Editorial

The increasing significance of digital equity in higher education: An introduction to the Digital Equity Special Issue

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Digital equity is a complex and multifaceted concept. It includes not only access to hardware, software, and connectivity to the Internet but also meaningful, high-quality, and culturally relevant content in local languages, and the ability to create, share, and exchange knowledge. Participatory citizenship in the digital era involves the right to access and participate in higher education. Indeed, it is a key civil rights issue of the modern world. This editorial provides the context in which the articles in this special issue are located.

Introduction

The notion of equity in higher education is a complex and multifaceted concept that continues to evolve. Gradual progress has been made over time with increasing access and participation in higher education by historically marginalised groups, such as women from the 1800s (Eschbach, 2017) and the inclusion of Australian Indigenous peoples from the mid-1900s (Andersen, Bunda, & Wallter, 2008). Examples of equity in higher education reaching the political agendas of nations around the globe have included the Australian government’s focus through policy documents from the 1960s and, in more recent times, the publication of the Bradley Report (Bradley, Noonan, Nugent, & Scales, 2008), which firmly moved educational equity of the so-named “non-traditional” student cohorts onto the agendas of most Australian universities since that time.

The rise of distance and flexible learning opportunities in the late 19th century (Matthews, 1999) has also helped broaden access and participation to higher education. Electronic access to course materials and course activities enables many students otherwise unable to participate in face-to-face activities on campus, to participate in higher education. In fact, e-learning has long been heralded as the way in which higher education institutions can enable participation by large numbers of students from non-traditional cohorts (Selwyn & Gorard, 2003; Sims, Vidgen, & Powell, 2008). Students are able to study in a range of modes (full-time or part-time; on-campus or at a distance), have variable enrolment patterns to accommodate their particular circumstances, and are able to enter into higher education through a variety of bridging programs. Along with this greater flexibility in enrolment is the increasing use of Internet-enabled technologies to manage learning. In this way, higher education institutions claim they are increasing participation in higher education (Beaton, 2012). Can this claim be justified? Unlike the foundational centuries of privileged male access to higher education, with the rise of the Internet and digital technology, the opportunities for access and participation in higher education have broadened; yet barriers remain (Anderson, 2015).

According to United States-based organisation the National Digital Inclusion Alliance (2019), digital equity is defined as:

a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.
Resta, Laferriere, McLaughlin, and Kouraogo (2018) argued that there are five dimensions of digital equity, and these encompass access to:

- hardware, software, and connectivity to the Internet
- meaningful, high-quality, and culturally relevant content in local languages
- creating, sharing, and exchanging digital content
- educators who know how to use digital tools and resources
- high-quality research on the application of digital technologies to enhance learning.

As such, digital equity and, inversely, the perpetuation of the digital divide, are significant human rights issues (La Rue, 2011).

**Access to hardware, software, and connectivity to the Internet**

A lack of digital access to technologies may be due to a range of complex factors which may include the lack of technical infrastructure, lack of affordability of technologies, gender bias or lack of digital literacies (Alexander et al., 2019). Leibowitz and Bozalec (2016, p. 113) reported that “access to the Internet and WiFi and ability to engage with digital literacies is important for participator parity in higher education, both for students and for higher educators themselves.” This increasing reliance on e-learning presupposes ubiquitous connectivity, that is, a reliance on the Internet. However, the reality remains that 42% of the world’s population does not have access to the internet (Statista, 2019). This can be for a number of reasons, including poor investment in information and communication technology infrastructure in a particular country or different government spending priorities. Disturbingly, it may be because of Internet censorship in that country as there are still a number of countries where this remains an issue including Vietnam, Bahrain, China, Syria, and Iran (Reporters without Borders, 2012). With the increasing internationalisation of education, this is likely to remain a problem for universities into the foreseeable future. In addition, access to current digital technologies remains an issue leading to significant disparities in digital equity within and between countries and even within and between communities (Sims, Vidgen, & Powell, 2008). Over three decades ago, scholars such as Sayers (1995, p. 767) were arguing that “equity in access to educational resources faces new challenges in the age of technology, with great disparity in access to educational technology”. This is the basis of the notion of the digital divide; that those who are at a disadvantage will be further disadvantaged. A useful definition of the digital divide in this context is as “a host of complex factors that shape technology use in ways that serve to exacerbate existing education inequalities” (Warschauer, Knobel, & Stone, 2004, p. 584).

**Access to meaningful, high-quality, and culturally relevant content in local languages; access to creating, sharing, and exchanging digital content**

Open education resources are one means of being able to create, share, and exchange digital content with disadvantaged learners. How might access to high-quality and culturally relevant content for linguistically diverse peoples affect learning? As Willems and Bossu (2012) have noted, the language of instruction and the relationship to context and localisation of content all play roles. Resta and colleagues (2018) argued that access is very important for social inclusion and digital equity and they suggested this includes hardware and software, high-quality content in local languages, and access to digital tools and resources.

**Access to educators who know how to use digital tools and resources**

Appropriate education considers all facets, including the abilities of those who teach. This is not simply how to access appropriate resources for learners but also how to teach in a digital age. As Hockings (2010, p. 3) noted, “[u]nderpinning the concept of inclusive learning and teaching are [the] values of equity and fairness”. Inclusive teaching suggests that:

Pedagogy, curricula and assessment are designed and delivered to engage students in learning that is meaningful, relevant and accessible to all. It embraces a view of the individual and individual difference as the source of diversity that can enrich the lives and learning of others. (Hockings, 2010, p. 1)
Inclusive teaching facilitates the participation of all learners, enabling them to realise their full potential. It involves considering scaffolded instruction in the use of technologies and the development of digital literacy (Press, Arumugam, & Ashford-Rowe, 2019).

**Access to high-quality research on the application of digital technologies to enhance learning**

Though the increased use of technology does help address the emerging demand for flexibility in learning, it also excludes significant portions of the student population (Aceves, Aceves, & Watson, 2011). In terms of educational advantage, things are improving; improved infrastructure and emerging technologies are leading to more ready Internet access, thereby decreasing the digital divide across the world. As universities increasingly move to online program offerings, access to higher education necessitates access to the technology and connectivity necessary to access that education (Murphy, Farley, Lane, Hafeez-Baig, & Carter, 2013). Because of the uneven access to digital technologies and connectivity, educational inequities can persist (Selwyn, 2016).

**Digital equity as a civil rights issue**

Eamon (2004) argued that we should be concerned about the digital divide for four key reasons: educational advantages, future employment and earnings, opportunities for social and civic involvement, and equity and civil rights issues. Indeed, one of the United Nations sustainable development goals (United Nations, 2015) is to redress inequality to global access and participation in education. Human rights in the digital age are being contested very openly today. In the text of the World Summit on the Information Society (2003) “Declaration of Principles”, as an essential element of life in the information society, particularly with respect to human rights, is that “[e]veryone, everywhere should have the opportunity to participate and no one should be excluded from the benefits the Information Society offers” (¶ 4). This includes the digital world. Digital equity, therefore, is to be considered to be a civil rights issue of the modern era.

In the 2018 “Horizon Report” (Adams Becker et al., 2018), ensuring digital equity was recognised as being significantly challenging, impeding the adoption of digital technologies in higher education around the globe. As a consequence, digital equity remains a “wicked problem”; one that is “complex to define, much less address” (Alexander et al., 2019, p. 4). This complexity of the field is reflected in contributions in this special edition of the *Australasian Journal of Educational Technology* (AJET).

**AJET special issue – digital equity**

This special issue of AJET sought articles that considered, evaluated, or contributed actionable knowledge towards addressing digital equity. Authors were invited to submit studies, reviews, and conceptual articles on topics including but not exclusive to:

- Representational issues in digital access and participation in tertiary education (race, gender, ability)
- Policy and practice barriers to digital access to higher education
- Incarcerated student participation in digital higher education
- Digital divides and barriers
- Accessible and assistive technologies
- The role of technology in meeting sustainable development goals
- Digital pedagogies
- Digital literacy
- Equitable digital practices.

In total, 50 articles were received with the call for papers for the special edition of AJET on digital equity. Of these, 25 were not directly relevant to the focus of the special edition; some authors were encouraged to resubmit to the general issues of AJET and others were encouraged to submit elsewhere if not their article was not relevant to the overall remit of AJET. Of the remaining 25 articles that were sent for double blind peer review, 11 articles were accepted for this special issue of AJET. These 11 articles have been written
by 27 authors coming from around the globe. The articles span a variety of topics including developing learning with special needs in mind through to better supporting those using the technology to teach others. The diversity of these articles serves to remind us of the complexity of the issues associated with digital equity and a reminder of the need to remain cognisant of these.

The issue begins with an article by Rogers Kaliisa and Michelle Picard, which focuses on the issue of mobile learning policy and practice in Africa. It presents the results of a review of practice and policy in relation to mobile learning and its potential to enhance inclusive and equitable access to higher education in Africa. Through a review of the academic literature concerning potential barriers, the authors explore the current state of the mobile learning policy environment in 10 African countries. Specifically, the authors analyse how the policies have tried to address the prominent challenges in the adoption of mobile learning as identified in the literature. The authors point to the significant resourcing inequalities in their findings. They argue that epistemological, sociocultural and institutional barriers remain and affect mobile learning adoption. They reveal that there is still a policy vacuum in relation to mobile learning – specific policies within African higher education have impeded the formal integration of mobile learning into higher education and the potential for mobile learning to facilitate equitable access to learning is still largely unrealised. The article provides us with insights into policy and strategic planning for the adoption of mobile learning to achieve inclusive and equitable access to higher education. While continent specific, this article reminds us of the importance for strong institutional, cross-institutional, national and continent-wide specific mobile learning policies to ensure better implementation of mobile learning.

The next article, by Katherine Frances McLay and Vincent Chua Reyes, highlights the importance of specific engagement with technology in initial teacher education. Preservice teachers (PSTs) develop learner and professional identities while participating in a university course that explicitly incorporates the use of technology into teaching. The article proposes that it is important for initial teacher education to explicitly engage with the role of technology in these developing identities to minimise the risk of digital inequity, both for PST’s learning and that of PST’s future students. Two central questions are addressed: How did PSTs make sense of their identities as they took part in an educational technology course? And what challenges did they encounter in incorporating technology into their learning experiences? An exploratory case study of a group of tutors and participating students in an ongoing action research project directed at redesigned educational technology and innovation course at a higher education institution was undertaken for this inquiry. By critically interrogating students’ reflexive accounts and focus group discussions with academics teaching into the course, this inquiry investigates and builds emerging explanations in relation to identity and digital equity.

Universal design for learning and analysis, design, development, implementation, and evaluation (ADDIE) guidelines are the basis for the development of the first massive open online course (MOOC) training proposal of the Universidad del Atlántico in Colombia. In this article by Liliana Herrara Nieves, Emilio Crisol Moya, and Rosana Montes Soldada, the design and pilot application of the MOOC is presented. The MOOC was created to promote inclusive virtual education with the learnings transferable to other contexts. The authors argue that the design of this online training activity has provided benefits to the quality of inclusive virtual education, improves accessibility with no need for platform adjustments, and involves participants in the learning. This educational initiative complements the academic offer for students, graduates, administrators, teachers and external guests, and contributes to the democratisation of education. The result is the creation of a MOOC which is accessible to a variety of learners.

On the other hand, an important consideration in the design of MOOCs is flagged in the next article, by Kydong Park, Hyo-Jeong So, and Hyunjin Cha. Despite the popular claim that MOOCs can democratise educational opportunities, this study suggests that current MOOC platforms are not designed to be accessible and inclusive for learners with disabilities. The main goals of the study reported in this article were to identify the needs and barriers that learners with visual impairments face when learning with mobile devices in MOOCs and to make recommendations for designing more accessible and inclusive MOOCs. The study had two phases: a user study in Phase I and a heuristic walkthrough in Phase II. In the first phase, a user study was conducted with three university students with visual impairments to identify their needs and the barriers to learning that they encounter in mobile MOOC platforms. In the second phase, five evaluators conducted a heuristic walkthrough based on the Web Content Accessibility Guidelines 2.0 to examine the degree of accessibility of a MOOC platform. Overall, the results indicate that serious accessibility issues exist in MOOC platforms, preventing learners with visual impairments from fully
participating in learning activities. The authors conclude with recommendations to design mobile MOOCs to make them more accessible for learners with visual impairments.

In a second article relating to teacher education, Lina Pelliccione, Valerie Morey, Rebecca Walker, and Chad Morrison argue that the rapid expansion of fully online delivery of initial teacher education (ITE) seen in the past decade has generated some concerns about impact on teacher quality. This is set within broader, sustained concerns about ITE generally. Much of the criticism of online ITE has been made without sufficient evidence to support claims being made, largely due to the still-nascent evidence base. The data presented here contributes to that evidence base by providing demographic and academic achievement insights for cohorts of graduate teachers (N = 2008) across the years 2012 to 2018 who have engaged in fully online ITE at an Australian university. The literature recognises traditional barriers to accessing higher education that have existed for many of these students, including women, the mature-aged, and those with existing family and work responsibilities. Performance data for online ITE students within their programs demonstrates that they are breaking down these barriers. Analysis of who these people are, where they come from and how they are performing provides valuable insights into online ITE, at a time when the value of broadening access to education is being widely acknowledged. Such access to online engagement in higher education must encompass appropriate support considerations that address the digital divide.

Martin Cabrera, Leidi Yoana Zamudio Garnica, and Isabel Cristina Martínez Farfán detail the results of a descriptive qualitative investigation to identify the inclusive educational processes from 707 preschools and primary schools in Colombia, distributed around 26 territorial units out of a total of 32. In order to obtain all this information around the country, a data-collection strategy was applied which the authors named the distributed access research strategy (DARS). All the data was collected by tertiary education students from two programs of the Faculty of Education of Corporación Universitaria Iberoamericana. The results revealed that most preschools and primary schools have documented institutional educational plans referencing diversity and inclusion for their students, but they have difficulties in establishing strategies to identify and implement curricular adaptations within their contexts, as well as with the use of tracking instruments. These results generated a reflection in order to review the syllabus and study plans in the tertiary education programs of Corporación Universitaria Iberoamericana to better prepare future teachers who will face such scenarios in their geographies. Moreover, this new DARS data-collection strategy shows an interesting potential, which is generic enough to enable unlimited research topics to be explored within distance learning contexts.

Gender equity and mature age-students are the twin focus of the article by Cathy Stone and Sarah O’Shea. The authors argue that while much has been written about the growing influence and reach of online learning in higher education, including the opportunities that this can offer for improving student equity and widening participation, that one area of student equity in which online learning has an influence is that of gender equity, particularly for mature-age students. The article explicitly explores how the dual identities of student and family carer are managed by women studying online, capturing the voice of women in these dual roles. It highlights the largely invisible yet emotional and time-consuming additional load that many women are carrying and discusses the importance of this being recognised and accommodated at an institutional level. Online study has the potential to facilitate a more manageable and achievable study path for students with caring responsibilities, most of whom are women. Institutional understanding and awareness are required for this potential to be truly realised, thereby reducing educational inequity.

The article by Dawn Adams, Kate Simpson, Lynda Davies, Chris Campbell and Libby Macdonald, reports on how course design can impact on disability. The authors explore how online course delivery is increasingly being used by universities to provide accessible and flexible learning environments. As this mode of delivery grows, it is important to consider the equity of the learning experience for all students. As online delivery may reduce challenges and stressors present in face-to-face delivery, it could be suggested that it may promote student learning for specific student groups, including those with a diagnosis on the autism spectrum. However, little is known about the experience of learning online for students on the autism spectrum. This article presents findings from two studies: one is a systematic review of the literature and the second, a survey of students on the autism spectrum studying online. From the systematic literature review, only four previous studies were identified as reporting on this topic. Findings from two studies identified that the online environment provided both facilitators and barriers to the learning experience for students on the autism spectrum. Although the online environment provided flexibility for
learning, how design factors are employed in online delivery may unintentionally create barriers to the learning experience for students on the spectrum. An outcome from this study has been the creation of a suite of resources to assist with course design and delivery for students with disorders in the autism spectrum.

The article by Alison Reedy highlights the educational inequity that Aboriginal and Torres Strait Islander people have experienced in higher education in Australia and how this has been replicated in virtual learning spaces. Generic models of e-learning design have taken little account of the cultural factors that impact on learning. To counter this, new approaches to online learning design are needed that consider the experiences of Indigenous people. This article explores culture as a critical element of online learning design that enhances the learning experiences and outcomes of Indigenous people. The article reports on a study conducted at a regional Australian university, which was methodologically situated within an educational design research framework. Data were collected through the narrative method of yarning with 19 Indigenous students enrolled in a range of disciplines. From the data, 10 themes were developed which guided the design of a learning design model and six preliminary design principles. The study contributes to the gap in the literature on learning design for Indigenous online higher education students. As the model and preliminary design principles are culturally situated at the site of the study, they need testing by educational designers and academics to ascertain their usefulness in other contexts.

A position article by Julie Willems argues that the rollout of technological advances in tertiary teaching and learning continues unabated. Concerns around staff lag in acceptance and adoption may overlook hidden influences. Although considerations to address the digital divide and digital equity for tertiary students has been a growing social justice issue since the 1980s, what of the academic and professional staff who facilitate their teaching and learning? They are the other side of the coin and, as a cohort, are as diverse as the students they teach. Today, building staff capacity in the implementation of technology in teaching and learning in higher education still remains a key need. Yet a one-size-fits-all approach may miss the differing needs, views and capabilities of staff. It may also be built and developed upon explicit assumptions relating to staff access, skills and ability. For an equity-based approach to building staff capacity through professional development, empathy is required in purveying staff values, abilities, and needs. To address such issues and empower staff, a robust professional development program on digital technology is but one means to help stem the digital divide between staff haves and have-nots.

Working from the perspective of open and online learning for widening participation of higher education, the final article, by Sarah Lambert, advances a new conceptual model to guide practitioners and researchers in maximising the enablers and minimising the constraints to foundation-level online learning for equity students. The model is adapted from technology for social inclusion research addressing persistent inequalities in Internet use and has six critical dimensions: course purpose, technology, social support, autonomy, learning materials and skills. Using a qualitative synthesis of empirically tested open and online programs (including MOOCs), the author clarifies how the six critical dimensions interact to enable and constrain diverse learners in distance and blended modes. Results support the model with new definitions for each dimension in light of unexpected findings: course purposes specific to enabling groups; breadth of learner supports; technology amplifying other dimensions; and aspects of the model designed to empower disadvantaged learners. This new conceptual model helps to explain why some online educational programs engage and enable disadvantaged learners and others do not. It is hoped that the model helps to address digital inequality and the digital divides which have been a problem for society, educators and policymakers alike.

Concluding thoughts

The challenges that give rise to digital equity continue. Every effort must be made to highlight these issues, to research them, and to consider solutions. The articles contained within this special edition of AJET on digital equity are but the tip of the proverbial iceberg. So much more to consider. It is only through collating such literature that the story can be pieced together, told, and action taken for remediation. Let’s work together to find solutions to this “wicked problem” (Alexander et al., 2019).

The Australasian Society of Computers in Tertiary Education (ASCILITE) has a special interest group (SIG) which focuses on digital equity. The aims of the Digital Equity SIG are to connect like-minded individuals around the globe with an interest in the various aspects of digital equity; to identify and explore
the issues, challenges and opportunities relating to digital equity and to bring these to the attention of ASCILITE members and the broader higher education community; to provide guidance and advice across the sector on issues relating to digital equity; to foster the development of initiatives, innovation and practices relating to digital equity; and to foster collaboration around digital equity projects, publications and practices. If you are interested in being involved, please follow the links on the ASCILITE webpage (http://ascilite.org/get-involved/sigs/).

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