

How Educational Technology Can Help Support Sound Pedagogical Approaches and Practices

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The Association for Educational Communications and Technology (AECT) defines the implementation of educational technology as “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources.”¹ The practice is one of continual growth as new evidence-based teaching and learning approaches emerge, new technologies are developed, and institutional needs change. Learning analytics, augmented and virtual reality, personalized and adaptive learning — there is no shortage of content for higher education articles touting, or disputing, the latest and greatest emerging educational technologies and trends, and/or their potential impact on teaching and learning. The only consensus is that the landscape appears to be in constant flux, which can leave faculty feeling overwhelmed by questions: *What if I change my teaching style; is the work worth it? Will it work? Will it be replaced by something better next week, next month?* While these are all valid questions, I would like to suggest that the educational technology itself is not a silver bullet; it is an approach that should enhance sound pedagogical approaches and practices.

Such approaches can be summed up by asking five core questions, namely: 1) who we are teaching, 2) what we are teaching, 3) how are we going to teach, 4) is it all aligned, and 5) who is going to support us?

Who are we teaching?

Sound pedagogical practice encourages instructors to identify where a student is in his/her learning, gaps in their knowledge, and/or any misconceptions they may have about a given topic. This is at the core of good teaching practices and is not limited to our current student demographic. Utilizing frequent formative assessments and feedback loops can provide both the faculty member and the student with a better understanding of where they are in their learning progress. Educational technology can facilitate these opportunities through quizzes in a learning management system, student-response systems, and/or personalized content review systems.

A second key consideration regarding who we are teaching is an understanding of learner abilities. Our current generation of learners live in an on-demand society — online shopping, watching, drop-in medical appointments, etc. — so it is not surprising that they have come to expect a level of flexibility and convenience in their education. However, the level of technology savviness displayed by these digital natives has resulted in various myths,² including an expectation that these learners are 100% comfortable with learning in an online environment. Educational technologies can facilitate blended and online learning, but support is needed to

help learners — and the faculty who are teaching blended and online courses — to navigate the online environment in order to reach the desired pedagogical objective(s).

What we are teaching?

As experts on a topic to which faculty members have dedicated their professional lives, it is easy to believe that learners should be as passionate about the intricate details of a topic as they are. But this belief runs the risk of distracting from the core of what the learner needs to know about a given topic. We must ask ourselves what is ‘need to know’ versus ‘what is ‘nice to know’ about the topic at hand; what are the three to five core concepts we want learners to take away from each lesson; what is the best delivery medium (e.g., text, animation, video, etc.) for each concept; and are the concepts presented in a logical sequence? These key questions posed during initial phases of the educational technology process can often identify areas for improvement and result in a clearer, more logical experience for learners.

How are we going to teach?

Harvard professor and father of the flipped classroom, Eric Mazur, frequently opens his talks with the story of when he stopped asking what he was going to teach his students, and started asking how he was going to teach them.³ He realized that his previous teaching approach mainly involved the passive transfer of information, i.e., what he was going to teach, and resulted in a lack of meaningful learning and retention. In search of ways to encourage such

meaningful learning, he incorporated more active learning strategies into his teaching. The flipped classroom is an active learning strategy, and involves learners becoming familiar with new material outside of class, in an online environment, freeing up in-class time for practice and the application of new knowledge. Educational technology can facilitate the delivery of the online portion, allowing for more free time in class for active learning strategies such as case-based teaching, problem-based learning, and group discussion.

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A second key consideration regarding how we are going to teach is the ability to identify pitfalls and misconceptions that may be experienced by novice learners. To do so, we must establish a strong foundational knowledge-base for the learner and explicitly build upon that foundation by linking new content to existing knowledge, allowing for a level of mastery of

foundational knowledge which in turn allows for deeper cognition. Foundational knowledge can be designed and delivered through the use of educational technology, including personalized learning systems, and referred back to as often as needed by novice learners.

Is it all aligned?

From a pedagogical perspective, alignment refers to the clear and logical connection among three key aspects: course content, delivery of that content, and the assessment of a student's understanding of that content. If an assessment is not clearly aligned it is almost impossible to evaluate where the root cause of a breakdown in student understanding may be. For example: Are students not performing well on a question in the mid-term because the question is unclear, the content wasn't covered in sufficient depth to answer the question, the delivery method was not optimal, or there was a lack of scaffolding from novel to complex aspects of a topic? Without this fundamental alignment, an evaluation of the impact of any change in the way the course is taught, or of the use of a new educational technology, is virtually impossible.

Who is going to support us?

How do we as an institution cultivate what Carol Dweck calls a growth mindset culture⁴ of "I'm a good teacher, but I want to be great!"? As many who have engaged with the process of educational technology will attest, it is a commitment of both time and effort for all involved that has fundamentally changed how they teach for the better. But what additional support struc-

tures could we provide to facilitate this growth mindset and teaching and learning exploration? Perhaps additional funding, or stipends, or course release? Perhaps integrating experimentation and innovation in teaching into the tenure and promotion process? We need to cultivate, encourage, support, and reward for the additional time, resources, and effort which go into improving the teaching and learning experience at our institution. This, in turn, would allow us to produce evidence-based research on the *Scholarship of Teaching and Learning (SoTL)*⁵, which could improve our understanding of the potential of specific educational technologies to enhance the field of teaching and learning as a whole. ■

Endnotes

¹Januszewski A & Molenda M. (2008). Educational Technology: A Definition with Commentary. Retrieved from https://aect.org/educational_technology_a_defi.php

²Moran K. (2016). Millennials as Digital Natives: Myths and Realities. Retrieved from <https://www.nngroup.com/articles/millennials-digital-natives/>

³Mazur E. (2014). Memorization of understanding: are we teaching the right thing? EDULEARN14 Keynote. Retrieved from <https://www.youtube.com/watch?v=nbVL5diULD4>

⁴Dweck C. (2015). Thinking Big About Learning: Teaching a Growth Mindset. Retrieved from <https://www.youtube.com/watch?v=isHM1rEd3GE>

⁵Center for Engaged Learning, Elon University. Retrieved from <https://www.centerforengagedlearning.org/studying-engaged-learning/what-is-sotl/>

Suggested Reading

Lang J. (2016). Small Teaching

Brown PC, Roediger HL, & McDaniel MA (2014). Make it Stick: The Science of Successful Learning

Leslie I. (2014). Curious: The Desire to Know and Why Your Future Depends On It