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Guest Editorial: Dynamic Accounts of Digital Divides: Longitudinal Insights into Inequitable Access to Online Learning

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ABSTRACT: Educational access is the first step to realising education as a universal human right. Yet, education remains a luxury for many. Contrary to expectations, the advent of online learning has not resolved this fundamental injustice as out-of-school learning and early drop-outs remain widespread phenomena. Rather, digital divides have hit hard in exacerbating social inequalities, with help from Covid-19. This special issue takes a critical look at online learning in its potential to rebalance and hinder universal educational access. It includes four papers focused on differing positions of disadvantage. Based on these papers, this special issue highlights that — although it is possible for disadvantaged learners to compensate for inequities — socioeconomic and infrastructural constraints often prevail, and will continue to unless critical changes are made to the educational ecosystem. Furthermore, the Special Issue calls for future work that takes process-level changes into account in order to generate recommendations that are better grounded in iterative change and causality: only then can actionable and impactful changes be made for a more equitable future of online learning.

Keywords: Social justice, Educational access, Disadvantage, Longitudinal research, Online learning

1. Access is critical to realising education as a human right

Whilst much research attention has been given to educational gains through effective delivery of education (Reynolds et al., 2014), much less attention has been given to the precursors of gaining access to such education. Yet, educational access is an indispensable pre-requisite for educational engagement and academic gains. Indeed, access to education is not so much a privilege as it is a fundamental human right (United Nations Convention, 1990). Meanwhile, there is widespread recognition that educational access is not universal, with prevalent challenges globally, especially among learners in low-and-middle-income countries and from disadvantaged backgrounds (Momo et al., 2019).

Systematic, empirical research has consistently shown interest in analysis of inequalities (Berkowitz et al., 2017; Broer et al., 2019). However, growing concern is now emerging beyond inequalities to address educational inequities (Long, 2022; Yerrick et al., 2022). There are fundamental and consequential distinctions between considerations of inequality and inequity. Inequality research is outcome-oriented and concerned, for example, with learner attainment or teacher salary. In contrast, inequity research is concerned with the whole individual and asks questions of, for example, the whole learner, factors of constraints, and rights or privileges that are amiss for significant minorities (Espinoza, 2007).

Once inequities have been highlighted, and as recognition is established of the situation, the potential to disrupt injustice increases, as the narrative is increasingly shared — and owned — by all. The stance of the marginalised normalises as these populations are humanised to, in turn, be better accounted for in future iterations of educational provision (Stornaiuolo & Thomas, 2017). Thus, research into the predictors, mechanisms, and under-represented narratives for obstacles to educational access is critically important if educational research is to hold to education as a human right.

2. A critical look at online learning for educational access

Online learning has long promised to increase educational access. With the right ingredients, human development scholars have documented their anticipation for the potential in online learning to meet the needs of underserved populations, to capitalise diversity, and to build society to an unprecedented scale (Stewart, 2004). Indeed, early signs lent support to this trajectory for online learning to reach the unreachable (e.g., Moloney & Oakley, 2010).

Yet, online learning does not always increase educational access, or resolve societal divides. In fact, the opposite is often true among the most marginalised, especially as globalisation has proceeded at an alarmingly rapid pace (Zondiros, 2008). In part, this is because disparities can be exacerbated by online learning, due to digital divides that are not present in classroom learning (Mathrani et al., 2021). Recent machine learning analysis has found

online learning to exacerbate between-country and gender-related disparities in educational access (McIntyre, 2022b). Interestingly, these gender disparities were not found in educational gains made once online learning is accessed (McIntyre, 2022a). Thus, the role of online learning in equalising educational access is a complex one with potential for research to reveal many surprising, complex, and insightful mechanisms.

The COVID-19 pandemic has prompted unprecedented attention to the social divides in educational access via online and blended learning (e.g., Greenhow & Galvin, 2020). The unique affordances and challenges of online learning, along with its psychosocial correlates, have received more attention than ever before. Although much opportunistic research has been conducted since the onset of the pandemic, these research efforts have consisted mostly of snapshot studies from a very specific and ungeneralisable moment in time. Little-to-no research has employed the longitudinal research design, either at data collection or during analysis. There is a dearth of research on students' experiences of online education at the process-level, such as for social interaction (Rasheed et al., 2020).

Accordingly, the Special Issue set out to address the question: does online learning serve to increase educational access for the disadvantaged, or does it instead exacerbate societal divides and feed into the digital divides? In doing so, this issue called for research on access disparities in online learning that adopts a longitudinal design.

3. Contribution of papers in this special issue

The following four papers were accepted in this Special Issue. Each one of them shed theoretical and practical light on the potential for online learning to support, or hinder, educational access.

As the first paper in this Special Issue, Li and colleagues (*this issue*) explored the relationship between the internal, individual differences among online learners and their external, environmental disadvantages. Specifically, they investigated the comparative importance of online learners' personalities versus the urban/rural status of their context for learning. They reported extraversion, neuroticism, and agreeableness to make significant contributions to development of digital skills, over and above the rural disadvantage. This brings encouragement, that online learners in disadvantaged, rural settings can potentially overcome socioeconomic and infrastructural constraints to make learning gains.

Nevertheless, the possibility to overcome digital divides to access online learning can be limited.

In their paper, Ng and colleagues (*this issue*) shed light on disadvantaged learners who venture across socioeconomic divides as a daily experience, namely cross-border students. These are students who would normally travel from Mainland China to Hong Kong, China, every day in order to access their school-based education. During the Pandemic, their educational access moved online due to travel restrictions. This online-only educational access set cross-border students' learning back severely, relative to their local peers. Other than the single modality for learning, the lower socioeconomic status shared by these students meant that they were unlikely to possess the advanced digital resources and infrastructure required to sustain online learning. Thus, inequities can overwhelm online learners who cannot reasonably overcome an ecosystem of disadvantage in the way that only few might.

Related is the disadvantaged position of being physically disabled which can prove an overwhelmingly disadvantaged one. AlShawabkeh and colleagues (*this issue*) report research with deaf online learners in Higher Education. Compared with hearing peers, deaf or hard of hearing learners were found to make consistently lower learning gains: this inequity was exacerbated by forced online learning during Covid-19 restrictions. Thus, online learning is more often found to widen rather than reduce societal divides by presenting digital divides into an ecosystem of inequitable educational access.

It is clear that significant efforts are required to tackle the challenges that online learning presents to social justice at multiple levels.

To address this, Lin and colleagues (*this issue*) presented a scaffolding framework by which teachers and learners can be supported to adopt technological tools for learning. The framework recognises the primary importance of social dynamics in the use of any learning resource, including digital ones. The framework then addresses the importance of technological readiness for learning with novel digital tools: in this case, augmented reality on mobile phones. Furthermore, in their analyses, Lin and colleagues examine the difference between the value of mobile augmented reality for learning in rural areas as compared with urban areas. Indeed, the dual

scaffolding-embedded framework was found to mitigate the rural disadvantage in online learning. Thus, authors have reported on a rigorous, multifaceted approach to tackling digital divides in online learning.

Paper 1: Personality Traits Predict Digital Skills Divide between Urban and Rural College Students: A Longitudinal and Cross-sectional Analysis of Online Learning during COVID-19 Pandemic.

Authors: Li Zhao, Yue Liu, and Yu-Sheng Su

Paper 2: Inequity Issues in Online learning of Chinese Cross-border Students under the COVID-19 Pandemic: A Longitudinal Study at a Macro-level

Authors: Davy Tsz Kit Ng, and Roxanne Xiaoxuan Fang

Paper 3: Technology-based learning and digital divide for deaf/non-deaf students during Covid-19: Academic justice lens in higher education.

Authors: Abdallah A. AlShawabkeh, Faten F. Kharbat, Ajayeb S. Abu Daabes, and M. Lynn Woolsey

Paper 4: Mitigating the urban-rural digital divides: A dual scaffoldings-embedded mobile augmented reality learning approach in the post COVID-19 pandemic.

Authors: Xiao-Fan Lin, Juan Jiang, Guoyu Luo, Xiyu Huang, Wenyi Li, Jiayan Zou, Zhaoyang Wang, and Qintai Hu

4. Conclusion and future research

This special issue revealed that online learning does not automatically increase educational access or dissolve societal divides. On the contrary, online learning can magnify digital divides to, instead, exacerbate societal inequities. This is especially true when online learning is the main—or sole—channel for accessing education (Ng et al., *this issue*), and even more so when essential assistive technology is not available (AlShawabkeh et al., *this issue*). Although some online learners may have the internal resources required to prevail (Li et al., *this issue*), this is not normally the case for the disadvantaged learner. A holistic framework is required in order to address both social and digital disparities in access to online learning (e.g., Lin et al., *this issue*).

Our evidence derives from rigorous research methods, too. Mixed methods research features in two of the four papers (Ng and AlShawabkeh) to triangulate insights across data types. Triangulation across constructs is carried by the other two papers (Li and Lin). Change over time is at the forefront, such that longitudinal patterns are analysed across all the papers. Thus, together, we present blueprints of how comprehensive research into social justice in online learning should be conducted.

Despite the above insights and achievements, much has still to be done.

This Special Issue pioneers in its efforts to highlight and champion longitudinal research into a critical component of education for social justice. More longitudinal research is needed in order to disentangle the processes and mechanisms for effective online education that is equitable in iterative design and delivery. Such a priority needs to be examined and enacted across the levels of the education system. At the micro level, processes relating to social justice need investigation within sessions of online learning. At the macro level, change over time needs to be examined beyond the two or three time-point approach to longitudinal research.

Furthermore, only two countries were represented in this Special Issue: there is a need for increased interest in this research topic at the global level, with more country settings represented that examine social justice in online learning, and perhaps countries can be compared within single studies to explore complementary strengths across countries in the design and delivery of equitable education through online learning.

Finally, an increased focus on online learning in the form of open educational resources (OERs) may really be where the greatest rewards lie for rebalancing educational inequities in online learning (Adam, 2020; Geith & Vignare, 2008). It is within this channel of online learning provision that there is exceptional scope for learning opportunities that circumvent socioeconomic and infrastructural barriers which can otherwise characterise access to online learning. Therefore, scholars would do well to concentrate research efforts on exploring and developing scalable frameworks for online learning provision as OERs to comprehensively address prevalent barriers for disadvantaged populations around the world.

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This Special Issue is highly inter-disciplinary with a research focus that has much room for further research attention and significant global impact. In view of these, the Guest Editor thanks the authors and generous reviewers for their invaluable support towards the completion and success of this Special Issue.

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