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Chapter 3

IMPROVING THE 21ST CENTURY EDUCATIONAL INSTITUTIONS VIA TECHNOLOGY

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ABSTRACT

As the 20th century draws to a close, the universal state of affairs of technological doings is varying in the 21st century educational institutions. Reports have shown that these changes are systemic while others are centered principally on the portion of teachers, supervisors, inadequate funding and establishment, among others which brought about the decline in education to meet the technological trends in the 21st century. Based on these established facts, this chapter examines how the

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knowledge of technology can be used as a medium for improving the 21st century educational institutions via technology.

Keywords: 21st Century Educational Institution, technology

INTRODUCTION

As the 20th century draws to a close, the general situation of technological activity is changing. Novel technologies depend on increasingly more on science, technology education and engineering (STEM) knowledge; this interdependence reinforces the common associations involving understanding and proficiency. Notwithstanding the increasingly prevalent acceptance of technologies affecting all facets of education, momentous challenges such as resistance to change, professional development, massive open online courses and failure to use technology to achieve valid assessments (formative, process and summative) are limiting comprehensive efficient execution. In past reports, these challenges are systemic while others are centered mostly on disinclination on the part of teachers, supervisors, inadequate funding and establishment, among others which brought about the decline in education to meet the technological trends in the 21st century. Based on this established fact, this chapter examines how the knowledge of technology can be used as a vehicle for improving the 21st century educational institutions via technology.

CONCEPT OF TECHNOLOGY AND LEARNING

Today, more than ever before, the demand for the utilization of technology in educational facilities has skyrocketed. The rationale for utilizing technology in schools is to improve student learning achievement. Clark (1983) viewed technology as a "mere vehicles that deliver instruction but do not influence student achievement any more than the

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truck that delivers groceries and causes nutritional changes." Since the beginning of the technology era, it has significantly metamorphosed the teaching and learning process by providing a gigantic avenue for almost everyone making learning experience available at the swipe of a finger or the click of a mouse. Numerous improvements in technology are designed for the teachers and students in the classroom to stay abreast with the trends in the 21st century. Matthew (2016) highlighted the following technologies allow teachers to prepare students for their academic careers and for lifelong success. These include;

Bring Your Own Device (BYOD)

The BYOD has now gained ground in the education. For instance, places like the Chesapeake Public Schools in the United State of America learners are permitted to use personal electronic devices to gain access the wireless network for academic achievement while on the school systems internet.

Custom-Made Learning Experiences

Custom-made learning permits the students to accent on feedback practices that bring forth policy for the advancement during the teaching and learning process (that is, the process evaluation) in lieu of the summative evaluation process. The notion behind this is that it has the promise to integrate different teaching aids to facilitate the teaching and learning process enabling teachers to preside over one-on-one learning experiences in practical ways.

Online (Virtual and Distance) Learning

Virtual learning is without doubt well-liked some time ago only the world of distant learning adopted the development of online learning. In

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the present day, the advent of online learning is progressively more replacing the customary learning experiences because the former makes it possible for teachers, guardians/parents and students to gain access to the needed information regardless of physical location while the latter has become orthodox to change and transform classroom learning. Thus, online (Virtual and distance) gives students adequate information, time and space to achieve their educational goals.

Virtual Laboratories

These are interactive mock-up in which students conduct experiments, gather data and answer questions to assess their achievement. The laboratories combine animations, illustrations and videos convey key messages and engage students in the process of science. Within the scope of education, the concept of online learning is now increasing popularity for teaching and learning. Thus, due to the nature of Science, Technology, Engineering and Mathematics (STEM), the use of online (distance) learning are still relatively behind. The rationale behind this lies in the fact that these fields of study (STEM) often require laboratory exercise (practical) to provide effective hands-on experience and skill acquisition. It is difficult most at times to make these laboratories accessible for online access either to be replicated as a fully software-based virtual laboratory or the real laboratory needs to be enabled for remote access.

iPads and Autism

iPads are a line of tablet computer designed, developed and marketed by Apple Inc., which runs the iOS mobile operating system. The iPad has varying effects on children with autism towards learning. Experts at Apple Inc. revealed that iPads “cure” sensory overload and give autistic children control, along with opportunities for effective communication.

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Using less extreme language, researchers also revealed that speech-generating devices, like iPads, can encourage late-speaking children with autism spectrum disorders to speak. In other words, the basic technology that is readily available in classrooms and many households may also support learning initiatives for children with a specific disorder that impact traditional learning.

Online Tutoring

Definitions related to online tutoring differ extensively, revealing the continuing evolution of the technology. Online tutoring is the process of tutoring in an online (involve the use of learning management systems) or virtual (such as WebCT, Blackboard, Moodle and Sakai) or network learning environment in which the teacher and students are separated.

As the desire for this form of learning escalates; tutoring in distant places will glimpse a spike in demand accessibility.

Cloud Computing

In the coming time, cloud computing will be used in teaching and learning, including cloud-based 1-to-1 programs using Chrome books and computing platforms that allow for shared desktops. It also identified the use of the cloud in IT infrastructure. Cloud computing has limitless perspective when it comes to the larger educational alliance for teacher-to-student, teacher-to-parent and teacher-to-teacher applications. By using a regular scene, academic achievements can more advantageous obtained in addition to real student work. Teachers also share learning materials and experiences through the remote opportunities that cloud computing providers such as cloud storage saves money, space and time for administrators, parents, students and teachers.

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Mobile Learning

Mobile learning. will be one of the emerging trends in technology in the nearer future because of their portability, flexibility, and natural, intuitive interfaces, mobiles are especially enticing to schools, and a growing number of them have turned into tablets as a cost-effective strategy for one-to-one learning a systemic solution in which every student is provided with a device that can be used to support learning in and outside of the classroom. In many regions of the world, students come to class already familiar and comfortable with the technology. At the end of 2012, the Daily Mail reported that 75% of ten-year-olds in the UK, for example, own a mobile device, and the global average is approaching 50%.

Open Educational Resources

Open Educational Resource (OER) (also known as the open content) is characterized as significant technologies that will impact education by making use of data and analytics to customize education for individual students. The OER is characterized as essentially the opposite of cumbersome, expensive, and quickly outdated textbooks. “Educators are taking advantage of OER to expand their curricula with media-rich tools and texts that can be used and adapted to specific lessons,” and assist teachers on how to have access to a wealth of digital standardized course materials information that can use to meet district expectations." according to the report. “Formerly bound by the framework of standardized course materials, teachers now have access to a wealth of digital information that they can use to meet district expectations.”

3D Printing, Remote and Virtual Laboratories

In the longer term, the 3D printing and remote and virtual laboratories will be currently in use in different facets of educational level, they are

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about to become more mainstream, in particular in the context of improving Science, Technology, Engineering, and mathematics (STEM) education. For instance, the 3D printers, physical models of fossils or proteins or molecules or other objects can be whipped up on the fly, allowing students to interact with them. In the case of virtual and remote laboratories, schools that lack resources to buy costly equipment will be able to fill in the gaps with less costly alternatives, allowing students to engage in experimentation, even if that experimentation is not direct.

REFERENCES

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 43(4), 445-459.

Matthew, L. (2016). *7 Educational Technology Concepts Every Teacher Should Know About*. Retrieved September 10th 2017 from http://www.theedadvocate.org/7-educational-technology-concepts-every-teacher-should-know-about/LCH

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