

# Could Educational Technology Replace Traditional Schools in the Future?

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## INTRODUCTION

During a recent presentation, Professor Karen Willcox, Professor of Aeronautics and Astronautics and co-Director of the Centre for Computational Engineering at the Massachusetts Institute of Technology, showed a painting of a university classroom in the Middle Ages with a teacher on a podium at the front of a room lecturing to a group of students, one of whom was asleep. Her next picture was of a twenty first century classroom with a teacher at the front lecturing to students, some of whom appeared to be uninterested. Her point was that little has changed in university classrooms for centuries, yet the affordances of e-learning suggest that university education could change more in the next fifty years than any change in the previous five hundred years.

## BACKGROUND

The scenario portrayed above is also visible in the compulsory schooling sector where the majority of compulsory education still occurs in classrooms with a teacher, but it could be argued that technology-induced change is already occurring. Information and communication technology has penetrated even the most remote schools in developed countries and is infiltrating schools in some of the least developed countries in the world. Futurists have predicted the demise of many brick and mortar universities resulting from the affordances of technology that allow learning to occur anytime, anywhere and in whatever format the learner desires. What of bricks and mortar

schools? The growth of virtual education is not limited to adult education, schools are already incorporating virtual education into their educational programmes and some parents are opting for home based virtual education in preference to traditional schooling. Marketing of educational technology has attracted some of the biggest names in business and the education market has become an important component of the world economy, so change is inevitable.

The presence of technology in a classroom should not be seen as an indicator of change in the learning process; the early use of computers in schools was merely replacing teacher instruction with computer instruction, termed programmed learning. In both cases the instruction was top down, based on the view that the teacher or computer programmer was the font of knowledge whose task was to deliver information for the student to memorise. This instructional process can be useful for the delivery of some learning, such as presenting factual information, but the exponential growth of knowledge resulting since the computer revolution began, and the ease of access to that knowledge via technology, makes knowledge transmission possible without the need for a teacher in a classroom. It is easier to keep a computer up to date with the latest knowledge than to keep a teacher up to date. So what is driving changes to the form of schooling as it has traditionally been known?

## Changes to Schooling

Globalisation has changed the range of knowledge, skills and dispositions required for a satisfying and

DOI: 10.4018/978-1-5225-2255-3.ch211

productive life. Traditional employment areas such as book-keeping have all but disappeared, new vocations such as mainframe computer engineers were created and then outlived their usefulness, and the world economy has lurched from one crisis to another due to influences beyond the control of any one individual. Soft skills are now needed to compete in a rapidly changing world and education must adapt to meet these changes.

Learners have changed too. The so-called Generation Z students are now in compulsory schooling. There is a debate about the definition of Generation Z. Geck (2006) indicated that the term is used to describe the students who born in or after 1990, Shatto and Erwin (2016) stated that Generation Z follows the Millennials, while Seemiller and Grace (2016) said Generation Z's students were born between 1995 and 2010. According to Seemiller and Grace (2016), Generation Z students are "loyal, thoughtful, compassionate, open-minded, and responsible" (p. 8). Viewed from family perspectives, Seemiller and Grace suggest that the personality characteristics of Generation Z are unique, because Generation Z students are raised by Generation X parents with an emphasis on individual responsibility and independence.

Although the dates that define Generation Z may differ, scholars have reached consensus that the world of Generation Z is shaped by the internet (Bassiouni, & Hackley, 2014). Generation Z are the first generation to spend the whole of their life in a world dominated by social media use. Viewed from social media perspectives, a Pew Research Center (2014) study indicated that millennials are "digital natives—the only generation for which these new technologies are not something they've had to adapt to" (para. 7). They have more reliance on social media such as Facebook than their older generation. An example of the influence of the internet can be found by viewing YouTube clips<sup>1</sup> show Generation Z babies trying to flick pictures in paper magazines to enlarge the picture or turn the page, in marked contrast to earlier generations who knew to turn a physical page.

As with any new technologies, there can be positive and negative effects on people. Social media links make it easier to connect with other people anywhere, anytime, but can be addictive. Social media addiction is a recently defined psychological phenomena spawned by issues with teenagers who cannot be parted from their smart-phone for more than an hour and whose health and school performance can suffer as a result <sup>2</sup>. Generation Z students are now in schools, bringing with them different learning needs to those of the generations before them. Their social lives are heavily influenced by social media and they cannot see why use of social media should not be normal within their education. Again, education must adapt to the changed needs of this different generation of learners.

As the baby boomer and subsequent generations age, many become financially independent, have increased free time and can turn to education once again to enhance the quality of their lives. Adult learners are either well qualified people who want to study later in life for interest, rather than to qualify for a vocation, or they may be adults who left school before earning the qualifications needed for success in life. In both cases, adult students may look to study at secondary school level, not by physically attending school where they would not fit socially, but studying virtually. As a result, Scandinavian countries have led the world in providing pathways into education for the needs of these adult learners, including use of technology (Biagetti, & Scicchitano, 2013; Boeren, Nicaise, & Baert, 2010; Rubenson, & Elfert, 2015). Adult learners who were schooled decades ago need different approaches to meet their technology education needs (Roche, 2016) as many lack the background in technology of younger generations.

As globalisation has changed the nature of work, technology has influenced the nature of learning and learners themselves have changed, there is a need for schools to change. The affordances of educational technology are likely to drive this change, particularly with new forms of virtual education (Robinson & Aronica, 2015).

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