Editorial

Achieving lasting education in the new digital learning world

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In this special issue of the *Australasian Journal of Educational Technology*, we take a step back from the events of the last 2 years and the changes that we have seen in the education arena, to remember that which has remained constant – how students learn best. Developing teaching and learning pedagogy based on lasting education theory and practice makes the past of education relevant to the present and future and creates a context where innovation can be scaled and taken further, from a single instance of impact to many. In this editorial, we present an argument for going back to our roots and present examples of the effective use of established theories of learning that continue to advance online education practice. We discuss the scaling of educational best practice to more students and more institutions, and we provide recommendations for creating sustainable and lasting future practice.

Keywords: online education, learning theory, innovation, scaling

Then and now

This special issue explores and showcases how lasting educational principles and learning theories can both transcend and engage with online modalities, enabling online education sustainability and optimal pedagogical practices and designs for deep learning. To ensure that education's rapid shift to online modalities is sustainable, worthwhile and transformative, learning and teaching must be founded on guiding educational principles, many of which have a long history (T. Anderson, 2008). It is these theories, universal theories of learning, that we refer to as "lasting" in this editorial. Designers of online education should embrace processes, practices, models and theories that are not modality-specific but have applicability across different modes of teaching and learning, even if they require some rethinking or redesign for the medium (Harasim, 2017). This involves balancing an awareness that virtual spaces have unique opportunities and constraints that require careful and theory-based pedagogical design. This allows incorporation of the best of new technologies, while retaining the fundamental principles of learning theories that help us consider how humans think and learn across contexts (Picciano, 2018).

Thus, the articles in this issue focus on supporting good practices and designs within the present and for the future of online learning – by engaging with fundamental knowledge and theoretical principles about how learning happens. Although online learning is relatively new across the broader history of educational practice, educational practice more broadly has a rich and long tradition of aiming to understand how and why humans learn and what motivates them (Ally, 2008). In any setting, developing high quality teaching and learning opportunities is an act of design. Notably, design is an interaction between the designer (e.g., instructors or course designers), their materials (e.g., technologies, content, resources), the users (learners, and the medium (e.g., online, hybrid or other settings) (Koehler et al., 2004; Norton & Hathaway, 2015). Therefore, scholarship that is grounded in learning theory while also applying sensitivity to the medium, materials, and learners, can help us to understand how to design better online learning.

Online education has, in the last decades, shifted to the mainstream of learning, and will only continue to grow in the future (Archambault et al., 2022). Thus, there is an ongoing need for research that employs theory, data or practices towards helping us craft better educational online futures (Hodges, 2008; Lodge & Corrin, 2017; Roddy et al., 2017). In this editorial, we contextualise the work of our authors and set the stage for it, by synthesising and prefiguring key facets of their work and grounding it in a situated look at online learning within education overall. We also consider how these examples, and other examples of good education practice, can be propelled to achieve greater future impact and reach. However, looking to the future is often best understood by looking at where we have been in the past and where we are right now in the present.

A new era of online education

In 2022, online learning may not feel like a dramatically new innovation to many in higher education. Online learning has technically been available since the invention of the Internet in 1992, and a few instances of online learning even predate this, via computer networking (P. Mishra et al., 2009; Reiser, 2007; Weller, 2020). Early on, academics and educators did not have significant access to computer networking. Yet, many of the early researchers with ARPANET (the experimental computer network that was the forerunner of the Internet) were academics who connected their students with larger knowledge communities by gradually incorporating email and networked conferencing into teaching. This prefigured the later development of the Internet, which expanded opportunities for learners to interact, communicate and collaborate (Weller, 2020). It also ultimately changed the landscape of education, by expanding means of educational access and communication beyond what had ever been available before.

At the turn of the 21st century, there was a paradigmatic shift, where online teaching and learning was starting to become a more mainstream practice or modality, moving away from the fringes of education. Harasim (2000) noted, "so far the signs are subtle, but the changes will ultimately be profound … it will alter global civilization as educators and learners worldwide adopt and adapt networked collaborative learning" (p. 42). Indeed, over the next 20 years, this prediction of a paradigm shift has taken shape.

New forms of online models have emerged for different blends of synchronous and asynchronous modes, with countless new and constantly emerging digital tools and technologies used in or for online learning. New roles and professions such as instructional designers or multimedia specialists have sprung up to help meet the demands of higher education. Online courses, learning opportunities and programs have steadily increased in demand to meet professional learning and workforce needs and suit the convenience of learners' busy lives, in some specific cases even outpacing the traditional in-person delivery of such courses (Hoskins, 2011).

All of this growth and shifting to the centre steadily occurred over 2 decades, as online learning grew in availability, accessibility and demand (Dumford & Miller, 2018; Panigrahi et al., 2018). It showed quality improvements in delivery due to new tools and knowledge about teaching in the medium as well as rising competition across higher education. All of these factors contribute to making online learning today into a form of disruptive innovation to the overall educational paradigm. While the concept is often overused and not unproblematic – its originators (see Christensen et al., 2015) have pointed to online learning as an example of this kind of industry-shifting innovation. We note this, because online learning has gradually unseated the broader societal understanding of why, when and where learning happens. In doing so, it has shifted the possibilities for education, though notably not necessarily what frames or constitutes meaningful learning.

Starting in 2020, the COVID-19 pandemic appeared to unleash the rising demand to new levels. The World Economic Forum (Wood, 2022) described the increasing trends, noting that these shifts certainly predate the pandemic but have since gained more momentum (S. Mishra et al., 2021). The online moves that happened due to the pandemic meant that everyone – from toddlers to their grandparents (and everyone in between) turned to the Internet for connection. These shifts carried over into huge spikes in online learning that have not slowed down since. On a single online platform (Coursera), the switch to remote working as the pandemic hit meant that registrations more than doubled in 2020 and continued to increase in leaps in the years since, more than any of the years prior to the pandemic (Wood, 2022). While Coursera is only one mass platform, and is by no means representative of the broader and more expansive growth of online learning as a phenomenon, this is just one example of the metrics that reveal ongoing and increasing uptake

of online learning. These increases reflect growing global acceptance and mainstreaming of online teaching, including increases in remote learners and those from vulnerable or remote communities taking higher education courses.

In eras of significant change, like the recent decades of networked digital communication and learning, educators and researchers need information about how to act most productively going forward, to make the most of innovations and ensure that quality remains high. Economic models like disruptive innovation do not necessarily help us with the actual acts, outcomes and behaviours of teaching and learning. Ideas about what constitutes quality in teaching and learning raises questions about what meaningful learning looks like. How do people learn best, and how do we enact tools, conditions, designs or pedagogies successfully online? These kinds of questions are often best addressed by learning theories. The long history of learning theories in educational psychology does not make them outmoded in new online modalities – quite the opposite. The history of educational psychology and learning theory instead underscores the need for theoretical foundations in new modalities, ensuring that education is grounded in well-established understandings about learning.

Therefore, as we look ahead to what kinds of ideas, examples and designs could benefit the future of online teaching and learning, it is valuable to have work that is framed by good theories. In each of the articles in this issue, the authors have attempted to do so, grounding their work in existing constructs or theories that we believe can offer some resonance and transferability, even outside of their data or the particular settings that they are employed within.

Examples of lasting good practice

Whilst the disruption of the COVID-19 pandemic impacted the overall learning experience for students and teaching practices of educators, a number of best practices arose through the need to repurpose and reshape educational technology (Studente et al., 2021). The articles presented within this special issue cover the interrelated themes of the benefits of hybrid learning approaches, the role of social constructivism in the use of new modalities, the need for instructional design to consider student preferences, the critical examination of existing practices, and the continuous advances in technology.

To start, hybrid learning approaches are featured strongly in this special issue, demonstrating the emerging nature of this model of education. Cochrane et al. (2022) assert the importance of the flipped classroom and the utilisation of pre-recorded content asynchronously to support synchronous learning. Another key point made by Cochrane et al. is that this concept should be driven by collaborative activities to facilitate learning experiences for students. Similar assertions are made by Noguera et al. (2022), in that synchronous and asynchronous learning approaches (in particular the flipped classroom) are based on constructivist learning practices that involve collaboration, and are generally preferred by students. The article also reminds the reader that constructivist practices enable self-paced learning, which is possible as part of the hybrid model and contributes to the flexible nature of online study.

The article by Creely and Lyons (2022) offers a teacher's perspective on the flipped classroom approach. Some pertinent recommendations are made within the article in relation to the provision of dialogic spaces for shared-meaning creation, that learning is an active experience for both students and educators and that challenges in designing for hybrid approaches need to be considered. As hybrid and blended forms of learning feature more and more as the preferred models being invested in as they potentially bring the best of both synchronous and asynchronous methods, a deep understanding of the benefits and challenges of these models is critical.

R. C. Anderson et al. (2022) extend upon discussions of hybrid learning through the consideration of creativity in online adult learning. The article reports on a study to test a hybrid learning experience focused on the creative development of rural educators. Similar outcomes of this experience are reported in other research, such as the enablement of self-paced learning, collaborative idea generation, and increases in student engagement, and confidence. Indeed, learning communities have become a necessity in today's digital world for successful learning (e.g., Tegos et al., 2015), and there is a wide body of research which outlines the numerous benefits to student learning. Similarly, Goode et al. (2022) report on a mixed-methods study investigating the impact of student engagement with hybrid learning. Findings from the article report that engagement with the online learning component had a positive effect on academic

success. The article also suggests that synchronous active learning classes should be offered alongside options for asynchronous participation and that low levels of engagement with online learning should prompt follow-up from educators to raise engagement.

The common thread here is the design of hybrid learning environments that aligns with social constructivism. Social constructivist theory views learning as a social process, paramount to cognitive development as learning occurs through interacting with others (Vygotsky, 1978). This social process comprises interaction, active participation and collaborative learning (Erbil, 2020). The articles within this special issue also emphasise the importance of self-paced learning as part of the hybrid model, allowing individuals to exercise self-regulation and learning at different rates (Bandura, 1986). Similarly, Maranna et al. (2022) assert that fostering higher order thinking skills is required to design a sustainable approach towards online pedagogy. The central focus of the article is upon the community of inquiry framework, rooted in social constructivist learning approaches and emphasising cognitive presence. The article provides an in-depth scope of literature on the topic and presents recommendations for practice, including using tasks which foster self-regulation and higher order skills in students, such as the use of explicit instructions to guide thoughts and actions and scaffolding and the authentic design of course materials. Again, there are links here back to the key assertions of social constructivism in that learning is contextual, and learning tasks need to be applied in authentic contexts through active participation (Brown et al., 1989). The importance of this is the widely accepted notion that knowledge arises from the activity and context in which it is situated (Lave & Wenger, 1991).

A further theme within this special issue is that of instructional design, which also has links back to social constructivism. The article by Gunasekara et al. (2022) investigates students' perceptions of how lecturers' emotional intelligence impacted their learning and engagement during remote learning. Emotional intelligence was found to enable lecturers to develop connections with peers online, and use a range of different modes of interaction to forge those connections. Similarly, Konstantinidou and Nisiforou (2022) report the need for students to feel supported in online learning and for collaborative or self-paced learning tasks to be authentic and meaningful. The authors also emphasise the need for the use of social learning communities as an approach to decrease feelings of loneliness for students and the role of the educator as a scaffolder, guide and facilitator. Finally, Kizilcık and Türüdü (2022) draw the reader's attention to a current challenge for online teaching: creating spaces in which learners can maintain collaborative connections. This is explored through the concept of care in guiding instructional design.

In terms of lessons learned and best practice, online interactions between both students and their lecturers must be meaningful (Goggins & Xing, 2016). It is well reported that social isolation is linked to low student engagement, and that these feelings can be exacerbated if students do not feel supported in online communities (Karalis & Rikou, 2020). Furthermore, when students do not feel engaged, they experience feelings of disconnectedness (Bryson, 2014). Returning to social constructivist theory, much is acknowledged regarding the shift of the role of the teacher to uider and coach, and the stages of changes within the role of the teacher as the student develops towards autonomous learning (i.e.,Vygotsky, 1978). It is also widely accepted that cognitive development arises from learning communities, in which shared multiple perspectives and modification of internal representations occur through sharing and reflection (Truman, 2013).

The third key theme within this special issue is that of examining existing technological approaches. The article by Freyens and Gong (2022) addresses whether lecture capture technology improves student performance, acknowledging the dependency on whether lecture recordings supplement or substitute live lecture delivery. The article centres on a parameter referred to as the technical rate of substitution, which holds student performance constant regardless of the capture purpose. The article reports on findings of a pilot study which indicates students' preference for asynchronous learning for reasons of flexibility, and that students who both attended live lectures and watched the recordings scored highest on exams. Several challenges are also highlighted: the reasoning behind students' preference for asynchronous content (e.g., whether to supplement lecture attendance or to substitute lecture attendance) and whether asynchronous availability of lecture recordings may discourage students from attending live lectures. The article adds that lecturers can use the technical rate of substitution parameter to determine the most effective way to deliver different types of content to students.

The use of video is taken further by Colasante (2022), who delves deeper by prompting lecturers to consider the use of video beyond passive student viewing. Lecturers are also prompted to consider types of roles when employing video as a tool within their teaching practice, for example, functional purpose, academic focus and pedagogical strategy.

The final theme of this special issue concerns advances in technology, addressed in the article by Ng (2022). The article focuses upon a hot topic of recent interest, metaverse, which generally refers to virtual reality spaces within which users interact with others. More specifically, the article draws on the various conceptualisations of the term, reviewing its application in differing contexts. The article proposes a model of a metaverse learning environment to enhance student outcomes and educational value.

The articles contained within this special issue highlight key learning theories and permanent improvements to online education practice. What this special issue brings to light is that we must leave behind the traditional view on technology as a conduit of disseminating knowledge to students and develop a contemporary perspective which aligns with the roots of social constructivism. To fully optimise technology in today's digital age, there is a growing urgency to view technology as a series of virtual spaces in which students learn via active participation within a community of peers. At the crux of this is the switch for educators to perceive students as actively learning via processes of exploration and participation, and not merely recipients of electronic content. But as well as the switch from offline to online modes, it is imperative to base instructional design on established theories of learning and aspects of best practice acquired through the pandemic to offer a much needed bridge between technology and education. It is important that research-informed practice is effectively translated within higher education institutions to deliver quality digital learning experiences.

Scaling online education

As we have covered, online education is a type of education, such that learning theories applicable to one mode of learning, for example, face-to face-learning, are also relevant to another mode of learning, for example, online learning. That is, whilst the mode of learning changes, the principles of learning remain the same, they are constant, and it is these principles that need to be reviewed, recognised and replicated, irrespective of a changing climate. However, all too often, online education success stories do not move beyond their instance of origin, innovations occur in piecemeal, in isolated units and courses and within single groups of teachers and learners. For example, a recent inquiry into the orientation programs for online students at an Australian university found that, within this same institution, a range of orientation experiences were offered by academic staff that differed in mode, structure, content, duration and depth – despite the fact that the majority of the content within these programs was the same (Garivaldis et al., 2022). In this example, we see limited impact even of successful orientation experiences, with insight into who benefits where and when largely unknown.

The true value of online education innovation, however, like any innovative practice, is gained when this innovation can be effectively taken from single examples of impact (including those discussed in this special issue) to multiple opportunities for greater reach. The process of extending the success obtained from one innovation to another opportunity involves scaling. Borrowing from the social innovation space, scaling is a tool that diversifies, builds, spreads and deepens the impact of innovation. It enables "activities that act on and improve already existing knowledge, processes, products, services, or interventions to serve more people better" (Seelos & Mair, 2017, p. 7). In fact, scaling has the potential to not only replicate good practice but to contribute to systems change, where impact is achieved at the institutional and cultural level (MaRS, n.d.). One way to achieve this is for examples of good practice to increase, such that they become a majority (from being a minority), to cause a tipping point in practice and enable laggards to participate in embracing such practices, and online education as a whole.

There are multiple ways that scaling can be applied to increase the reach of online education innovation, three of which are referred to as scaling out, scaling up and scaling deep (Riddell & Moore, 2015). Scaling out is when an innovation can be replicated to different communities, such as educators, designers or students, reaching a greater number of people. For example, an online education orientation experience that improves engagement with one group of students (Garivaldis et al., 2022) can be scaled out to benefit more students, broadening its impact. In another example from this special issue, successes found from using a flipped learning approach in hybrid or mixed learning environments in one course of study or the use of

collaborative autoethnography to share the experiences of this approach (Creely & Lyons, 2022) could be scaled out if it were to be implemented in new units and courses of study, potentially benefiting more learners and educators. Sharing success stories, such as through publications such as this, is a first step in the process of scaling out.

Scaling up is when an innovation has the potential to change institutional policies or practices (MaRS, n.d.). Indeed, the changes to teaching practice we have witnessed in the last few years within faculties and institutes of higher education, to adapt to changing contexts, were also accompanied by changes to procedures and guidelines, and sometimes, policies. The articles in this special issue have demonstrated that learning principles have remained the same, but the means or methods in which these have been applied have adapted to current trends, and these adaptations have necessitated new support structures and standards. For example, the successes of intensive block learning in online courses in enabling students to focus on one or two units at a time have led to substantial and permanent changes being applied to all courses and all units at some universities, including to traditional face-to-face delivery (Goode et al., 2022).

Scaling deep is the changing of hearts and minds, of deeper values, cultural beliefs, meanings and practices of people, educational leaders, educators and students and the qualities of their relationships (Riddell & Moore, 2015). Scaling deep involves a transformative approach to creating impact, and paradigm shifts. Online education is a paradigm shift in itself, creating a mindset that education and continual professional development do not need to compromise other aspects of people's lifestyles to occur. Examples from this special issue include the reconceptualisation of the role of the teacher as an agent of the building, nurturing and sustaining of relationships within the classroom (Gunasekara et al., 2022; Kizilcik & Türüdü, 2022) or the role of students as drivers of their learning experience (Konstantinidou & Nisiforou, 2022).

Scaling within the space of online education should, therefore, involve a deliberate effort to increase the reach and impact of successfully delivered online education innovation to benefit more people (scaling out), institutions (scaling up) and teaching and learning practices (scaling deep). To give scaling the best chances of occurring, impact and reach must be considered early on in the design of educational experiences, such as when considering what learners are expected to gain from their learning, as well as how they are to achieve this gain. In simpler terms, learning should be conceived and designed with the scope of being lasting and sustainable, rather than short lived.

Scaling is not without its challenges (Hsieh et al., 2021). Firstly, scaling is most effective when applied within stable environments, that is, stability in learning environments and learning principles. As online education is continuously growing and changing, with more students taking up online courses than ever before and with new technologies constantly being developed, it is wise to consider context when applying practices that have been successful elsewhere. Secondly, the fidelity of the outcomes of learning interventions that have been scaled out from pilot studies or trials, is often reduced. Again, this can relate to local, contextual factors that have unknown impacts on outcomes. The very nature of participants, their demographics and needs can create some of these discrepancies. Thirdly, adopting new practices can be an arduous and costly process: another important consideration in terms of new practice versus scaled practice.

Principles for best practice online education

In sum, it is safe to say that online education is here to stay. Recognising what is stable, lasting and sustainable, as we have attempted to do in this special issue, can inform which innovations and stories of impact can be taken further.

Examples of non-optimal online education include onlinifications (and by this we mean the process of uploading to the Internet in their original format) of existing traditional face-to-face courses and the development of new courses that are not student centred and not transformative. Courses that adopt this process do not utilise the full potential of the medium, are not strategically guided and do not reflect universal education principles. Consequences of non-optimal online education may include students not iking it, at least not as much as face-to-face education, or being confused about dual delivery models, as demonstrated by student surveys. There have even been anecdotal accounts of student revolts, where students demanded that online course components be reduced (Picton, 2022. Our new generation of online education therefore needs to optimally combine and build on the best of the old – universal education

principles and the new – methods allowing realisation of the full potential of the new and exciting medium – to be the best that it can be.

We therefore offer the following lasting online education guiding principles, which emerge from the papers in this special issue and the broader literature base, to help align online education with other disciplines which benefit from an a priori specification of shared values, standards or commonly recognised optimal practices.

1. Be clear and transparent about your online education motivations

Online education works best when it is based on optimal underlying motivations as well as on optimal practices and standards. Online courses should be chosen, developed, refined and implemented to benefit their students and potential students as well as the institutions that are offering them. The primary motivation for introducing or expanding online education programs can be to increase student choice and to expand education reach and power, rather than to react to a changed education environment (including the one that has been accelerated rather than caused by COVID-19) or to the fear of missing out.

Similarly, the vital principle o no harm, borrowed from the medical profession (Sokol, 2013) and applied here, can help with recognising that no matter how enthusiastic one is about developing and implementing valuable online education programs, practices and research, one needs to evaluate the impact on student learning to ensure that students are not negatively affected by the implementation, according to appropriate evaluation criteria.

2. Strategically and systematically incorporate universal education principles

Online education practices and processes need to be guided by principles that are not modality-specific, but apply across all modes of teaching and learning. These principles need to guide development of optimal student-centred learning environments and courses that ensure that students experience:

- equity and inclusivity
- a sense of community and connection
- engagement between students and other students and between students and faculty
- learning diversity and flexibility including in the way that information is presented
- deep and transformative learning.

All of the above are present in the higher education standards framework put forward by the Department of Education, Skills and Employment (2021) and/or captured by the United Nations Sustainable Development Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (United Nations, n.d.).

3. Choose and use an appropriate online education model

There are many potential paths to online education success and it is important to recognise this choice and to strategically choose online education models that are appropriate to the institutional and programmatic context. Online education design and delivery models can for example be fully online or dual delivery (hybrid), they can be light touch or more student directed, and can even be Spartan (minimalist) or Athenian (maximalist) as described by McKenzie and Garivaldis (2020). Regardless of the chosen online education model, it is important that it be purposefully selected a priori, rather than applied post hoc. It is also important that online education models meet student needs informed by evidence, including student preference data, rather than on subjective ideas of what students want or need.

4. Use research evidence to optimally develop and refine online courses

The papers presented in this special issue all provide examples of online education–related research that supports the development of optimal online education. These include evidence to support the use of creativity in the online classroom (R. C. Anderson et al., 2022), optimal student engagement with online learning (Goode et al., 2022) and the need for students to feel supported in their online learning

(Konstantinidou & Nisiforou, 2022). Online education decisions, developments and refinements can be based on practitioner experience as well as general or program-specific research evidence.

5. Aim for whole-student success

Education that includes an online component needs to allow and encourage whole-student success, which includes whole-student experience success, well-being success, work readiness success and academic success. Online work and study environments are sometimes more narrowly focused on *core content* than traditional face-to-face environments because there are fewer opportunities online for serendipitous, non-structured information exchanges, such as when workers or students talk to each other in a tea room or before a class. The physical learning environments are more likely to include features that support recreational, connection and well-being and mental health than online education environments. They are also more likely to enable non-task-focused, valuable, whole–student education activities such as students connecting with other students on the way to or before the start of face-to-face classes. In addition to academic equivalence, online education needs to aim to achieve more subtle and non-academic equivalence with face-to-face education. This is a vital need given the high levels of stress and mental health challenges that face-to-face as well as online students are currently experiencing (Larcombe et al., 2021; Sharp & Theiler, 2018; Thorley, 2017). Optimal achievements beyond academic success can be supported by the creation of online equivalents to services and facilities, such as student orientations, student memberships to clubs and societies, and student support services, and by recognising the need for an online student hierarchy of needs that includes well-being (Chung & McKenzie, 2020).

6. Design educational experiences that are sustainable and scalable

The concept of scaling is not new, and there are a number of enabling factors we can draw on from other literature (Hsieh et al., 2021) that can improve the practicality of achieving scaling success and reduce the impact of the aforementioned challenges. These include making the innovation (a) simple, such that the contingencies that determine its success are few, (b) translatable, such that it can be easily applied and contextualised to new opportunities and (c) agreeable, such that there is agreement of its suitability and value by key stakeholders, including designers, educators, and students.

7. Centre the learner in the design of the learning experience

The concept of learner-centredness is much discussed across modalities and forms of education. Centring the learner, however, is often easier said than done, as it requires us to design from the viewpoint of the learner and their needs. The papers presented in this issue inform the design of course environments, activities or practices from the perspective of what best serves learners. There is no single best approach to learner-centred design, as this can mean many things, including developing grading and/or feedback practices that best support learners' needs (as opposed to instructional convenience), the use of tools that best support learner collaboration and connection, engagement of best pedagogies of care, and much more. Learner-centred learning and teaching very much align with the notion of the instructor's perspective as that of a designer of experience, as the best designs always try to empathetically engage the perspective of the user.

Conclusion

This special issue of the *Australasian Journal of Education Technology* has provided a valuable opportunity for a deep and deeply practical consideration of how online education can be the best that it can be. For online education to be genuinely optimal rather than opportunistic, it needs to be developed and evaluated according to guiding universal principles or lasting education theory. We have a great opportunity to shape the strategic evolution of online education by developing and implementing shared guiding principles and help online education be planned rather than random. The development of online education guiding principles can be valuably guided by the themes of this special issue, which together show how universal and lasting learning theories can both transcend and engage with the online modality, enabling optimal pedagogical practices and design for deep learning.

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Please cite as: Garivaldis, G., McKenzie, S., Henriksen, D., & Studente, S. (2022). Achieving lasting education in the new digital learning world. *Australasian Journal of Educational Technology*, *38*(4), 1–11. https://doi.org/10.14742/ajet.8331