
The difficulties of Online Learning for Indigenous Australian Students Living in Remote Communities – it's an Issue of Access

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Abstract

Online learning and new technologies are driving a trend in worldwide education that is not only gaining momentum, it is becoming a juggernaut. While the positives for online learning are clear and are often being touted by Universities and Vocational Education and Training providers as a panacea for educational access, what is not clear is the potential negatives for those who cannot reasonably be expected to engage with online learning. Through a review of current literature and research findings, this paper discusses the difficulties of online learning for Indigenous Australian students living in remote communities who do not have adequate access to online learning technologies. This paper proposes the idea that this seemingly reasonable trend towards increased online learning will in fact be hugely detrimental to this section of Australian society and will see the potential for a widening of the gap in education.

Keywords: Indigenous, Distance Education, Online, Australia

Introduction

Increasingly the world is moving towards a higher dependence on online technologies, for everything from banking, liaising with government services, communicating with other people and of course education. The push towards online education, particularly in the more developed countries of the world has been considerable over recent years. 'Open learning' is accessible to anyone with internet access (Savage, 2012) and the push for online opportunities has been sold to the consumer as another way Universities and Vocational Education and Training providers are meeting the needs of their diverse client groups. Such openness could do a lot to improve revenue at education facilities whose business models are driven by the number of students, rather than mastery of a given subject.

Indigenous Australians are some of the country's most disadvantaged people's, with health, education, and lifestyle outcomes far below those of other Australians (Australian Bureau of Statistics, 2008a, 2010, 2012). They are also among the lowest users of internet services and Indigenous people living in remote communities are the least likely to have used the internet (Australian Bureau of Statistics, 2004a). In Australia, the gap that separates those individuals who have access to new forms of information technology from those who do not is widest between people living in remote Indigenous communities and other Australians, although there are major variations among remote Indigenous communities as well. Indigenous Australians living in remote communities face significant hurdles to be able to access and use the internet. Overall, they have poor and inadequate access to internet technologies and the equipment required to use it and most currently lack the pre-requisite knowledge and skills for more intensive internet use. That people living in remote Indigenous communities are not accessing computer technology is hardly surprising, given "low levels of education, English-language proficiency and high unemployment" (Daly, 2005; Lloyd & Hellwig, 2000). This paper reviews existing literature around the issue of online learning in an Australian context and suggests that online learning is highly dependent on telecommunication infrastructure, on the learner being able to engage with the technology and on the financial costs to the learner. In Australia, Indigenous people are already well behind the national average in areas like education, literacy and socio economic standing and to compound these factors, many Indigenous people are also geographically isolated in areas with the worst infrastructure in Australia. It could therefore be argued that the push towards online learning may be just another step in excluding Indigenous Australians and in particular those living in remote locations. This push may very well be widening the gap as opposed to closing it.

Article

The gap between Indigenous and non-Indigenous youth in Australia is most evident when considering secondary school completion and progression to higher education (Gray & Beresford, 2008, p. 199; Toombs & Gorman, 2010, p. 14). It is well documented that Indigenous Australians experience a level of disadvantage which prevents many from undertaking university studies, however, despite this disadvantage many Indigenous Australians do enrol in university and successfully complete their studies (Toombs & Gorman, 2010, p. 14). It is clear, though, that if Indigenous Australians, or any socio-economically disadvantaged group, are prevented from accessing and using the technologies that the rest of the country take for granted, then they will become even further disadvantaged (Servon, 2002).

Within the education system, there has been a move towards using Internet and various digital technologies as a way to offer greater opportunities and this trend has influenced educators, in Australia and overseas, to utilise online environments and technologies to meet educational goals and aims (Kral, 2010, p. 5). Technology has become central to the daily routine of university life and in most higher education institutions students must access and provide information relevant to their studies online. They must enrol in courses and units; access grades, timetables and university announcements; communicate with their lecturers and fellow students; and otherwise manage their academic schedules online. Implicitly, these institutions presume that the student body has the technological knowledge and skills to navigate through this digital environment. With the level of technology currently used in universities, students must have at the very least a basic to intermediate level of computer proficiency in order to operate in an online environment. The Illinois Online Network has stated that for students to succeed in an online program they must be comfortable navigating the World Wide Web, be able to use a variety of search engines and be familiar with Newsgroups, FTP procedures and email ("Weaknesses of Online Learning", 2010). However, students come to university with differing technological skills and access to technology and not all students possess the tools needed to succeed.

The digital divide and Indigenous access to ICT

Individuals and communities around the world have been transformed by Information and Communication Technologies (ICT) such as mobile phones, computers and the internet. However, it is clear that there are inequalities in ICT access because such technologies are not accessible to all (Rombel, 2000, p. 47; West, 2003, p. 23). There are evident and ever widening gaps between those people considered to have access to ICT services and those who do not. These gaps are commonly referred to as the digital divide (Black & Atkinson, 2007, p. 1). Digital divide discussions have primarily focused on the technical component of the equity gap, which recently has meant broadband Internet access (Meredyth & Thomas, 2000, p. 213; Warschauer, 2002, p. 30). The digital divide remains the leading theory as to the reasons for, and the impacts of, differences in internet access and use (Van Dijk, 2005).

Rooksby, Weckert and Lucas (2002, p. 201) further define *access* to ICT as being made up of three components; access, ability, and affordability. 'Access' is defined as someone being able to access ICT from their home, community or a public place and also includes the physical components of access to ICT such as basic computer facilities, word processing, data storage and printing, web browsing, searching and discussion mediums (Black & Atkinson, 2007, p. 4). 'Ability' is explained as the training and support needed to utilise ICT and 'affordability' is the material cost of access for ICT (Rooksby et al., 2002, p. 205). The cost factor is always an issue for poorer Australians, so access becomes a barrier to computer technology. Roberts and McInerney (2007, p. 257) further clarify that some of the fundamental issues associated with the digital divide, or barriers to technological access, include "access to knowledge, access to technology, access to communications, access to control, access to goods and commodities and access to participation".

In Australia the gap, or divide, between those people who have access to current and innovative forms of ICT, and those who don't, is widest between Indigenous people living in remote communities, and those living elsewhere, although research has shown that vast differences exist among remote Indigenous communities as well (McCallum & Papandrea, 2009, p. 1231). For Indigenous people living in remote regions of Australia, the digital divide can be seen as the absence of available services in some areas, but also minimal access in houses and buildings where internet services do exist, whether it be mobile or wired internet access (Rennie, Crouch, Thomas, & Taylor, 2010, p. 49).

While the digital divide may be narrowing with other marginalised groups in Australia (Willis & Tranter, 2006), the divide may be widening for Indigenous Australians. The 2000 Telecommunication Service Inquiry and the 2002 Regional Telecommunications Inquiry clarified that Indigenous people living in remote communities had minimal access to technological facilities that were usually of poorer quality and lacked regular maintenance, slower internet connections and less access to training in internet use than those in urban Australia, all factors which impacted on their use of internet services (Besley, 2000; "Connecting regional Australia", 2002). The

Australian Bureau of Statistics (2004a) data showed that in 2002, only 56 percent of Indigenous Australians had used a computer and 41 percent had used a computer in the previous year, though information on the level of use was not provided. Earlier Australian Bureau of Statistics data reported that in 2001, only 3 percent of Indigenous Australians living in remote areas had a computer at home; (Australian Bureau of Statistics, 2004b, 2008b; Besley, 2000). More recent data indicates that there has been a veritable boom in home internet access across Australia, with Broadband access rising from 28% in 2005-2006 to 23% in 2010-2011 (Australian Bureau of Statistics, 2011). This has continued to rise with 63% of Aboriginal and Torres Strait Islander households reported as having an internet connection in the 2011 Australian Bureau of Statistics Census, compared with 77% of other households (Australian Bureau of Statistics, 2012).

The survey conducted by Rennie, Crouch, Thomas & Taylor (2010, p. 52) found that of 34 of the larger Indigenous communities in central Australia (with a combined Indigenous population of 9724, or 72 per cent of the Indigenous population of central Australia outside Alice Springs or Darwin) residential access was extremely low. They explain that internet access is immensely variable in remote Australia, in the types of access, bandwidth, reliability and cost. Some remote areas are well-equipped with ADSL, while others have only satellite and physical obstacles, such as distance and harsh environmental conditions, have meant that installation and maintenance costs are high. Small, scattered populations with high unemployment and little in the way of industry make no economic sense for telecommunications providers investing in a competitive market (Rennie et al., 2010, p. 52).

McCallum and Papandrea (2009, p. 1232) documented patterns of internet access and use in remote Australian Indigenous communities by visiting 14 communities in the Northern Territory and the Anangu Pitjantjatjara Yankuytjatjara (APY) lands of northern South Australia. The data they assembled critically examines the practice of applying unsuitable technological solutions to problems on Indigenous communities. Their data supports the findings of Rennie et al (2010) that private access to the internet in the communities was uncommon and that less than one quarter of the Indigenous households interviewed had a computer, and fewer than half of those with a computer also had an internet connection at home (McCallum & Papandrea, 2009, p. 1238). Selwyn (2004, p. 347) notes that “accessing online information and resources from a home based computer or digital television set is not necessarily equitable to accessing the same materials via an open access workstation in a public library or other community-based ICT centre”. The emphasis here is that availability can obscure more subtle disparities.

McCallum and Papandrea (2009, p. 1242) explain that poorly maintained facilities, intermittent training and the absence of home access mean that users have little opportunity to reinforce skills and retain knowledge. For the most part, community access facilities are considered a culturally appropriate means of internet access in remote Indigenous communities and government policy has supported community internet facilities as opposed to home Internet (Rennie et al., 2010, p. 52). However, the difference between media use in the public and private domains has yet to be adequately examined in the remote Indigenous context. The assumption that a generally communal lifestyle requires community internet access facilities needs to be tested.

Mobile Phones

The Parliament of Australia established the Regional Telecommunications Independent Review Committee (RTIRC) to evaluate the adequacy of telecommunications in regional, rural and remote parts of Australia. The resulting report found that “generally, Indigenous people in remote communities purchase mobile phone services in preference to fixed voice telephony services” (Glasson, 2008, p. 75). The report acknowledged that fixed voice telephony services are an unpopular choice for remote Indigenous households due to lack of mobility and pricing, noting that there is “strong evidence of a cultural misalignment between the technology and the intended user” (Glasson, 2008, p. 75). For internet access, mobile telephones would therefore seem to be a good option. However, mobile-based internet connections are not appropriate for situations requiring a large download volume because of the high costs that apply to large data download volumes on mobile services. Australia’s largest Telecommunications Company TELSTRA currently sells an 8GB mobile datapack for use with mobile phones for \$60, with excess usage costs equating to a further \$102 per GB downloaded. An 8GB mobile broadband package costs around \$40, while for around \$50 you can get up to 50GB of data with a landline set-up (“Mobile broadband plans”, 2012). For an online learning environment that requires weekly interaction with discussion boards and downloading content like readings this is simply not practical. The impact of substantial personal expense complicates any basic assumptions around the social benefits of access (Rennie et al., 2010, p. 57). McCallum and Papandrea (2009, p. 1241) also found in their study that on average people under 30 years of age possessed knowledge and confidence about their level of computer and internet skill and that they also used a broader range of ICT services. Generally, they had developed their computer and internet skills at primary and secondary school where they had access to facilities and training. Schools provided students with access to computing facilities, though most young people were unable to use the internet outside of school terms and hours;

however, those who no longer attended school had few opportunities to access the internet at all.

Online learning

‘Online learning’ is a term that covers a wide range of technologies and tools, from recording lectures and posting them online for easy access, to uploading resource materials and assessment items, all the way to “highly sophisticated interactive learning systems that use cognitive tutors and take advantage of multiple feedback loops” (Bowen et al., 2012). Most Australian Vocational Education and Training (VET) and Higher Education (HE) facilities are experimenting with online instruction though the rationale, method and approach vary from institution to institution. Along with the rapid advancement of ‘online’ or ‘hybrid’ courses, the pervasiveness of the Internet in higher education is evident in the increasing integration of course management systems and virtual reading materials into the curriculum. Even courses that are considered ‘traditional’ often include some form of digital resources (Bowen, Chingos, Lack, & Nygren, 2012, p. 7). The more comfortable students become with using sophisticated technology in their day-to-day lives, the more courses will be taught wholly online and the pace of change is likely to accelerate (Bacow, Bowen, Guthrie, Lack, & Long, 2012, p. 16).

Rapidly evolving online technologies and powerful mobile devices mean educators all over the world are now trying to understand the profound ‘disruption’ web-based online learning is causing (Ben-Naim, 2012). Simonson (2010, p. 72) notes that “a disruptive technology or disruptive innovation is a technological innovation, product, or service that eventually overturns the existing dominant technology or product in the market”. ‘Disruptive’ is used not because it is a breakthrough improvement but because it transforms the product or service into something that is simpler and much more affordable and accessible to the whole population (Simonson, 2010, p. 72).

The book on disruptive technologies and universities by Christensen and Eyring (2011) has been widely discussed by educators and is a good indication of the attention being given to online technologies as a way of profoundly changing the way students are educated, such as distance education, virtual school, and e-learning. Online education means to broaden access to learning by targeting students who otherwise would not be able to engage with more traditional programs. These non-traditional students include older men and women who are attending school while employed, students who live in remote and rural locations that are unmanageable distances from campus, and disabled students, among others (Bacow et al., 2012, p. 10). Distance education has become increasingly important as it is breaching a gap that the older technology hasn’t been able to.

Massive Open Online Courses and Interactive Online Learning (future of online learning)

To people who live in rural and remote areas, online learning signifies access to higher education. Distance education has become more readily available and easier to access over the last 20 years but it is the arrival of Massive Open Online Courses (MOOCs) that is a major leap forward in accessibility to online learning. MOOCs are innovative and highly advanced interactive online courses in which machine-guided instruction replaces some, or all, of face-to-face teaching. This kind of course system collects data from large numbers of students so that it can provide each student with customised instruction, and so that instructors can monitor each student’s progress and allow for more targeted and effective guidance (Bowen et al., 2012, p. 9). The larger and more prestigious education brands, like Harvard and MIT in the United States of America are enrolling tens of millions of people into their MOOCs (Ben-Naim, 2012; Savage, 2012). Australia has also set itself on this path to democratise learning. Universities are evaluating MOOCs to try and understand if they are a disruptive innovation or just healthy competition.

The idea that by promoting the increasing use of technology in teaching as being the best way of controlling costs while also minimising achievement gaps and improving access to education has been embraced by institutions around the world. President Emeritus of Northwestern and chairman of the board of Rasmussen College, as well as chairman of ITHAKA Henry Bienen is quoted in a recent article as saying that:

“online education, in some form, is the only way that many people can acquire more skills and earn a college degree, the returns on which have skyrocketed in the past three decades. But online education is also increasingly common in colleges and universities that educate ‘traditional’ students” (Bowen et al., 2012, p. 10).

Online education is increasingly being seen by many institutions as a way to generate revenue. (Bowen et al., 2012, p. 8). It is a two pronged attack, consisting of a higher capacity to enrol students and thus raise revenue but also to lower costs and therefore raise profits. Until now, “technology-induced productivity gains in higher education have been taken mainly in the form of increased output” (Bowen et al., 2012, p. 24) for example in producing more and faster research. Online learning is being viewed as the future in education for institutions that need to restrict cost increases, such as the cost of building new space, improving retention rates and providing

education to students who have access issues due to their location (Bowen et al., 2012, p. 29).

Importance of Culture

Research intended to evaluate access to and use of the internet needs to consider the ways that internet use can be damaging (McCallum & Papandrea, 2009, p. 1235). Article 15 of the WSIS Declaration of The World Summit on the Information Society states “In the evolution of the Information Society, particular attention must be given to the special situation of Indigenous peoples, as well as to the preservation of their heritage and their cultural legacy” (“Declaration of principles”, 2003). Culture has been defined by Uzuner (2009) as “acquired behaviours, perspectives, and values characteristic of a particular group or community”. Most digital divide studies refer to computer technology as a power for positive social change (“Connecting regional Australia”, 2002) though this is not a universally accepted stance and has been widely debated and discussed. It is important to recognise that new technologies can be the cause of sociocultural conflicts.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) Institute for Information Technologies in Education has stated that for Indigenous peoples, technology has often had unforeseen and negative consequences and that “ICTS may be used to reinforce and accelerate the dominance of Western-based modes of thought, culture, and learning strategies” (Resta, 2011, p. 4). Casey, Ross and Warren (1999) noted that introducing new technologies into Indigenous communities can cause conflict between traditional and modern ways of living and would only succeed to be a positive influence on the community with the support of tribal members. Livingstone (2003) states that studies of internet use should avoid assuming that what is a positive force for non-Indigenous urban communities must also be good for remote Indigenous communities.

To close the gap in Indigenous education, mainstream institutions need to acknowledge the evidence that Indigenous students are struggling to succeed in an educational system that is often unsympathetic to them while at the same time striving to participate in a society that has been and continues to be a contributing factor in their level of disadvantage. According to Waller et al (2002), the differences between Indigenous and mainstream cultural practices causes confusion and a feeling of dislocation, which goes some way to explain why Indigenous students’ are not engaging with mainstream education. Indigenous people often come to believe that they are incapable of learning (Pirbhaj-Illch, 2012, p. 257).

However Indigenous communities tend to place an “intrinsic and collective value on education which is woven into the present and future needs of their people” (Eady, Herrington, & Jones, 2010, p. 262). Battiste (2008, p. 176) notes “Aboriginal scholars and writers have recognised that education is the key matrix of all disciplinary and professional knowledge and central to alleviating poverty in Aboriginal communities.” Existing models of distance education being applied to Indigenous students are generally representative of the technology, values and pedagogic traditions of developed Western countries, and mostly lack culturally appropriate learning mechanisms which have been a proven factor in the success of adult learning (Ramanujan, 2002; “The digital divide”, 2006, Young, 2004; Young, Robertson, Sawyer, & Guenther, 2005). Ramanujan (2002, p. 37) warns against carelessly copying Western models of distance education rather than recreating Indigenous models, which “will have greater relevance and strength than the copied or adopted models”. Prototypes based on Western middle-class ideals and standards where the curriculum and learning objectives emphasise the acquisition of workplace skills and appropriate literacy levels related to personal success and status in mainstream society are often rejected in Indigenous communities (Taylor, 1997).

The dispossession of Australia’s Indigenous people, began with colonisation, and continues with the deliberate undervaluing and even destruction of their culture, beliefs, and oral traditions, and the promotion of European values and customs (McClellan & Tanner, 2011, p. 33). The consequences of the erosion of Indigenous culture have been dismal for Indigenous peoples and data collected on key social and economic indicators highlight their continuing and significant disadvantage. ‘Closing the gap’ on Indigenous disadvantage in terms of economic participation, health, and education, is an objective shared by all, however, it is important to consider that each Indigenous community has its own ideas as to what ‘well-being’ entails, and this definition is formed by the connection it has been able to preserve to its country, culture and traditions (Sen, 1999, p. 38).

Understanding the underlying reasons for the continuing disadvantage of Indigenous Australians has proven to be difficult; however, positive strides have been made to address the disadvantage and to enable Indigenous peoples to direct their own path (McClellan & Tanner, 2011, p. 33). There is a greater understanding that resolving the problem of Indigenous disadvantage requires Indigenous self-determination and the restoration of their cultural identity and pride. It is important to note that what non-Indigenous Australians think will be of benefit to Indigenous people may not be what they want or feel they need. Governments and researchers have learnt that it is crucial that Indigenous peoples have direct input into the programs that affect them, and that successful outcomes can only be achieved through genuine consultation and partnerships (McClellan & Tanner, 2011, p.

Culturally appropriate ICT Training

There is a noticeable difference between Indigenous and non-Indigenous populations in the level of ICT competency, and this difference indicates that there is a need for skills support for those with limited access due to “geographical barriers, government policies, language background, poverty, health or technical insufficiencies” (Eady & Woodcock, 2010, p. 25) and for assistance with accessing ICT. UNESCO has recommended that governments support research that determines the level of access to ICT devices and connectivity needed in Indigenous communities and the training and technical support that is required (Resta, 2011, p. 8).

UNESCO is encouraging Governments to create programs incorporating ICTs and e-learning so as to allow Indigenous peoples to benefit from the new opportunities offered by ICTs and to increase ICT awareness and literacy. UNESCO believes that the first step in reaching this goal is to make ICT initiatives readily available in Indigenous communities (Resta, 2011, p. 9). One of the objectives of the Australian Government’s Indigenous Economic Development Strategy 2011 – 2018 is to assist higher education providers meet the special needs of Indigenous students through the Indigenous Support Program (ISP) (“Indigenous economic development strategy”, 2012). The ISP supports the establishment and management of Indigenous Education Units, provides assistance with study skills, and cultural awareness activities (“Indigenous support program”, 2012).

Learning support programs need to provide solutions to effectively address the unique learning and skills development needs of Indigenous learners by researching, designing and delivering online programs in culturally-appropriate and community-relevant ways. ICT training and support offered to Indigenous students’ needs to be culturally appropriate, which means that it should incorporate “culture specific values, styles of learning and cognitive preferences” (McLoughlin, 1999, p. 231). However it is crucial to note that the optimal learning environment to support adult Indigenous learners while maintaining educational integrity in the process is the implementation of technology that is not just suitable but accessible and reliable (Eady & Woodcock, 2010, p. 35).

Discussion

A key point, if an obvious one is that every student has varying degrees of competency in ICT. In important respects, the online learning marketplace reflects the diversity of higher education itself but to suggest that a push towards online learning is a suitable answer for all learners, in all contexts, in all locations, across a country as geographically and socially diverse as Australia is not plausible. For those of us who work in Indigenous Australian education, culture and diversity are recognised and acknowledged as important and necessitating the design and teaching of courses in ways that relate to local conditions and accreditation requirements. This can still be accomplished in a virtual world with online courses, but for obvious reasons they can't be mass globalised courses. In order to engage with Indigenous students educators need to use examples from the student’s own culture, that are at the level of their own life experience. There are tangible advantages to developing the ICT skills needed to be competent in learning in online environments, but there is also value in discussion groups, seminars, and directed study. Ideally, students will be exposed to a carefully designed mix of learning models, in part so that they can continue to benefit from the socialisation values of higher education that have been so important historically.

Online and mobile technologies are now widespread in higher education and play a central role in learning. Computers are widely in use by students and staff to access online resources and communicate with each other, and mobile technologies are also increasingly used for education, often providing an alternative way to access the Internet or communicate with fellow students, though it is important to note that most people use mobile devices to quickly check facts rather than to read lengthy material, because their small screens make reading hard work.

However, while technology can facilitate learning, it does not guarantee that learning will take place. While the extensive resources on the web provide knowledge and information which can easily be kept up to date, they are of little use to those who do not have reliable access to the Internet, and can instead deepen the divide between those with access and those without. Access for students is an important issue because of the need for online students to have both the appropriate devices and software to accommodate this type of learning, as well as internet capacity and the ability to afford the cost incurred. As discussed above, Indigenous Australians in remote communities have far less opportunity to engage with online technologies due to a lack of quality telecommunication services, the high cost of mobile device access and the lack of sufficient access to computer equipment, private or public.

Online learners are expected to be confident, or quickly become confident, in using computer or mobile devices

to write, communicate or access resources on the web. Students must be familiar with web browsers, email, and word processing, and may need to use spread sheets, presentation software or online forums. Students will most likely need to access web pages; online journal articles and e-books; graphics; photographs; and podcasts (audio) and video, or use web-based search tools to find relevant information. Students will be asked to communicate via email and may also need to use instant messaging, videoconferencing or texting, and undertake group work online. A major consideration when attempting to use computers in Indigenous communities is access and for the majority of these communities there are logistic challenges in finding a workspace, purchasing equipment and connecting to the internet. When students have limited and/or restrictive internet capacity for downloading they will be unable to fully engage in the requirements of online learning.

Rather than engage in a current trend for the sake of engagement, Indigenous education providers need to consider exactly what the probable outcome of a push towards more and more e-learning will be for their learners. Having spent decades trying to get Indigenous students to engage in classroom settings, is it advisable to now distance these students by removing them from classrooms and enrolling them in online, e-learning cohorts. For that matter, forcing Indigenous people into e-learning, because the education provider only wants to deliver this method of education is potentially even more disastrous. For a segment of society that has a long history of being on the fringe of Australian society, yet another policy that dictates terms to them would certainly not be an ideal situation to promote inclusiveness in education.

Conclusion

This paper has reviewed a range of literature sources available around the ideas and ideals of online learning in Australia. While by no means an exhaustive review, as online learning is a very large area of academic study, this paper has examined a specific area of thinking with a particular reason. Any level of logical analysis of the situation many remote Indigenous people find themselves in would indicate that delivering online education is simply not practical or achievable at this time. Even with recent advancements in technology and the proliferation of mobile phone usage in remote communities, still the underpinning technological and financial requirements are just not there. While the current trend in education is to push online learning, education provider should be very wary of engaging in a costly and time consuming push to online learning that ultimately could result in reduced enrolments, reduced positive outcomes for students and a step backwards in Indigenous Australian education. In a world where access to computing for the purposes of engaging in education is becoming increasingly more popular amongst education providers, there is a very real chance that those who are not able to engage with these emerging technologies will be left behind.

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