

# Chapter 12

## Digital Literacy and Other Factors Influencing the Success of Online Courses in Remote Indigenous Communities

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### Introduction

Indigenous students enrolled in universities nation-wide still comprise less than 1% of all enrolments (Anderson 2015; Behrendt et al. 2012).<sup>1</sup> Indigenous higher education participation statistics indicate that despite small growth in numbers of commencements between 2008 and 2012, Indigenous representation in Australian universities remained virtually unchanged (Department of Education and Training 2014; Pechenkina 2014). The average national Indigenous completion rate was 28% in 2013, which was half that of non-Indigenous students (Pechenkina 2015). The low enrolment and completion rates among Indigenous students could be attributed to a number of challenges facing Indigenous Australian students before and after entering higher education (Barney 2013; Bin-Sallik 1996, 2003, 2000; Pechenkina 2014; Schofield et al. 2013). These challenges, summarised from literature, can broadly be classified into three areas:

- socio-cultural factors including attitudes, aspirations and intentions; societal, institutional and family support or lack thereof<sup>2</sup>; language and cultural barriers, and overcrowded housing.<sup>3</sup>

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<sup>1</sup>Indigenous Australians make up 2.5% of the Australian population according to the 2011 Census (Australian Bureau of Statistics 2013).

<sup>2</sup>Differing familial and social expectations faced by Indigenous men and women may have a direct and profound influence on the degree of support, or lack thereof, that either gender can expect or will receive.

<sup>3</sup>Overcrowded housing is a huge factor affecting remote students' ability to have regular access to a quiet place to study, as well as their ability to establish a study routine.

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- institutional and financial factors including availability, affordability and access to resources, socio-economic status, intergenerational poverty, chronic unemployment<sup>4</sup> and welfare dependence.
- individual factors such as schooling experiences and performance, aspirations and expectations, chronic health conditions, self-confidence and self-esteem.

Often Indigenous students face not one, but a complex mixture of these challenges; that is, those from low socio-economic backgrounds and remote communities are further disadvantaged (Hughes and Hudson 2011). Across the nation, non-Indigenous adults are over four times more likely than Indigenous Australians in the same age group to have attained a Bachelor degree or higher (24% compared with 5%) (Australian Bureau of Statistics 2011). Although widely critiqued, research produced by the Centre for Independent Studies makes an important point: Indigeneity in and of itself is not a factor that affects Indigenous participation and completion rates in higher education (Hughes and Hudson 2011; Hughes and Hughes 2012). Children of working, urban Indigenous Australians are participating in post-secondary education at rates similar to those of the non-Indigenous population; more than three quarters of this group are not from low-SES (socio-economic status) backgrounds; and 44% are not the first in their family to attend university (Hughes and Hughes 2012).

Evidence indicates that the attainment of higher levels of education was more likely to be found among Indigenous adults living in major cities than those in regional and remote areas. In 2008 Indigenous adults living in major cities were three times more likely to attain higher levels of education, such as a Bachelor degree (9%), than those living in remote areas (3%) (Australian Bureau of Statistics 2011). Statistically, however, Indigenous Australians are much more likely to live in regional and remote areas compared to non-Indigenous Australians. Their distances from higher education providers negatively affect remote Indigenous Australians' chances of accessing a university degree due to high costs for both institutions and families, whereby infrastructure is spread over fewer individual students who are required to travel longer distances for education (Biddle 2010). In theory, online education should be able to address many of these issues.

In this chapter, we examine the extent to which a lack of digital skills among Indigenous students might be impacting on the success or otherwise of online courses, and discuss other digital technology-related factors that may be playing a greater role. Firstly, we provide an overview of the spatial dimensions of higher education and online learning using available statistics. We then describe the Indigenous Futures Program, which is working with Indigenous communities and delivering online courses to provide Indigenous pathways into higher education.

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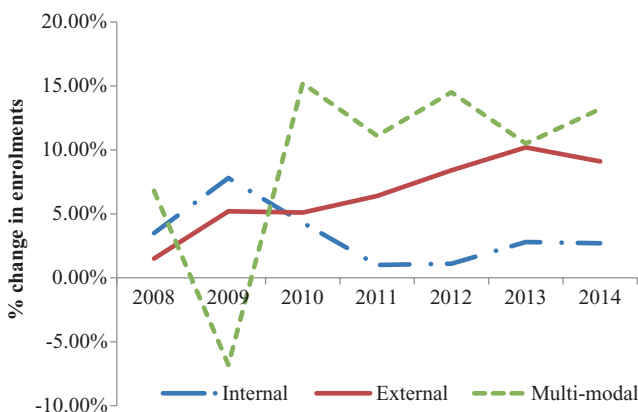
<sup>4</sup>Chronic unemployment can be inter- or multi-generational, which could also affect the ability of students to access and participate in higher education. Not only for reasons of access and equity but more commonly due to family dependence on a potential student's capacity as an income earner.

Our discussion of digital skills and other factors influencing online education is based on the preliminary results of that project including a survey of technology use and digital literacy collected at enrolment, interviews with the first cohort of students conducted four to 6 weeks after the commencement of the course, and our fieldwork observations from project meetings and planning days. The research project received ethical clearance from the Swinburne Human Research Ethics Committee, and all participants were made aware that participating in the research project was voluntary and that they could withdraw at any time. The chapter concludes with a discussion of the socio-technical barriers to online education, with reference to the capabilities approach proposed by Amartya Sen.

## Reducing Spatial Inequality

Approximately a third of Australians reside in regional and remote areas (Australian Institute of Health and Welfare 2013). In 2011, 44% of Indigenous Australians lived in regional and 21% in remote and very remote areas (Australian Bureau of Statistics 2013; Behrendt et al. 2012). In 2008, 8.7% of Indigenous Australians living in major cities completed a Bachelor degree or above compared to only 2.7% in remote and very remote areas (Australian Bureau of Statistics 2011).

Higher education enrolment statistics in Australia indicate that the percentage of enrolments in external and multi-modal courses has been increasing since 2008, while enrolments in traditional internal courses have been declining (Fig. 12.1). Indigenous students are more likely to enrol in external and online courses than



**Fig. 12.1** Higher education enrolments in Australia (Source: Department of Education and Training 2015)

non-Indigenous students. In 2010, 27% of Indigenous students enrolled as external students compared to just 16% of non-Indigenous students (Behrendt et al. 2012).

Online education uptake data in Australia indicates that for regional universities external and multi-mode<sup>5</sup> enrolments were as high as 80% of all enrolments and comprised nearly 50% of national Vocational Education and Training (VET) providers' enrolments (Regional Universities Network (RUN) 2013). Comparably, in the US, in the period between 2002 and 2012, there was a significant growth in the number of students taking at least one online course, reaching 32% at its peak (Allen and Seaman 2012). These numbers suggest that online education has the capacity to address spatial barriers, and that digital technologies may provide access to culturally relevant education forums for those unable or unwilling to travel for education.

Online education, therefore, presents an opportunity to address some of the challenges facing the Indigenous higher education sector, including spatial inequality. Recent trends in Indigenous higher education have indicated that online courses are in fact succeeding in attracting and retaining Indigenous students, particularly in regional and remote areas (Batchelor Institute of Indigenous Tertiary Education 2014; Darwin Sun 2014). However, as discussed below, multi-mode delivery (including block delivery, whereby students travel into town for face-to-face intensive learning) can involve particular incentives that are tangentially related to education outcomes, and that need to be taken into account.

## The Indigenous Futures Program

The Indigenous Futures Program (IFP), funded by the Higher Education Participation and Partnerships Program in 2013, involves three 'demonstrator' (pilot) projects, each of which is being planned and conducted in partnership with local not-for-profit organisations working with Indigenous individuals and communities in low-SES regions. Three criteria were used in selecting and designing the projects: (1) existing relationships with partner organisations working with Indigenous individuals and communities in low-SES regions; (2) an identified need for further education in the subject area/field; and (3) a willingness to use new technologies to deliver education in the areas where a need exists. The courses for the three demonstrator projects were designed specifically to provide clear pathways into higher education (i.e. from certificates to diplomas, associate degrees and degrees) and to facilitate engagement and progression to higher-level qualifications, particularly for Indigenous learners.

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<sup>5</sup>A course that has a combination of two or more methods of teaching, for example online and face-to-face classes, is known as mixed-mode or blended course.

### ***Media and Creative Industries Demonstrator Project***

The media and creative industries demonstrator project is working with Goolarri Media Enterprises (Goolarri), an Indigenous media organisation based in Broome, WA. This demonstrator project seeks to address the need for further training in media and creative industries fields by extending and filling the gaps in Goolarri's training remit beyond the broadcasting sector and into design and digital media skills development. Such a workforce typically requires tertiary qualifications.

Goolarri is part of the remote Indigenous media sector, a multi-faceted system that has evolved since the mid-1980s to include regional radio networks, a satellite television channel (ICTV), film and television production, and music production (Rennie and Featherstone 2008). Goolarri also works closely with the Pilbara and Kimberley Aboriginal Media Association (PAKAM)<sup>6</sup>, which coordinates radio and video activity in approximately 20 remote communities in north-west Western Australia. Goolarri has been providing training to remote media workers, including PAKAM workers, becoming a Registered Training Organisation in 2003. Until now, Goolarri's training has primarily been directed at remote media workers – Aboriginal people residing in remote areas that produce radio content for Remote Indigenous Broadcasting Services (RIBS radio, including PAKAM) and locally focused video content distributed on ICTV, NITV and Indigitube. Although the learning platform and courses developed through the IFP may assist this group, the project aims to connect with students living in remote areas that aspire to creative jobs beyond the remote broadcasting sector. By producing digital media- and design-qualified creative workers, Goolarri ultimately seeks to expand the creative economy of the Kimberley and Pilbara. The project is thus responding to what has become known as the 'creative economy', which extends beyond what we traditionally see as the arts and cultural industries, to account for the growing need for creative skills in other industry sectors (Bakhshi et al. 2013). The creative workforce consequently includes those working with new technologies, content and applications to coordinate businesses and lifestyles, producing design solutions within a broad array of industries including traditional services and manufacturing (Hearn et al. 2014).

### ***Health and Community Services Demonstrator Project***

The health and community services demonstrator project aims to develop new training methods and resources to facilitate online and mixed-mode delivery in this area. This project is being developed in partnership with four partner organisations, collectively dubbed the NT Consortium, working in the Northern Territory (NT) delivering services in the health and community services sector. The NT Consortium

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<sup>6</sup>Goolarri is the business arm of the Broome Aboriginal Media Association, which also auspices PAKAM.

includes Carers NT, Carpentaria Disability Services, Council for Aboriginal Alcohol Program Services and Human Services Training Advisory Council. Courses to be offered by this project include certificate level courses that will provide formal qualifications to individuals working in the disability and community services and alcohol and other drugs treatment and rehabilitation sectors. These courses will serve as pathways to an associate degree in health and community care and other similar courses.

Since its inception in 1992 Carers NT has been dedicated to improving the lives of family carers living in the Northern Territory who provide 'unpaid care and support to family members and friends who have a disability, mental illness, chronic condition, terminal illness or who are frail' (Carers 2014). It operates across the NT providing services to individual carers as well as advocating on behalf of all Territory carers. Carpentaria Disability Services (CDS) has been providing services, support, information and encouragement to the disabled and their families since its formation in 1973 (Carpentaria Disability Services 2014). Previously known as NT Spastic Association, CDS was formed to provide services to Northern Territory children with cerebral palsy and other disabilities, and their families. In response to the community's needs, it has broadened its role to provide specialised early intervention, respite and adult services.

The Council for Aboriginal Alcohol Program Services (CAAPS) Aboriginal Corporation is a family-focused residential alcohol and other drug rehabilitation centre in Northern Australia (Council for Aboriginal Alcohol Program Services 2014). It provides a substance misuse service that supports Indigenous families who are experiencing alcohol and other drug issues. It has an all-Aboriginal Board and strives to maintain a minimum 60% Indigenous staff body. CAAPS has been operating for 30 years and came into being with the support of NT's remote communities. It provides evidence-based assistance to overcome problems caused by substance misuse, while raising public awareness and advocating for client and community needs.

Human Services Training Advisory Council (HSTAC) provides advocacy, products and advice about training packages for vocational education and training in the human services (Human Services Training Advisory Council 2014). It is one of six training advisory councils contracted to provide advice to government and industry about vocational education and training. HSTAC provides both free and commercial services essential to supporting future workforce development across a range of human service industries. Its key focus is on workforce development for the health, community services, local government and correctional services sectors.

In this context, the health and community services project and the NT Consortium are committed to building a cohort of skilled and qualified Indigenous workers and managers in a range of health and community service industries including developing skills for management-level positions. In addition, they are committed to developing and delivering course and training materials that are culturally appropriate and accessible to Aboriginal remote area learners and workers regardless of their geographical location.

In 2011, almost 2% of the Indigenous population were employed in health-related occupations compared with 3.4% of the non-Indigenous population (Australian Institute of Health and Welfare 2015). More Indigenous Australians (3%) were employed in the community services sector than non-Indigenous Australians (2%). Of all Indigenous people aged 15 and over about 6% were employed in health and welfare sectors represented, and of this, 15% were Indigenous health workers. Indigenous people aged 15 and over accounted for almost 4% of all community services workers in Australia. The largest occupational groups among Indigenous people in the community services workforce in 2011 were education aides or support workers, welfare support workers, and aged and disabled carers. The economic contribution made by this workforce is significant, yet generating direct pathways for these workers, particularly those living in remote and very remote communities, is not easy. Although the partner organisations in the NT Consortium will continue to provide training to the community and health workers, collaboration with the Indigenous Futures Program is expected to provide opportunities to engage remote and very remote learners interested in working in this sector, while simultaneously opening pathways to higher degrees at Swinburne University of Technology and other universities.

### *Education Demonstrator Project*

The education support workers' demonstrator project is developing an online course that recognises prior learning of existing Indigenous education and liaison support workers in schools, and provides gap training so that they can attain Certificate IV in education support. This project was initially set up in partnership with the Queensland University of Technology (QUT); however, due to changes within QUT in late 2014 this partnership did not continue. Since then Swinburne has been in negotiations with other potential partners, some of whom are playing a key role in student recruitment and student support, including Australian Catholic University and Nahri, an Aboriginal not-for-profit consulting firm. The Department of Education and Training, Queensland, has been key to promoting the course in Queensland by providing referrals and word of mouth recommendations. Despite this, the course offered by this project commenced delivery and will serve as a pathway to education degrees offered through Swinburne Online and other institutions.

Education and training is the second largest industry that employs Indigenous Australians (Australian Bureau of Statistics 2011). However, only about 20% of Indigenous Australians reported an occupational status of professionals or managers compared to about 36% of non-indigenous Australians (Gray et al. 2012). The aim of IFP is to provide opportunities to particularly Indigenous education support workers to use their prior learning and experience in obtaining formal qualifications, and subsequently enable them to access higher education, particularly teaching degrees.

**Table 12.1** Student enrolment in the three projects

Project	Course	Total enrolments	Withdrawals	
			Number	%
Creative industries	Cert 3: Media	21	14	67%
	Cert 4: Media & design	5	1	20%
Education support	Cert 4: Group 1	15	1	7%
	Cert 4: Group 2	13	–	
Health & community services	Cert 2: Community services	7	3	43%
	Cert 3: Disability services	8	1	13%
	Cert 4: Alcohol & other drugs	13	4	31%
	Total	82	24	29%

## Student Enrolment

Partner organisations are an integral part of the IFP project as they are crucial to student recruitment, course delivery and student support. All the partners were involved in course development and were instrumental in providing expert input and locally relevant Indigenous knowledge course content and advice on delivery methodologies and appropriate student support structures. All courses developed for delivery through these demonstrator projects underwent varying degrees of adaptation to meet local needs, such as including local knowledge and content to meet community and workforce needs. Course delivery has commenced in six courses across three demonstrator projects. The courses being delivered in online and blended formats are:

- Certificate IV in Education Support: This course has now enrolled two cohorts of students.
- Certificate III and IV in Media and Interactive Media, respectively.
- Certificate II in Community Services, Certificate III in Disability Services and Certificate IV in Alcohol and Other Drug Rehabilitation.

At the time of writing, there were 82 students enrolled across six different online and blended certificate-level courses ranging from Certificate II to Certificate IV. Student enrolments were spread evenly across each of the three demonstrator projects (Table 12.1). The student cohort was predominantly female (68%) and mature age (45% being older than 40 years and 21% aged between 30 and 40 years).

Students enrolled in all the creative industries and education support courses and Certificate II in community services all identified themselves as of Australian Aboriginal or Torres Strait Islander origin. However, about 46% and 50% of the students enrolled in the Certificate III and IV, respectively, in the health and community services project identified themselves as non-Indigenous. Overall, Indigenous enrolments were 87%, and non-indigenous enrolments were 13%.



Student attrition, at the time of writing, was 29% across the entire student cohort. The highest attrition was in the courses offered by the creative industries project (58%) followed by 29% in the health and community services project, and 4% in the education support project. Historically, student attrition from online courses has been higher than on-campus courses both in Australia and internationally (Ali and Leeds 2009; Cochran et al. 2013). The attrition in these courses was comparable to international online courses (Bruff 2013; Burnsed 2010) but lower than online vocational courses in Australia where there was a completion rate of less than 10% (Jacks 2015; Kollmorgen 2014).

The differences in attrition are possibly due to factors such as student motivations, and whether the course was required or encouraged by their employer. These non-ICT related factors are likely to have influenced completion rates and student experience. For instance, a significant factor was the extent to which students were motivated through work incentives. In both the health and community services (NT) and education (QLD) demonstrator projects, students were encouraged to undertake the course by their employer. Community health workers are required to have qualifications to work in specific areas, including alcohol and drug rehabilitation. The education support workers saw value in having their existing skills acknowledged through the recognition of prior learning mechanism. For the creative industries cohort, the incentives were less direct. Some students were involved in PAKAM and came into the program through that connection. However, PAKAM workers were not required to do the course as a condition of their employment and some already had similar qualifications. Other students enrolled in that course of their own volition.

Moreover, the project was still in development when the data collection occurred, and some level of attrition might be attributable to the platform and delivery at the time. For instance, on the health and community services project, the students found that the devices they were using (iPads available for loan through the project) were not suitable for tasks such as assessment submission. On the creative industries project, course content-creation had fallen behind schedule. The delayed timelines meant that staff had not received professional development when students commenced, which might have made a difference in terms of online forum participation. A majority of students in that project commented that they wanted more contact with trainers, either in person or through discussion boards. Despite having the highest dropout rates, the majority of students in the creative industries project stated that they were happy with the platform and appreciated the ability to access content on the device from home, suggesting that the platform itself was not the reason for the high attrition.

Factors such as student motivations and incentives undoubtedly influence the success of online education, as will the functionality of the platform and trainers' proficiency in delivering content online. Community obligations and English-as-a-second-language also need to be considered, and these will be explored in future publications.

## Digital Literacy

Digital literacy is the ability to access, understand and create knowledge using devices, platforms and tools commonly referred to as digital or information communication technologies (ICTs). According to Buckingham (2007), literacy of any kind needs to be understood within the context in which reading takes place – ‘where the text is read, with whom and why’ – as well as the social and economic forces within which texts are created and circulated. Digital literacy thus holds multiple meanings: functional digital literacy is focused on competencies and tasks, but the term can also refer to a level of self-efficacy and conduct (for instance, in relation to online threats such as scams and cyber safety), or to societal transformations that result from the adoption of new technologies.

The skills to make use of online resources are clearly important, and are critical to success in most educational disciplines and occupations (Murray and Pérez 2014). Researchers have identified that educational institutions frequently overestimate students’ ability to use information and digital technologies to solve common problems related to study; one of the main factors influencing dropout or attrition rates in online courses is technical expertise, skills and technical experience (Fini 2009; Hart 2012; Kennedy 2014). Digital competencies, or functional digital literacy, thus plays a crucial role in retention, particularly for novice learners (Fini 2009).

However, just because a level of competency is required in order to participate in education, it does not follow that possessing digital skills will result in students making full use of online education resources. The question of whether digital skills are a major factor in the success of online education for Indigenous people living in remote areas is important, as digital skills can be taught and thereby addressed within programs. If it turns out that people’s engagement with online learning is related to other aspects of technology access and use, then the feasibility of online education as a strategy to counter spatial inequality may be less straightforward.

Research on digital inclusion has interrogated the significance of various factors including skills, motivations, resources, and social and cultural capital, in influencing whether an individual experiences benefits from Internet use (Selwyn 2003; van Dijk 2005). One point of entry into understanding the outcomes of Internet use is the ‘knowledge-gap hypothesis’, whereby social stratum determine the resources and motivations that people might have for engaging with information, resulting in knowledge inequality despite the same information being made available to all (Zillien and Hargittai 2009). Another particularly useful approach is to examine the ‘domestication’ of technology (Silverstone and Haddon 1996), paying attention to how social context shapes people’s digital choices and the values they ascribe to technology. Household and workplace circumstances can lead individuals to adapt technologies to their needs, often in ways that were never anticipated in the design of a technology. As discussed below, domestic factors are significant in the success or otherwise of online education for remote-living Indigenous students. However, as Blank and Dutton (2014) argue, the limitation of the domestication approach is that

it fails to address other structural issues that may play a part in people's digital choices, including systems that determine infrastructure availability and pricing.

Specifically to Indigenous experiences with digital technologies, some of the common issues shared by a number of Indigenous peoples are the lack of prior involvement with information technology due to limited educational opportunities, the high costs of computers and the insufficient infrastructure in Indigenous places of residence (Gaidan 2007; Hui Ying Ooi 2007; Mau 2007). In Indigenous Australian contexts, research (Mills 2008) has suggested that taking advantage of the multi-literacies focused pedagogies can enable a meaningful learning design and ultimately improve Indigenous educational outcomes.

In assessing the digital literacy of the students in the Indigenous Futures Program, we set out to measure students' digital confidence and competence. What this data could not tell us was whether other motivations, resources and social dynamics might be influencing the success or otherwise of the program. Possessing the skills to take part in online education is of little importance if, due to other factors, the individual chooses not to take up the online education opportunities on offer. As discussed below, evidence from interviews provided important insights into how the domestic environment, as well as regimes of access (infrastructures and related pricing and availability), impacted on students' engagement with the courses, suggesting that the provision of culturally appropriate digital education platforms and skills may not resolve barriers to education for all. A further extension of this, which we do not have the space to consider in this chapter, is the question of whether participation in online education, once achieved, enhances the life of the individual in tangible ways. As indicated above, motivations and aspirations related to employment – as well as negative incentives such as welfare that are linked to education participation – can play a significant role.

Instead, we have limited our focus here to the normative connection between offline circumstances and digital inclusion (Helsper 2012). A useful explanatory framework for such an investigation is Sen's capabilities approach, which sees exclusion in terms of people's freedom (or otherwise) to achieve certain 'functionality' when their life circumstances are taken into account. If skills are not the main factor influencing engagement with online education, what other technology-related issues might be at play?

## Method and Data Collection

All the courses designed for this project have a large digital and online presence whether they were delivered through online or blended formats. The online presence and delivery require the students to be comfortable in an online environment using technology and web-based services. To determine the levels of digital literacy of enrolled students and how they were coping with the online courses, the data was collected in two stages:

1. At enrolment students were asked to complete a 'Technology Use and Digital Literacy Survey'.
2. A face-to-face interview with the students about six to ten weeks after enrolment about their experiences with the course.

### ***Digital Literacy Survey***

The digital literacy survey was specifically designed for this project to gauge the extent of students' digital literacy. The survey was paper-based and contained three sections with a series of simple questions. Sections A and C contained questions about Internet and technology use, respectively, and also contained one self-assessment question each that asked the students/ respondents to rate their skills in using the Internet or a preferred device based on the following criteria:

- *Beginner*: I know a little but don't use it often and am not comfortable using it. Need help to go online and do any tasks.
- *Intermediate*: I have been using it on a regular basis, and am fairly comfortable using it. Can do simple/routine tasks (email, chat, read news, etc.) without help.
- *Advanced*: I have been using it for many years, know all of the basic aspects, and am comfortable using it and rarely need help.
- *Expert*: I have been using it for a number of years and am very comfortable using it. Can create/post complicated content online, can figure out and solve problems and people come to me with their questions.

The survey's section B contained a set of statements that measured the respondent's Internet skills. The statements in this section were synthesised from digital literacy measurement criteria developed by Murray and Pérez (2014) and van Deursen et al. (2014). The statements in this section addressed the functional knowledge and basic skills as well as critical thinking required to successfully study online. The statements were divided into five categories:

1. *Operational skills*: necessary to operate computer hardware and software
2. *Information navigation skills*: necessary to operate in the Internet environment and to find relevant information
3. *Online safety and security skills*: necessary to send and share information securely and to know when and what to share
4. *Applying knowledge skills*: required to create or generate something new from information gathered from the Internet
5. *Mobile skills*: needed to use and operate a mobile device

The students were presented with simple statements in each of these five categories and were asked to score the statement on a five-point Likert scale with self-reported truth response items: 1 = Not at all true of me; 2 = Not very true of me; 3 = Neither true nor untrue of me; 4 = Mostly true of me; 5 = Very true of me. The mean score for each statement was then calculated by adding all the individual

**Table 12.2** Response rate for the digital literacy survey

Digital literacy survey	Total enrolments	Responses	
		Number	%
Creative industries	26	23	88%
Education support	28	28	100%
Health & community services	28	17	61%
Total	82	68	83%

scores and dividing it by the number of responses for each statement. The mean or average score for each category was calculated by adding the mean score of each statement in the category and dividing it by the number of statements in the category. This procedure was followed for all the categories except for the category on information navigation skills because this category contained negatively worded statements like ‘I find it hard ...’ or ‘I get confused (or tired) ...’ etc. In this case, if the respondent answered 1 (‘not at all true of me’) it meant that they did not find it hard or were not confused. If the scores for this category were calculated on the existing scale, then the respondents were likely to score very low when they did not have problems and vice versa. As this was counter-intuitive, the scale was reversed to ensure that the scales for all five categories were similar.

The overall response rate for the digital literacy survey was 83%. The number of responses for each project is presented in Table 12.2. The response rate for the health and community services project was lower (61%) than the other two projects.

### *Face-to-Face Student Interviews*

About six to ten weeks after enrolment the students were approached by the researchers and invited to participate in an interview about their experiences with the course and to share their views, particularly about the online and technology components. The students were encouraged to provide feedback on topics such as:

- The course, including challenges and highlights, course materials, teaching, student support, etc.
- The learning management systems accessibility, navigation, content online, etc.
- Technology and Internet aspects, including data and connectivity issues, devices loaned to students<sup>7</sup>

The interviews were conducted at the time of the second workshop or block release for the health and community services and creative industries projects,

<sup>7</sup>At the time of the interview, devices were not yet available for students enrolled in the education support course as there were issues with their ownership and loan agreements. These issues were subsequently resolved and the students were able to borrow devices towards the middle of their enrolment period.

**Table 12.3** Response rate for face-to-face interviews

Face-to-face interview	Students eligible for interview	Responses	
		Number	%
Creative industries	9	6	67
Education support	15	13	87
Health & community services	13	9	69
Total	37	28	76

respectively, while the interviews were conducted at the time of the first assessment discussions for the education support project. These occurred approximately between six and ten weeks after enrolment. The interviews took about ten to 15 min each and the students were assured that they would not be identified in any way, and only de-identified data would be reported or published.

Only eligible students – that is, students who were still enrolled and active in the course – were invited to participate in the interview (Table 12.3). At the time of writing this chapter 37 (45% of) students were eligible to participate in the interview, and all were invited to participate. Of those invited 76% agreed to participate, with the education support project having the highest participation rate (87%).

## Digital Literacy Survey Findings

Of the students that completed the digital literacy survey, 94% said that they use the Internet regularly. About 56% had used the Internet for more than 10 years while 34% had used it for less than 10 years, and 10% either did not remember when they first used the Internet or did not respond, compared with 78.7% of the mainstream adult population having used the Internet for 10 years or more, and 21.3% having used it for less than that<sup>8</sup> (ARC Centre of Excellence for Creative Industries and Innovation 2013). The top uses were email (82%), browsing (72%), social networking (71%), watching YouTube videos (68%) and banking (63%). About 61% of the respondents said that they had used the Internet to study in the past (Table 12.4).

About 64% of the respondents said that they had a fixed Internet connection at home.<sup>9</sup> A majority of the respondents said they used the Internet either at home including on mobile devices (73%) or at work (66%), and 21% said they used the Internet when they were away from their home town. A quarter (25%) of respondents said they used the Internet at a local library or community centre.

More than half the students (53%) assessed their Internet skills at the beginner or intermediate level, while 47% considered themselves to be advanced or expert Internet users (Table 12.5). There were more beginner and intermediate Internet

<sup>8</sup> Based on a representative sample in terms of age and gender.

<sup>9</sup> In 2014–2015, 86% of households in Australia had an internet connection, up from 83% in 2012–2013 (Australian Bureau of Statistics 2016).

**Table 12.4** Internet use by the students

Variable	% of respondents
Email	82.4
Internet browsing/searching	72.1
Facebook/Snapchat/social networking	70.6
YouTube/videos	67.6
Banking	63.2
Music	61.8
Checking news, weather, sport	58.8
Photos	55.9
Playing games	54.4
Shopping (eBay)	44.1
Centrelink	41.2
Homework/study	41.2
Contacting services (Land Council, health, etc.)	41.2
Making letters or posters	39.7
Looking for work	33.8
Skype calls/chat/video calls	27.9
Indigitube	16.2
Other	2.9

**Table 12.5** Internet skill self-assessment

Skill level	% of respondents			
	Creative	Education	Health	Total
Beginner	17.39	3.57	17.65	11.76
Intermediate	47.83	39.29	35.29	41.18
Advanced	21.74	35.71	29.41	29.41
Expert	13.04	21.43	17.65	17.65

users enrolled in courses offered by the creative industries project (65%) than in any other project, while the education project had the highest number of advanced and expert Internet users enrolled (57%).

The results of the survey indicate that there were no differences in the five skill categories between students enrolled in the different projects (Table 12.6). The only exception was that the health and community services students scored higher than the other students with regard to online safety and security skills categories. The students scored low in the information navigation and applying knowledge categories, which could affect the students' ability to perform tasks required for studying online.

A comparison of the Internet skill scores and the self-assessment indicated that the students had underestimated their digital and Internet skills. This is expected because when conducting a self-assessment, respondents often either over- or

**Table 12.6** Digital literacy skills of students

Internet skills	Creative industries	Education support	Health & community services	Total
Operational	4.04	4.15	3.90	4.06
Information navigation	2.22	2.13	2.22	2.34
Online safety and security	4.49	4.47	5.00	4.31
Applying knowledge	2.94	3.06	2.97	2.73
Mobile	4.02	4.15	3.82	4.19

under-estimate their skill levels (Murray and Pérez 2014; van Deursen et al. 2014). In this instance, students' under-assessment of digital skills points to their lack of confidence – a possible contributing factor for the higher dropout rate in these courses.

In interviews with students and staff, it was also implied that lack of confidence was an issue, particularly in comments on how to improve course delivery and design. Staff and students felt that all students would benefit from a short but intensive workshop about the various digital tools and technologies used in the course, and that troubleshooting and help materials would be of benefit.

## Discussion

The results of the survey indicate that the functional digital literacy levels of most students should have been adequate for the tasks required. Digital literacy, therefore, did not appear to be the reason for the high attrition in the creative industries project. In this final section, we discuss how ICT-related factors other than digital literacy may have a greater impact on the success of the online courses. We used information from interviews with the Indigenous students to identify barriers faced by the students. Students spoke of two particular difficulties in undertaking online education that related to social and cultural dimensions of living in remote communities, namely, accessing and using the Internet at home, and the isolation of online learning.

### *Accessing the Internet at Home*

Students enrolled in the community health and creative industries courses were able to borrow devices and received mobile Internet assistance. The first cohort of students enrolled in the education project was the only group that did not receive devices (on loan) or Internet assistance. Half of the students interviewed in the education program (five of 10) informed us that they did not have Internet at home, while others stated that the cost of Internet was too high, or the speeds too slow.



Access to devices and assistance with Internet costs were provided to these students on request.

Three of the six students interviewed on the creative industries project stated that they had issues with accessing the Internet at home despite being provided with mobile Internet and data. Reasons included family and friends using up the data, as well as their own fear of the device being taken and used by others. The other half stated that the data was sufficient, with one pointing out that they were conscious of having to manage their data but did so successfully.

While sharing of devices occurs across mainstream households, the particular sharing dynamics that occur in remote communities (related to traditional systems of demand sharing) influences how devices are shared and with whom. Sharing can also influence affordability, whereby the person who paid for the data is not necessarily the person who will use it up.

The findings align with ethnographic research on ICT use in remote communities in central Australia conducted by co-author Rennie and colleagues (Rennie et al. 2016). The researchers found that the digital divide in remote Australia relates to observable 'digital choices' (Dutton et al. 2004), which are in turn informed by community norms and practical considerations. The study examined issues such as ownership and sharing of devices, as well as people's travel, finding that these can influence adoption and use of computers and the Internet. Internet adoption in remote communities is not a linear progression from non-use to use; people can fall in and out of connectivity on a regular basis depending on location, credit and device-sharing. A widespread preference for pre-paid billing, as well as practical difficulties associated with satellite Internet connections, means that households are more likely to go without the Internet than enter into and maintain household satellite Internet services.

Online education thus needs to cater for students that do not have constant connectivity, but that are nonetheless likely to travel to towns where mobile broadband is available on a regular basis. Affordability is also a consideration: Pre-paid mobile broadband data is charged at a higher rate than post-paid satellite or fixed line services. The costs of online education are therefore greater for learners that are only accessing the Internet through mobile broadband, and education providers may need to subsidise Internet costs. Trainers and students have also requested that the projects provided preloaded content that updates through cloud-based applications when the student is connected, for this reason.

### ***Preference for Group and Face-to-Face Learning***

Although many students commented that they liked the ability to access content and study at home, a high number preferred to carry out their work in face-to-face classrooms with trainers present. On the creative industries project, some students stated that they were used to block learning. Moreover, there were clear incentives to block learning, including travel into town and social interaction with other students and

trainers. The students suggested that trainers be available for face-to-face assistance if the students were in town between block training sessions. Interestingly, on the education project, some students self-organised face-to-face group study sessions.

Creating more engaging online forums could potentially counterbalance the current preference for face-to-face learning. However, it is possible that some students are not likely to make the transition to online learning, especially those that have become accustomed to the standard mode of block delivery. Trainers at Goolarri, for instance, are now looking more closely at how to provide both and to ensure that students can participate in the delivery mode most suitable to them.

### *Capabilities and Online Education*

The capabilities approach, developed by economist Amartya Sen, is a broad normative framework which can be used to assess individual, social and community capabilities (Klein 2015; Robeyns 2003a, 2003b; Saito 2003). Capabilities are the real ability or freedom to achieve areas of functionality, like the ability to be healthy. There is some debate in the literature about the application of the capabilities approach to Indigenous issues and policy which seems to violate its core concepts of freedom, agency and pluralism (Klein 2015). However, the capabilities framework is useful here in that it asks what freedoms people have and what ability they have to enact things they value, given the constraints placed upon them. Answering this question requires knowing what barriers are surmountable, and which are related to complex (or multiple) exclusions. Such an approach also requires understanding how group norms, sometimes referred to as remote Indigenous sociality (Austin-Broos 2011), are influencing choices and motivations. If spatial disadvantage is a significant factor in Indigenous higher education, then online education may increase enrolments and completions. However, for that to eventuate, new models of online delivery that take into account factors such as the sharing of devices will need to be developed.

### **Conclusion**

In this chapter, we have shown that digital literacy is not necessarily the primary barrier to online education for people living in remote areas. However, other aspects of ICT access and use that are distinct to remote Indigenous sociality may be playing a significant role, including the ability to access the Internet at home and demands from family members for Internet credit and access to devices. A further factor is the historical model of education provision which has centred on block learning, whereby students travel into town for face-to-face instruction and activities. The block learning model involves incentives for some (travel, per diem allowances, social interaction) that may make online learning less appealing.

The Indigenous Futures Program is currently looking at ways to deal with these barriers, including interactive online forums, student support and peer-mentorship. We recognise that addressing the provision of ICTs and online student support cannot overcome all of the barriers to education (for instance, it will never resolve poor literacy and numeracy stemming from poor primary and secondary education). Some students might always prefer face-to-face learning. However, for those that wish to study in their communities, online education may prove to be a significant opportunity.

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