Login ID:							
1. What secondary school did you attend?							
Please respond to the following questions					Yes		No
2. I had a school issued laptop during my secondary schooling. If yes, please circle if you could: Take home or Use at School only					②		①
3. I had a personal computer or laptop during my secondary schooling					②		①
4. I have used computers/digital technologies throughout my secondary schooling					②		①
5. My school had a Learning Management System eg. Blackboard, Moodle etc					②		①
Think back to when you enrolled in the Bachelor of Business and answer the following questions					Yes		No
6. It was difficult to enrol online at university					②		①
7. I couldn't enrol online					②		①
8. I needed help to enrol online. If yes, circle who helped you to enrol: Family or Friends or University Staff					②		①
9. I needed to contact the student centre for help to enrol. If yes, circle how you sought assistance: Phone or email or Face to Face					②		①
10. It was difficult to set up my class registrations					②		①
Please indicate how strongly you agree or disagree with the following statements	Strongly agree	Agree	Agree somewhat	Undecided	Disagree somewhat	Disagree	Strongly disagree
11. I was well prepared by my school for university level study	⑦	⑥	⑤	④	③	②	①
12. I was well prepared by my school to study in a digital learning environment	⑦	⑥	⑤	④	③	②	①
13. I would rate myself as having excellent digital technology skills	⑦	⑥	⑤	④	③	②	①
14. I grew up using computers/digital technologies	⑦	⑥	⑤	④	③	②	①
15. My parents/caregivers actively use computers/digital technologies in the workplace and home	⑦	⑥	⑤	④	③	②	①
16. My parents/caregivers keep up with the latest trends in technology	⑦	⑥	⑤	④	③	②	①
17. I would rate my parents/caregivers as having good computer/digital technology skills	⑦	⑥	⑤	④	③	②	①
18. I feel it is important to be able to access the Internet any time I want	⑦	⑥	⑤	④	③	②	①
19. I think it is important to keep up with the latest trends in technology	⑦	⑥	⑤	④	③	②	①
20. I believe there is only one right way to use digital technologies	⑦	⑥	⑤	④	③	②	①
21. I can quickly learn how to use new technology	⑦	⑥	⑤	④	③	②	①
22. I am able to jump from one kind of digital technology to another to achieve my goals	⑦	⑥	⑤	④	③	②	①
23. I recognise the potential transformative uses for new digital technologies	⑦	⑥	⑤	④	③	②	①
24. I take comfort with the fact that there is more than one way to use a technology	⑦	⑥	⑤	④	③	②	①
25. I think technologies, not people, always cause success or failure	⑦	⑥	⑤	④	③	②	①
26. I think high social media use always causes a decrease in face-to-face communication	⑦	⑥	⑤	④	③	②	①

27. I often oversimplify or underestimate the role of a new technology	⑦	⑥	⑤	④	③	②	①
28. I understand the types of potential value in using social media	⑦	⑥	⑤	④	③	②	①
29. I have a large number of followers on social media	⑦	⑥	⑤	④	③	②	①
30. I believe change is necessary	⑦	⑥	⑤	④	③	②	①
31. I embrace change as opportunity	⑦	⑥	⑤	④	③	②	①
Please indicate how strongly you agree or disagree with the following statements	Always	Very frequently	Frequently	Sometimes	Rarely	Very rarely	Never
32. I use JCU Library One Search to research my assignments	⑦	⑥	⑤	④	③	②	①
33. I use JCU Lib Guides to research my assignments	⑦	⑥	⑤	④	③	②	①
34. I use Google or other search engines to research my assignments	⑦	⑥	⑤	④	③	②	①
35. I use Google Scholar to research my assignments	⑦	⑥	⑤	④	③	②	①
36. I use Wikipedia to research my assignments	⑦	⑥	⑤	④	③	②	①
37. I only use peer reviewed or academic articles for my assignments	⑦	⑥	⑤	④	③	②	①
38. I use online referencing tools eg. Endnote, Cite this for me or Easy bib	⑦	⑥	⑤	④	③	②	①
39. I critically evaluate information by checking that the content is fair, valid and current	⑦	⑥	⑤	④	③	②	①
40. I evaluate and interpret online sources by checking for bias	⑦	⑥	⑤	④	③	②	①

On a scale of 0 to 5 (with 0 being not competent at all to 5 being expert user) please indicate your competence with the following digital technologies.	5	4	3	2	1	0
41. Microsoft Word or equivalent	⑤	④	③	②	①	⓪
42. Excel	⑤	④	③	②	①	⓪
43. PowerPoint	⑤	④	③	②	①	⓪
44. Email	⑤	④	③	②	①	⓪
45. Outlook calendar or equivalent	⑤	④	③	②	①	⓪
46. LearnJCU	⑤	④	③	②	①	⓪
47. PebblePad	⑤	④	③	②	①	⓪
48. Online Tests eg LearnJCU quizzes, Aplia, Wiley	⑤	④	③	②	①	⓪
49. Posting to Blogs, Forums and Wikis	⑤	④	③	②	①	⓪
50. Creating Blogs, Forums or Wikis	⑤	④	③	②	①	⓪
51. Adobe Acrobat Professional	⑤	④	③	②	①	⓪
52. Graphics packages eg. Adobe Photoshop etc	⑤	④	③	②	①	⓪
53. Post material to social networking sites eg. Facebook, Instagram	⑤	④	③	②	①	⓪
54. Upload videos to social media eg YouTube, Facebook, Instagram, Snapchat	⑤	④	③	②	①	⓪
55. Editing video and sound recordings	⑤	④	③	②	①	⓪
56. Web searches	⑤	④	③	②	①	⓪

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