The concerning persistence of weird ideas about learning and educational technology and their influence on the future directions of higher education

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Many volumes have been devoted to intuitive but misguided ideas about how learning works. This is as true in the use of educational technologies in higher education as it is in other related fields of educational research. As we (hopefully) emerge from the COVID-19 pandemic, educational technologies are poised to feature more heavily in post-secondary education into the future. There is a substantial incentive for bad actors to provide oversimplified solutions to complex problems. These neat solutions may seem attractive to sector and institutional leaders looking for solutions to the morass of wicked problems the pandemic has inflamed. The pages of this journal and others provide a venue for world-class research on the use of educational technologies in higher education. Despite this enormous volume of high-quality work, misconceptions and oversimplified notions of learning with technology persist. Much has been made of weird ideas about learning but, with higher education facing an increasingly uncertain digitally-mediated future, there is significant risk that these ideas could have a profound influence on the global higher education sector into the future.

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Disrupting post-COVID higher education

The COVID-19 pandemic has changed everything we know about learning and educational technology. The cohort of digital natives now entering higher education are much more creative and right-brained than their predecessors. They demand flexibility, not just in terms of needing education anytime, anywhere on any device, but also having the option to engage with their learning in their preferred learning style. Teachers need to create very high production value videos of no longer than 45 seconds and communicate them via Snapchat and TikTok because that's where students want to learn. Teachers also need to ensure that they cater for the kinaesthetic learners in their cohort through constant movement. Higher education institutions need to disrupt every possible aspect of their teaching and learning operations or risk becoming the next Kodak or Blockbuster Video. Campuses need to be reinvented for Instagram. Online learning environments need to be like Facebook. The more innovation that is facilitated the better; quality will look after itself. Students who are happy will learn more, achieve more, and revolutionise the world after they graduate.

Does any of this sound familiar? Sadly, it likely does to many in higher education around the world. It is the kind of opening spiel you can find in glossy brochures from consulting firms or the abstract of a talk to be given by your local guru, 'futurist', or 'ed-tech evangelist' - whatever that is supposed to be. We'd rather not point to specific individuals or organisations here, but we are certain that it won't take much searching to find plenty of examples of these kinds of pitches. The pandemic itself led to an explosion of misinformation and disinformation about many different aspects of the COVID-19 experience and institutional responses. With the rapid shift to online learning over the last two and a half years, educational technology was not exempted from this trend. However, with some notable exceptions (e.g. Teräs et al., 2020), there is little to suggest that there has been the same level of backlash against falsehoods spread about educational technology as there has been in the health, social, or political spheres. Why is that?

There is a long history of intuitive but incorrect ideas about learning that dates back decades. These include the notions that students only use 10% of their brains, that they can be left or right brained, or that modality-based learning styles should be a foundation for design. There is nothing new or different about debunking myths, it has become somewhat of an 'academic bloodsport' (Lizzio, 2022). There is an enormous volume of research and commentary on these false ideas already (see for example: De Bruyckere et al., 2015). However, there are two pressing issues that flow from the persistence of these misconceptions. The first is the underlying causes of these misguided ideas. Where these ideas are being generated can be problematic for reasons that have been discussed extensively. For example, Kirschner and van Merriënboer (2013) discuss the problem of beliefs and convictions taking primacy over empirical evidence.

The second urgent issue associated with the persistence of weird ideas about learning is that there is now a moment of reflection stemming from the experiences of online and digitally-mediated learning during the COVID-19 pandemic. There is much sensible commentary about the 'new normal' for higher education (e.g. Rapanta et al., 2021). Some of the commentary is, however, troubling because it is apparent that the experiences of many who needed to shift to online mode with almost no preparation do not reflect high quality digitally-mediated learning any more than a life raft resembles a luxury cruise liner. The experiences and observations of teaching and learning during the pandemic do, however, make great anecdotes for driving change. These anecdotes then serve to fuel the persistence of intuitive and appealing but flawed ideas (Lodge et al., 2017). The combination of an apparent paradigm shift in combination with misguided ideas has grave possible implications for the future of higher education. Observations reinforce intuitive but incorrect notions, which, in turn, provide a shaky foundation for decision-making.

What has and has not changed?

Despite the concerns we have raised here about any lessons that might be gleaned from the pandemic, it would be naive not to recognise that the COVID-19 situation is without doubt a turning point for the use of educational technologies in higher education. Again, this fundamental shift has been described elsewhere (e.g. Thompson & Lodge, 2020). Some of this commentary suggests that everything about learning has changed since the pandemic (again, we prefer not to identify specific people or groups). That is simply not the case. Paraphrasing Richard E. Clark (1983), shifting a truckload of vegetables to a train doesn't change the nutritional value of the food. Similarly, there are many fundamental aspects of learning that do not change when moving learning from a face-to-face setting to a digital one. Interaction, engagement, sharing ideas, working with others, being challenged, experiencing purpose in the learning; all these remain core elements of high quality learning regardless of mode. Similarly, the idea that a supposed expert talking at a group of students for an hour or longer is, in most cases, not ideal for learning regardless of mode. Many aspects of high-quality learning, student support and the student experience in higher education are mode independent.

So, the question then is, what lessons can be taken from the pandemic? One of the key aspects of the shift to online learning that was challenging a decade or so ago was the ability to learn together, in multimedia at the same time in different places at scale. Prior to the early 2010s, there were possibilities for webinars and videoconferencing (e.g. Andrews & Klease, 1998), but these were often too unreliable or difficult to be viable alternatives to a live class. The possibilities of videoconferencing are a relatively recent addition to the list of affordances of educational technologies and are, therefore, largely foreign as a means of communication and interaction for many, particularly compared to face-to-face interaction. There is still much to learn about how to do webinars and videoconferencing well for learning. This would seem to be a fruitful avenue for research that is desperately needed. There has been much work attempting to understand the phenomenon of videoconferencing (e.g. Correia, et al., 2020), but we are still some way from understanding how to maximise the benefits of this relatively new mode and to integrate videoconferencing within broader pedagogical approaches and strategies. This is particularly the case in institutions or systems of higher education that do not have a history in online learning. More work on the tactics or microskills required to run videoconferenced learning would also be beneficial. We do not suggest here that there has not been some research on these issues, more that there is still much we could learn about how to do videoconferenced learning well.

Many fundamental aspects of high-quality learning remain important as a foundation for the design and delivery of higher education as we (hopefully) emerge from the pandemic. These foundations should, as always, inform policy decisions also. The 'new-ness' of videoconferencing relative to other forms of

communication perhaps conjures a level of excitement about what might be possible. A veritable armada of dust-covered electronic whiteboards within educational institutions around the world serve as a constant warning about the risks of getting carried away with new technologies before we really understand how they can be used effectively (or not).

What got us into this mess?

Compelling ideas that do not align with evidence often have a kernel of truth that facilitates their ongoing popularity. It is true that people do often have preferences in learning, for example. Does it help to design learning activities to cater for these preferences? The evidence suggests that it does not help (see Pashler, 2009). Ideas that are intuitive and that reduce a complex reality into a simple heuristic have great appeal, particularly in higher education. Take another example, that students are deep, surface, or strategic learners (Entwistle et al., 1979). There is a kernel of truth that students may often fall into one of these categories, but learning patterns and strategies are far more complex (Vermunt & Donche, 2017).

Some (e.g. Teräs et al., 2020) have pointed to consulting firms and technology vendors as nefarious actors who use intuitive notions about learning and technology to make sales. The amount of money globally that is invested in educational technologies would certainly provide motivation for bad actors to leverage a crisis and use the allure of a simple solution to a complex situation to make a buck (or several million). The complex set of problems brought about by the pandemic serve as a clear example of a situation where simple solutions would have been appealing to institutional and sector leaders. The current moment is therefore high risk as far as the perpetuation of weird ideas go because their intuitive appeal may set institutions on a course out of the pandemic that is not built on sound evidence.

The debate about what the appropriate evidence to inform education has been raging for a century since Dewey and Thorndike (Zimmerman & Schunk, 2014). On one side of the debate are those in the tradition of using rigorous randomised control trials to determine generalisibility across contexts. On the other are those who see the context as the primary point of consideration. What is perhaps common to both sides is an overall unwillingness to be generous to the alternate viewpoint. The issue is perhaps best exemplified by the heated debate about whether direct instruction or inquiry-based approaches are best (see Bakker, 2018).

Going beyond evidence, there is also the question of expertise when it comes to the use of educational technologies in higher education. Researchers, teachers, designers, technologists, leaders and many others have some expertise in aspects of the use of technologies in this context. Echoes of the century-old debate were remade in 2020. The lab vs. the classroom has evolved into the lab vs. the classroom vs. the design team, vs. the tech company vs. higher education leaders vs. policymakers. All parties have expertise in parts of the problem and potential solutions, none have all the answers. As is alluded to in the widely used Technological Pedagogical Content Knowledge (TPCK) framework (Mishra & Koehler, 2006), it is rare for anyone to have deep expertise across all domains and applications.

It is often lamented that evidence is not used in education as it is in health but the analogy is flawed. There isn't the same ecosystem of complementary approaches, professions and sub-disciplines in education as there is in health. For example, what is the educational equivalent of epidemiologists? Even if there are some who use approaches similar to those in epidemiology, the separation of the approaches used here is nowhere near as evident as it is in health and medical settings. Therefore, not only is there widespread disagreement about the suitability of various forms of evidence and expertise, there isn't much clarity about the ecosystem in educational technology research, practice, policy, and management to plot a clear path out of the current situation.

Overcoming the hard problem

There is disagreement in some quarters about what is the appropriate evidence to use for the design and use of educational technologies in higher education (e.g. Henderson et al., 2018). However, the usual response to issues raised about the use of evidence is that researchers, practitioners, leaders, and policymakers should work together. Indeed, this is a point we have also previously made (Thompson & Lodge, 2020). Agreeing on the appropriate form of evidence and/or expertise to draw upon for educational technology in higher

education is difficult because each party brings to any collaboration a distinct set of values, assumptions, and epistemologies that are, in many cases, incommensurate. This situation has been referred to as the 'hard problem' of interdisciplinary or interprofessional collaboration (Palghat et al., 2017).

One hundred years of debate about appropriate evidence and expertise for designing and enhancing education leaves us with a complex problem to overcome. The research community is tribal, as anyone who has attempted to cross the quantitative/qualitative divide can attest. Beyond this though, there are tribes and territories (as per Becher & Trowler, 2001) along disciplinary, organisational, and professional identity lines also. There are no laws, no formula, and no phenomena observed in a lab that apply directly to the use of educational technologies in higher education. At the same time, the basic research on learning relevant to educational technology is not simply a reductionist fantasy with no connection to reality as though the learning sciences still see the world through the lens of a Skinner box. A range of empirical evidence across the longstanding and emerging divides is needed.

The understanding and use of educational technologies in higher education is a complex undertaking. The pages of this journal over many years are bristling with the outstanding work of a community of committed scholars attempting to improve learning and teaching in tertiary education with educational technologies. Despite this, weird ideas persist and continue to feature in practice and policy discussions. Does it matter? If an intuitive but incorrect idea is helpful, does it matter if it doesn't align with the basic research? We argue that the disconnect between basic research, practice, and policy does matter. At a minimum, incorrect assumptions about learning lead to wasted time and effort. At worst, there is potential for detrimental effects on students. For example, there are strong negative consequences for assuming that all young people are digital natives, as outlined in detail by Marshall (2018).

It is somewhere between flippant and a cliche to suggest that the solution is for all parties concerned to work together. That is undoubtedly part of the solution. Until there is more of an appreciation of the different evidence and expertise that people across the tribes and territories bring, it is fair to suggest that there is much more to be done to understand and effectively use educational technologies in higher education. Given the apparent paradigm shift that the global higher education sector seems to be going through, now would seem to be an appropriate time to reach across the divides. This will be easier said than done though as the 'academic bloodsport' of assuming the worst, 'problematising', and critiquing/dismissing the methodologies, professional status, expertise, and worldviews of others in educational research, policy, and practice is arguably wildly more popular than that of debunking myths.

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