Editor’s Perspective Article: The Future of Education through the Lens of Disruptive Innovations

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Abstract

The focus in this issue’s Editor’s Perspective article is on the future of education examined through the lens of disruptive innovations. Recent technological developments have changed the ways in which many industries have operated, and while we have not seen much impact on schools and universities yet, those changes will likely manifest not far into the future. This article addresses several areas of change that new teachers may experience in their careers and lifetimes. This will be contextualized through alternative certification preparation for teachers.

Keywords: future of education, technology, alternative certification

The views expressed in this article are the editor’s views and do not necessarily reflect the views of the National Association for Alternative Certification.

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I have been interested in how technology changes both society and education for a very long time. For example, in the 1990s I had imagined that one day people would be able to communicate in modern languages through a headset with an ear piece, glasses, and microphone so that the other person could both hear and speak in his or her native language. The glasses would be used to help the user read in the other language. I had no idea how close we would get to this point by 2018 with automatic translation apps and software including Google Translate. Science fiction becomes reality. I'll have more to write about that later in this article.

The ubiquity of the Internet and smart phones in our lives has radically transformed how we live from buying plane tickets, banking, shopping, socializing, and soon the way in which we learn. Few could have predicted in the 1980s or 1990s how much change we would experience over such a short time. Entire industries have been disrupted by this seemingly simple technology that is essentially a communication tool. Newspapers, record companies, book publishers, traditional retail, and the travel industry, among others, have seen their profits reduced and/or redirected to other more innovative players such as Amazon and Google. The profitable New York City taxi industry, with its formerly desirable and expensive medallion system, enabled medallions that conferred the right to operate a taxi to be sold for approximately $1.3 million in 2013, and in 2017 medallion prices hit a low of $241,000 with averages between $325,000 and $750,000 (Agovino, 2017).

A comparison can be made between the Internet and Guttenberg’s printing press in the mid-15th century, which would launch the scientific revolution soon after due to quick, cheap, and efficient spread of knowledge through print. Researchers had a better way to read what other researchers had produced, and they in turn could build on that knowledge and disseminate to others who were working on their own research. My hypothesis, as articulated in my book (Evans, 2014), is that we may enter a new golden age, and perhaps another scientific revolution, as we move toward the mid-21st century. While the Internet and smart phones certainly provide us with plenty of opportunities to enjoy entertainment and waste our time, valuable information can be gleaned quickly and efficiently at almost any time that we have a Wi-Fi connection or cell signal. This has profound implications on how we teach and learn in the coming years. Instead of focusing on facts and dates, teachers have opportunities to explore deeper and better topics. For example, children in the United States memorize that Christopher Columbus sailed in 1492. While that date is still very important in an historical context, it can be found rather quickly through a quick online search. In the United States in 2018, many people have a smart phone with them at nearly all times. The implication from this is that this information can be found quickly and effectively. The implication for teaching is that perhaps not as much time is required for dates and facts as we might devote more time for deeper learning such as, for example, a conversation about the implications of Columbus’ voyage on the Americas and the people who were already living there.

We already see this situation arise in my area, mathematics. When I was in school, I learned how to take the square root of non-perfect square by hand (e.g., finding the square root of 10). However, later classes didn’t spend time on this cumbersome process in the way that some schools may choose to deemphasize long division given the ubiquity of the hand held calculator. In fact, many people today have calculators on them at all times because of their smart phones.
Returning to the discussion of learning language, we’re not very far from using glasses and headsets to communicate in another language, albeit through our phone which I didn’t predict, to communicate to people on a trip oversees in a tourist or business environment. Will language instruction in school cease to be important? Probably not right away, if at all. Studies are clear that learning a second, or third, language has positive cognitive benefits beyond being able to communicate with another person in a different language (Delistraty, 2014; Marian & Shook, 2012). This means people will still learn other languages, but not necessarily for the same reasons that you and I would have. However, before we arrive there, we still might see technology change the way we learn language in the very near future. For example, a study showed that using the app, Duolingo, could be as effective as spending approximately one-third of the time as a traditional one-semester college class in Spanish, if we consider homework and class meeting hours (Vesselinov & Grego, 2012). The impact this might have on language instruction is that technology such as Duolingo would allow teachers to require students to study vocabulary and sentence construction through the app at home, and then use valuable class time for more important and bigger ideas such as practicing what was learned, discussing culture, and other important ideas that many teachers currently do not have time to do. In my own area, mathematics, we can see this happening in the “flipped” classroom in which students learn the basics at home and then use class time to practice, which is the opposite of how we traditionally teach mathematics (i.e., learn the basics in class and practice at home). The popularity of the Khan Academy videos relate to this.

The implications for disruptive innovations in education is a movement away from what technology can provide for us through computer software (including calculators and statistical software in a mathematics example) and online search, and a movement toward more critical thinking and deeper learning. At least for now, and until some point where artificial intelligence might replace every job, teachers still will be needed to foster deep thinking in their students. Teacher education programs will need to adapt to this new environment in the way newspapers, record companies, and retail outlets have had to adapt and will continue to adapt. Increasingly, we’re likely to see a continued shift toward alternative teacher certification and a continued need for high quality teachers. Currently, one in five new teachers go through alternative pathways (Kamenetz, 2014; U.S. Department of Education, 2013), and U.S. News and World Report cited teaching as one of seven peak fields of the future including 1.4 million new jobs by 2020 (Favreau, 2013). The major shift will be in our expectations for good teaching. Teachers will be expected to foster deep thinking within their students, and also be adept at using technology that supports good learning. At least for the foreseeable future, good teachers are highly needed.
References


