EDUCATION TECHNOLOGY SPECIAL

CIOReview

The Navigator for Enterprise Solutions

MARCH 07, 2017 CIOREVIEW.COM

IN MY OPINION

TOM ANDRIOLA,
VP & CIO,
UNIVERSITY OF CALIFORNIA

CIO INSIGHTS

SHARON P. PITT,
AVP & CIO,
BINGHAMTON UNIVERSITY

Martin McKay,
CTO & Founder

Texthelp

Bringing Literacy to Life

$ 15US SE 13

0 74470 91626 0

CIO REVIEW
44790, S Grimmer Blvd.
#202, Fremont, CA-94538

The Transformation of Education: What Role Does Technology Play?

By Tom Andriola, VP & CIO, University of California

People who know I came from the healthcare industry, before joining higher education, often ask me to compare the two. Even though my experience in higher education is still relatively short, I have observed evolutionary similarities that present both great challenges and opportunities for higher education IT leaders in the years ahead.

Over the last sixteen years, I have watched a technology-associated evolution in healthcare that includes stages of challenge, struggle, hype, failure, rebirth, struggle, adaption and the process continues. I see education in the early stages of such a technology revolution and think the next ten to fifteen years will be as transformational (and fun) as any time in modern history.

In higher education, we use the phrase "educational technology" largely to refer to the confined context of technology in the classroom and its potential impact on pedagogy. At a time when many people critical of education want new ways to measure value, that context misses the bigger picture and larger opportunity for transformation in education.

I prefer expanding "educational technology" to mean the intersection of technology and data in the innovation cycle that leads to increased value creation. That is a lot of buzz words, but the essence of what I mean is that:

1) Innovation will be driven by moving toward more evidence-based decision-making;
2) Data should be seen and leveraged as an asset, so logically, more data represents more assets; and
3) Technology by itself is not transformative; it is merely a tool and only as good as how it is used and implemented.

I also find it interesting that the new dialog in education uses the term "outcomes," which was very much part of the evolution in healthcare. Education is hungering to find credible means to quantifiably demonstrate quality outcomes for students beyond, "did they graduate on time or not?" I see the future of education being defined through the intersection of technology, data, smart devices, and intelligent software for the future engine of innovation—with a focus on better outcomes.

Outcomes are another way of saying we are looking for evidence-based decisions. The focus on outcomes will drive very important industry transformations because it "begins with the end in mind" and necessarily raises questions that challenge current assumptions. Those questions might include assumptions around pedagogy, appropriate uses of data, formally captured vs. self-generated data sources, and the role of machine learning and artificial intelligence in the future of the learning and assessment process. These questions may even go back up the value chain to examine the professor-student data interface.

In healthcare or higher education, the pace of change is tied to the adaptability of the expert provider (doctor or professor). As generational turnover happens and a natural increase occurs in the percentage of professors who are digital natives, you will see an acceleration of these trends.

I also believe today's student population is ready for these changes and a data-driven and outcome-focused world. They grew up with technology in the palm of their hands and accessed it with their fingertips as often as a keyboard. Mobility for them is not an option but rather a way of life. They share their lives through social media, which gives us clues about what's going on with their world. There are billions of dollars being invested into healthcare products and services to attain data that education already possesses. For educators, all this self-reported data is a treasure trove in addition to the formal mechanisms we've used to create student profiles. Sometimes we collectively call this their "digital footprint," or to steal a healthcare term, the "quantified self." All this data, once seen and leveraged as an asset, can be brought to bear to help each individual student be successful. You might call it precision education, like individualized "precision medicine" in healthcare–now a national priority in the United States.

Let me share with you a plausible future: The University of California has 238,000 students—all individuals with unique needs. We could address this population's needs the way we use healthcare population management strategies, like in managing


Tom Andriola

diabetes. In healthcare we use the formal data in the health record combined with self-reported data though home-based or personal devices, such as a Fitbit. We could think about student populations in a similar way. We already formally collect data from student systems and learning management systems, and could also leverage more and more self-reported data.

For example, the type of innovations we see at the university is increasingly about being able to deliver information, such as helpful hints and reminders to students, on their mobile phones. The university could help keep students on schedule with regard to everything from assignments and advisor meetings to self-care tips about healthy eating and getting sufficient rest. This is just the start from my perspective. As more machine learning and artificial intelligence applications find their way into education, I think we will create the opportunity to transform the student experience and improve the success rates. Our faculty has shown great interest in this as a research topic and will ultimately drive the innovation cycle. Ultimately, "educational technology" will mean much more than technology in the classroom.

In the way the Internet fundamentally changed how we buy books or plan our travel, so will technology change how we educate our population. We have always been an adaptive culture, and I believe higher education's adaptation will happen as well. It is only a question of how long it takes to reach critical mass and what is the impact on those at the tail end of the adoption curve.

I'm looking forward to the journey. CR