

The Indigenous Digital Divide: COVID-19 and Its Impacts on Educational Delivery to First Nation University Students

Arthur M. Wilson, III
Curtin University

Amma Buckley
Curtin University

Mandy Downing
Curtin University

Julie Owen
Library for All

Max Jackson
Curtin University

The global COVID-19 pandemic highlighted that the delivery of online education inadvertently disadvantaged Indigenous Australian university students. This situation was particularly critical for Indigenous students from rural and remote locations. Australian universities increased the use of digital technologies to engage, support and teach due to students' inability to access campuses. This presented universities with challenges in supporting Indigenous students living in and returning to non-urban settings. Due to COVID, the need for better strategies and plans for Indigenous students returning to their rural or remote community to continue their studies is often not recognized. These communities often lack suitable infrastructure to access pedagogical and learning support opportunities. This paper explores how the business decision made by Australian universities to increase reliance on teaching online during COVID impacted the education of Indigenous students. This paper will then canvas ways this ongoing dilemma can be addressed by considering risks, measuring and monitoring performance to guide transformation, including universities' more inclusive and respectful use of digital technologies involving First Nations people and cultures.

Keywords: Aboriginal and Torres Strait Islanders, Indigenous students, online university education, digital divide, transformation, COVID-19

INTRODUCTION

The Acknowledgement of Country aims to assist with establishing the context of this paper. The acknowledgment is a sign of respect and a recognition of the resilience of Aboriginal and Torres Strait Islander (Indigenous¹) people despite the trauma endured through colonization. Colonization created a situation that continues to effect university students of Indigenous heritage. The persistence of the effects of colonization is reflected in the unequal treatment of Indigenous students during the COVID-19 pandemic. The focus of this paper is not to revisit the catalyst of the trauma but to develop an understanding of the challenge facing Indigenous students, particularly those in rural and remote areas so that a solution can be critically considered. Without this understanding, the risk of underestimating the change required increases.

This presents a deceptively simple research question:

How can Australian universities maintain engagement with Indigenous Australian students during situations such as the COVID-19 pandemic?

To address this research question, a literature review was conducted, themes created, and opportunities investigated to reduce the digital divide and its negative impact on Indigenous students in rural and remote communities. This study is exploratory and of a qualitative nature.

LITERATURE REVIEW

Context

Indigenous Australians are relatively new to attending universities due to being marginalized and oppressed through colonial practices, and policies supported by Australia Federal, State, and Territory legislation.

The first Australian university, the University of Sydney, was founded in 1850 (CatEight, 2021). While the first Aboriginal person to graduate from university was the late Charles Perkins in 1965 (Williams, 2005). Once the doors of universities were eventually opened to Indigenous students, in addition to their studies of Western ways, they had to overcome the stigma of being treated as flora and fauna for generations. Conversely, Australian universities with Indigenous students, seeking to grow the base of Indigenous students had to consider the creation of a culturally safe learning environment for these students.

Australian universities are still learning how to create a safe and secure learning environment for Indigenous students. This transformation is a result of the lessons incrementally learned over time. Like the incremental changes to create a safe and secure environment by universities, the trauma faced by Indigenous students is receding in increments. Changing this situation involves universities recognizing that a positive lived experience of university life is still unknown to many Indigenous families. This can affect the support Indigenous students receive at home and in their community. Technology and university education are intertwined with many Indigenous Australians, and Indigenous people see technology as a pathway to a better future (Rennie, Thomas, and Wilson, 2019). However, not all Indigenous people can access and use this technology.

Digital Divide

Internet access contributes to people's welfare and is now considered widely as an essential service comparable to other basic utilities (Rennie et al., 2019; Wilson, 2021). On university campuses, Indigenous students from rural and remote Australian communities have technology that can assist them to remain connected to their families and community.

However, not all rural and remote areas have sufficient technological infrastructure to support maintaining family connections or enabling online education (Wyatt, 2019). This condition is known as a digital divide. Before the pandemic, the term digital divide was used to describe the gap between people with access to digital technologies and reliable and stable Internet and those without (Bennett, Uink, and Cross, 2020). Although there have been improvements in access to technology, the digital divide remains

for students at the lower end of the socioeconomic spectrum (Bennett et al., 2020; Brown, Te Riele, Shelley, and Woodroffe, 2020).

In addition to the potential lack of infrastructure, the affordability of the technology and the Internet, and the capacity and capability of the users influence the adoption and use of the Internet (Rennie et al., 2019) and how Indigenous students engage with universities online.

The Pandemic

In 2019, the COVID-19 pandemic disrupted communities and industries across the globe, including the higher education sector. COVID-19 magnified digital divide issues that equity practitioners and policy-makers have been seeking to address for decades (O’Shea, Koshy, and Drane, 2021). COVID caused significant changes in the way university students, lecturers, and administrators interacted not only in Australia but also in countries including New Zealand (Akuhata-Huntington et al., 2020) and Canada (Galloway, Bowra, Butsang, and Mashford-Pringle, 2020). Although universities delivered courses online, the scale of change from the current blend of online and face-to-face to fully online teaching and learning was significant. Universities reallocated human and financial resources from blended learning to fully online delivery (Heckenberg et al., 2020). In March 2020, efforts to protect the Australian people from COVID-19 included the closure of Australian universities with learning on campus rescheduled or canceled (Dodd, Dadaczynski, Okan, McCaffery, and Pickles, 2021). Within the Australian higher education sector, COVID-19 presented multiple challenges (Dodd et al., 2021).

While students in metropolitan and regional centers had access to suitable space and technology to continue their university studies, rural and remote Australia students may not have had the same opportunity. In particular, the differences between Indigenous students and their non-Indigenous classmates remain; as Wyatt (2019) and many others have identified, the situation needs to be addressed.

Effect of COVID on Indigenous Australian Students

Many Indigenous students are either the first or second generation that have had the opportunity to study at an Australian university. In Australia, data from 2017 shows that the undergraduate attrition rate was estimated at 16%. For Indigenous students, the attrition rate was almost 29% (O’Shea et al., 2021). Although over the past decade there have been improvements, admission and completion rates of Indigenous people in Australia are the lowest in terms of proportional representation at universities (Bennett et al., 2020). With the emergence of COVID-19, many Indigenous students studying face-to-face were forced to shift to online learning. This transition presented challenges that forced numerous Aboriginal students to withdraw from the university, including mental health difficulties (Dodd et al., 2021). Many Indigenous students did not have access to home computers or the internet, or if they had access, there were circumstances where they only had one home computer that was shared with siblings also learning from home (Holt and Worrell, 2021).

Many Indigenous students in rural and remote communities could not come to campus. Few Indigenous students from regional and remote Australia prefer online learning because of the cost, lack of stable internet access, or restricted access to devices (Brown et al., 2020). Cultural factors are also a consideration, as money is often shared within Indigenous families and influences the allocation of technology and internet access (Rennie et al., 2019).

Effect of COVID on Lecturers Teaching Indigenous Australian Students

As COVID-19 emerged, lecturers primarily focused on face-to-face delivery and had the challenge of learning to teach and interact with students online (Daumiller et al., 2021). However, many lecturing staff did not have the knowledge and skills to develop and deliver engaging material suitable for an online environment. According to Daumiller et al. (2021, p. 2) this had the potential to cause one of “three types of attitudes: perceived threat (e.g., being concerned about problems that could arise from the shift from face-to-face to online teaching), perceived usefulness for competence development (e.g., finding the shift helpful to learn and increase professional competences), and perceived positive challenge (e.g., experiencing feelings of confidence and capability concerning meeting the demands tied to the shift)”.

Another dimension of the complexity of teaching online due to COVID-19 was the thought and effort needed to support and keep Indigenous students engaged. With the number of risks being considered, the consequences for Indigenous students may not have been understood or adequately considered, or sufficiently prioritized by university leadership. This could be reflected in the trend in Indigenous students commencing their studies in 2019, with 22.8% not returning in 2020, which was below the 2016 rate (Productivity Commission, 2022).

Priorities of Administrators and Effect of COVID on Indigenous Australian Students

In June 2021, the Federal Minister for Education and Youth, The Hon. Alan Tudge presented the priorities for higher education as research commercialization, international education, the domestic student experience, and freedom of speech (Tudge, 2021). When considering the domestic student experience, the Minister focused on returning to face-to-face learning where possible and enhancing the classroom and learning experience of Australian students.

An important matter that may have been included in the discussion about the domestic student experience but was not at the forefront were matters associated with Indigenous student engagement and the challenges of the digital divide.

However, two of the four priorities the Minister for university administration set appear to be financially related, commercialization, and international students. It appeared that more concern was raised at least from a media perspective, about the loss of revenue, especially from overseas students and a balance sheet of Australian universities, rather than engaging and maintaining Indigenous students.

DISCUSSION

Education is a human right (Shultz, 2015; United Nations General Assembly, 2007), and COVID-19 presented unique sociotechnical dilemmas that involved a transformation process in which universities commenced journeys from a current state of teaching and engaging with students face-to-face to a desired state of online teaching and engagement. This change in delivering education affects students lives and their well-being as individuals, families, and communities (Anderson and Ostrom, 2015). This change may need to consider a stronger focus on cultural matters for Indigenous students in rural and remote locations.

Similar to other large, complex sociotechnical initiatives, several risks need to be considered and resolved. According to Obondi (2022), many studies have concentrated on risk identification, assessment, and analysis while neglecting activities related to controlling, monitoring, and mitigating risk. These risks consider both human and non-human multidisciplinary actors involving leaders and managers driving strategy, marketing to influence culture change, and changes to processes such as supply chains and technology to support these activities (Verhoef et al., 2021). These issues may contribute to the high failure rate of sociotechnical initiatives (Obondi, 2022).

Adopting a multidisciplinary approach to consider and monitor the risks of human and non-human factors may help reduce the high failure rate. However, the number of actors and associated risks linked to the actors can prove significant and complex. Existing models and frameworks may not be suitable for managing the complex processes of transforming how universities engage and teach Indigenous students in rural and remote communities (Khazieva, Tomé, and Caganova, 2018).

The sociotechnical risk in this study can be reflected in strategic or operational networks that enrol actors, form new networks, and obtain and relinquish power as they interact to contribute and influence sociotechnical initiatives. The actors and networks also interact with one another to identify and mitigate risks associated with the initiative (Wilson, 2021). To help manage the complexity, the actors and networks are categorized into four domains: leadership and management (a strategic domain), culture (a strategic domain), process (an operational domain), and technology (an operational domain).

FIGURE 1
RELATIONSHIP BETWEEN STRATEGIC AND OPERATIONAL ACTORS, NETWORKS, AND
FOUR RISK DOMAINS



Leadership Management

Actors and networks in the leadership and management domain focus on activities that include governance, strategy, policy, allocation of human and financial resources, and alignment with federal, state, and local government requirements. Leadership and management also involve being accountable for risks and risk management for the initiative, to ensure Indigenous students are engaged. The support of leaders and managers must be visible and sustained, or the effort to support Indigenous students may fail. If recognizing the importance of maintaining and enhancing opportunities to engage and teach Indigenous students is not sufficient and sustained by university leadership and management, their effort can be seen as unsatisfactory and morally insufficient. A failure to take strong action can be viewed as a token gesture by many in the Indigenous community and may be considered unjust by reinforcing unjust inequities. According to Grant (2017), tokenism is the practice of appeasing or acting to pacify a demand to undertake a particular course of action.

Examples of risk and mitigating actions that university leadership and management can consider related to Indigenous students in rural and remote Australia include:

- **Leadership risk 1:** University leaders and managers may not have the knowledge, experience or have the trust or relationships with Indigenous people to understand the situation in rural and remote communities.
- **Leadership mitigation 1:** Ensuring there is an appropriate and authentic Indigenous voice guiding the university's executive team regarding engaging, supporting and teaching students in rural and remote communities.
- **Leadership risk 2:** Insufficient human and financial resources allocated to engage, support and teach Indigenous students in rural and remote communities.
- **Leadership mitigation 2:** Leaders and managers develop plans, strategies and policies to ensure human and financial resources are allocated to meet requirements laid out in strategies plans and procedures. Leaders and managers will also work with organizations external to the university to ensure solutions can be developed and funded to create the infrastructure, including telecommunications and spaces for Indigenous students to study.

Culture

To transform from a current to a desired state where Indigenous students can be engaged, have sufficient support and access to learning from universities may face resistance. This resistance may be from a lack of understanding of Indigenous students' plight, opposition to the allocation of human and, or financial resources needed for transformation, or the importance of building trust with Indigenous communities and students. A challenge in managing socio-technical initiatives is the need to develop and communicate to multiple stakeholders from multiple disciplines the purpose, status, and issues associated with the

transformation (Bygstad, Nielsen, and Munkvold, 2010; Jarulaitis, 2015). This is why steps to influence culture are considered important for this transformation initiative. The change in culture. These perspectives and related risks include understanding the culture of multiple networks within and external to the university and the activities needed to influence this culture. These networks may include Indigenous and non-Indigenous community residents, Indigenous students, organizations (e.g., telecommunication providers), and other stakeholder networks (Wilson, 2021).

From an Indigenous perspective, Indigenous students' cultural safety and security can be considered paramount (Coffin, 2007). It is important to note that Indigenous students require different support structures when compared to non-Indigenous people (Kickett-Tucker, 2021; Wright, Culbong, Crisp, Biedermann, and Lin, 2019). A thorough culture change process can assist alter attitudes to gain support for change respectfully.

The culture of an organization is influenced by its leadership. If leadership and managers demonstrate dedication to achieving a vision and allocate appropriate human and non-human resources, it can contribute to supporting and sustaining transformation. These resources should encompass and acknowledge the challenges of colonialism and the negative impact on Indigenous people. This includes a better understanding of how colonisation created an environment in which Indigenous people are often disadvantaged regarding justice, education, housing, and healthcare. With this understanding, more thoughtful and considerate decisions can be made.

Examples of risk and mitigating actions that university leadership and management can consider related to cultural matters include:

- **Culture risk 1:** Thorough, Indigenous-led cultural awareness initiatives are not developed for non-Indigenous stakeholders.
- **Culture mitigation 1:** Cultural awareness training developed for stakeholders to assist them in understanding the challenges facing Indigenous students, people, and community self-determination.
- **Culture risk 2:** Lack of understanding of the need to support Indigenous students.
- **Culture mitigation 2:** Engage with Indigenous Elders, students, families, and communities to build trust, understand the needs and work together on how to support attaining the need.

Process

Universities may need to create new or enhance existing processes to effectively engage, support, and teach Indigenous students from rural and remote communities. A key process involves creating and managing knowledge for continuous improvement in supporting Indigenous students. This involves creating or acquiring knowledge to store and accumulate; pool, assemble, transfer and assess knowledge; and applying or utilizing knowledge (Evans, Dalkir, and Bidian, 2015). Knowledge gained from this process may assist the effort of universities to gain and sustain support for the initiative that supports Indigenous students in rural and remote communities.

Fundamental to the solution proposed in this paper are processes to support risk planning, assessment, risk handling, and monitoring. Each domain of leadership and management, culture, process, and technology include multiple risks that influence how Indigenous students in rural and remote areas are engaged, supported, and taught, which need to be identified, managed, and mitigated.

Examples of risk and mitigating actions that the university related to the process include:

- **Process risk 1:** Some dwellings housing Indigenous students in rural and remote communities may lack space for the students to learn.
- **Process mitigation 1:** In collaboration with Indigenous communities, create a process to identify culturally safe and secure spaces for Indigenous students to study and learn online in regional and remote areas. For example, a classroom at the school after hours or a room in the council building.
- **Process risk 2:** Current university processes to engage, provide support and teach Indigenous students online may not satisfy target student audiences.

- **Process mitigation 2:** Review and refine or create processes to ensure Indigenous students can engage, be supported, and learn. This can be done during initial interviews, online surveys, and personal contact with the cohort.

Technology

The final domain briefly described in this paper is the technology domain. The vision for the desired state encompasses using technology to engage, support and provide students the opportunity to learn online. However, according to Cresswell and Sheikh (2013) technology based initiatives are complex and have a high failure rate. To reduce this risk, technology will need to be considered in a sociotechnical context of the integration of human and non-human actors that include strategies, people and management processes (Coltman, Tallon, Sharma, and Queiroz, 2015) as well as legal, ethical and social perspectives (Fisher et al., 2015).

The technology domain interacts with these sociotechnical activities to help present a broad multidisciplinary view of the initiative and influence how the university engages with Indigenous students in rural or remote communities.

- **Technology risk 1:** Indigenous students cannot access adequate technology for online engagement, support and learning.
- **Technology mitigation 1:** The university can provide Indigenous students with access to adequate technology through multiple channels. This may include loan of technology or provide access to locations, such as community centres where the technology and space is available for use by the Indigenous students.
- **Technology risk 2:** Indigenous students do not have access to the Internet, or access is insufficient in rural or remote communities.
- **Technology mitigation 2:** In collaboration with other stakeholders, such as telecommunication providers, universities will create solutions to ensure sufficient Internet access is available to Indigenous students in rural and remote communities. This could be a partnership with local schools or clinics to provide internet access.

Transformation Cycle

The domains of leadership and management, culture, process and technology interact to transform the existing situation to a desired one. This is summarised in figure 2.

FIGURE 2
A SIMPLIFIED TRANSFORMATION CYCLE INFORMED BY KARP (2006)



Using figure 2 as a guide, the transformation cycle as discussed.

- **Existing situation:** The existing situation is that Indigenous students in rural and remote communities are disengaging from university studies because of the lack of online support due to the lack of infrastructure.
- **Vision:** The vision of the desired state includes universities have the capacity and capability to engage and support Indigenous students online in rural and remote locations.
- **Transform:** With a vision, visibly and tangibly supported by the university, the process to transform the current state into the desired situation commences. This transformation involves identifying multidisciplinary human and non-human actors aligned to achieve the desired situation.
- **Desired situation:** The transformation process encompasses the change from a previous state to the desired. During this stage, the desired situation is achieved.
- **Knowledge gained:** During the knowledge gained stage, the transition from the previous state to the desired state is achieved. The desired becomes the new current state. The new current state is considered. The ability of Indigenous students in rural and remote communities to access online support and learning are assessed against the vision for the desired state. If the solution can be developed to strengthen how Indigenous students in rural and remote communities engage and learn, the journey to transform may continue if there is sufficient support from leaders, managers and community stakeholders.

Several steps can be undertaken to reduce the risk of further disengagement of Indigenous students because of situations such as COVID-19. As previously stated, sociotechnical initiatives are complex. To be effective and sustainable, the transformation cycle will need to be iterative and repeated multiple times until the desired stated is attained. With each iteration, knowledge is gained to assist with the next iteration.

CONCLUSION

COVID-19 shed light on the challenges Indigenous students face in rural and remote communities face to engage and be supported to learn. This digital divide is a sociotechnical situation in which Indigenous students in rural and remote areas are disadvantaged compared to other students in urban and regional center settings. To plan and progress with an imitative to successfully address this challenge would require a multidisciplinary approach. However, according to academic literature, the failure rates of such initiatives are high.

Of potential concern in efforts to resolve the challenges related to supporting Indigenous students in rural and remote communities is the lack of human and non-human actors to support efforts to service university Indigenous students during the height of the COVID-19 pandemic. To address this sociotechnical issue, it is recognized that a sustained solution is complex.

To assist address the matter of complexity, in this paper, risk is categorised into the domains of leadership and management, culture, process, and technology. The risks may be better identified, managed, monitored and mitigated using these domains.

The model presented in this paper focuses on Indigenous students from a broad perspective that includes social, economic, and cultural dimensions and human rights for Indigenous people. This aims to ensure that Indigenous students from rural and remote locations have the space and technology to have culturally safe and sustained pathways to learning and engagement while in their communities.

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ENDNOTE

- ¹ Use of capital “I” for Indigenous is common practice in Australia and a sign of respect and courtesy for Australian First Nations people. The capital “I” in Indigenous is not intended disrespectful conference proceedings in any way.

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