
EXAMINING TECHNOLOGY UNCERTAINTIES IN GLOBAL HIGHER EDUCATION

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ABSTRACT

Current technology affords global higher education with the means for providing educational experiences to an expanding number of clients in a variety of contexts with expanding delivery options driven by technology. Global higher education in the 21st century revolves around the use and application of technology, particularly for teaching and learning. Global higher education institutions are attempting to develop the capacity to adapt and modify new models of knowledge and information, predominantly using technology enhanced learning. However, fundamental, systemic change has been slow to develop, particularly advanced technology for teaching and learning. Some have argued that these new technologies will enable global higher education to respond to the changing world and thus remain relevant in this new century. Consequently, global higher education leadership needs to develop new organizational structures and systems to promote and encourage quality learning as well as the ability to assess the impact of the use of technology in teaching and learning. As a result, systemic examination of the uses and applications of technology enhanced learning should be developed.

Key Words: Technology Enhanced Learning, Teaching And Learning , Global Higher Education.

1. INTRODUCTION

During the past decade, technological innovations transformed the skills, competencies, proficiencies, and knowledge needed to succeed and thrive in the global workplace and society and created a digital world (Dave, 2019). Preparing technically educated and skilled individuals continues to be of great economic importance in every country of the world and requires significant attention from educators, businesses, employers and politicians (Garretson, Lemoine, Waller, & Richardson, 2020). Technology is becoming pervasive and is having a major impact on global higher education, rapidly becoming ubiquitous. Global higher education is also operating in a global economy driven by technology and communications: a dramatic departure

from the industrial driven economy of the past century (Brown & Keep, 2018). This has created a state of disequilibrium for global higher education institutions that are being forcefully moved in new directions with evolving technology changes (Sarantinos, 2019)

The connection of the entire world by internet and the speed with which products can be moved (both intellectual property and actual tangible goods) have rendered practices obsolete and many existing organizations irrelevant, leaving leaders in a state of uncertainty even as they work to implement existing plans, protocols, policies, and procedures while planning for a future that seems impossible to anticipate (Richardson, Garretson, Waller, & Lemoine, 2019). While practices have always evolved toward eventual obsolescence and organizations have evolved toward ultimate irrelevance if they are unable to reinvent themselves in a way that meets current needs; however, the pace at which this takes place has never been faster and in fact is increasing at a dizzying rate (Wheaton, 2020).

Technology in Global Higher Education

As a consequence of its importance to society, global higher education operates in a continually fluid and uncertain environment driven by technology. Technological innovations have important strategic implications for global higher education because change is difficult and often produces results that are not intended (Andujar, 2019). Institutions of global higher education are high on the list of organizations facing unprecedented change in terms of scope and speed: scope because of the number of variables influencing the future, and speed because of the preponderance of new technologies and increasing competition from both the number and types of competitors (Bileviciute, Draksas, Nevera, & Vainiute, 2019). The rapid nature of change is exacerbated for institutions of higher education that have remained largely unchanged in organization and delivery over the last century.

The development and implementation of technology provides tools that irreversibly revolutionized methodologies, attitudes and processes used in global higher education (Lemoine, Jenkins, & Richardson, 2017). This is a period of significant change as universities attempt to respond to the challenges, opportunities, and responsibilities present in this global knowledge-driven society (Mardiana, 2019). These changes are driven by economic market forces, social turbulence, and progressive uncertainties which are almost impossible to predict (Mense, Lemoine, Garretson, & Richardson, 2018). Therefore, the most critical challenge facing global higher education leaders is how to develop the capacity for change: if change is inevitable, the capacity for change is perilous (Pucciarelli & Kaplan, 2016).

Technology Opportunities and Challenges

Throughout the world, college and university administrators are attempting to determine the impact of technology for their institution and for society. Standards for the utilization of technology in global higher education have been outlined by numerous organizations and agencies, but there is no clear consensus on how to evaluate the viability, efficiency or effectiveness of the technology, particularly as it relates to teaching and learning (Waller, Lemoine, Mense, & Richardson, 2020). However, there is strong convergence regarding the

importance of computing, telecommunications and technology (Robson & Wihlborg, 2019). Technology is becoming prevalent and is having impact on all of society and industry, especially education and is increasingly becoming an integral component of education delivery (Wadhwa, 2016).

In global higher education information technologies are as much about creating direct connections among people as they are about storing information in databases and other types of repositories. Therefore, technology should be examined relative to its flexibility, increased learning potential, and development of new knowledge instead of specific solutions to every problem (Mense, Lemoine, & Richardson, 2020).

There are significant opportunities and challenges that global higher education institutions should examine relative to their uses of information technology. A global higher education institution uses information strategically in three areas: to sense change in its environment; to create new knowledge; and to make decisions about possible courses of action and future directions (Leahy, Holland, & Ward, 2019). These apparently distinct processes are in fact complementary pieces of a larger agenda and an explanation of technology use in global higher education institutions (Castaneda & Selwyn, 2018). Through evaluation of technology, the insights of groups and individuals can be ascertained and converted into information that can be used to improve institutional and student performance (Leiber, 2019).

As information and communications technology continue to grow exponentially, faculty and administrators in global higher education feel constant pressure to adopt and maintain up-to-date computer and network hardware and software and fight a never-ending battle against technology obsolescence (Waller, Lemoine, Mense, & Richardson, 2019). Further, they must balance the need to acquire, maintain, and replace technology with limited state, federal, institutional resources, and outside revenue sources (Conceicao, 2016).

Technology for Learning

Historically, university classrooms and teaching practices were largely unchanged by technology; however, more recently, technology has had a significantly stronger impact in those practices (Saubern, Urbach, Koehler, & Phillips, 2020). As technologies become more transparent and 'user friendly' there has been a greater need to emphasize effective and efficient utilization in a diversity of applications, particularly in teaching and learning (Gadge, 2020). Current teaching approaches emphasize attainment of required computer skills and accentuate adaptability and 'learning how to learn' (Englund, Olofsson, & Price, 2017).

Information and communication technology (ICT) have immeasurably contributed to the quality of teaching and learning in global higher education. ICT enhances teaching and learning through its dynamic collaborative engagement of content and provides opportunities for individualization of instruction (Cubules & Riu, 2018). Further, ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students' learning, support relating university experience to work practice, assist in creating economic viability for tomorrow's

workers, contribute to the overall improvement of the institution, and strengthen teaching and learning (Bansal & Kumar, 2018).

Moves from content-centered curricula to competency-based curricula are associated with moves away from teacher-centered forms of delivery to student-centered forms. Through technology-facilitated approaches, contemporary learning environments encourage students to take responsibility for their own learning (Jones, 2019). The growing use of ICT as an instructional instrument is changing many of the strategies employed by both faculty and students in the learning process (Crompton & Traxler, 2019). Students appreciate the capability to access education anywhere and anytime. This flexibility has provided learning opportunities for many more learners who previously were constrained by time, place and personal commitments (Crittenden, Biel, & Lovely III, 2019).

Technological innovations at an educator's disposal are tools to help educators and students find, analyze and use data and information. These tools are important to learning because they can provide a focus on the primacy of student learning for both the student and the institution. To use these tools appropriately, educators must move away from a "cookbook mentality" to a position of technological knowledge application (Jääskelä, Häkkinen, & Rasku-Puttonen, 2017). Educators must prepare students to use the skills to find the information they need and the knowledge to analyze appropriately and not just to regurgitate facts as often happened in the past (Knox, Williamson, & Bayne, 2020). With these rapid technological changes, faculty will need to adopt attitudes and skills to keep pace with new methods of delivery to accommodate different aspects and characteristics of student learning and technological change (Lemoine & Richardson, 2019).

Technology should not be an end for global higher education; it should be a means to achieve the goal of student success. This requires educators to use technology as a learning tool to assist the learner with the opportunity to learn productively (Alqurashi, 2019). Faculty use of technology must transform the way students learn and how faculty teach in the coming decades. However, the pervasive integration of digital technology into global higher education impacts both teaching and learning practices (Naidoo, 2020).

Global higher education has essentially moved away from the traditional campus environment to a technology driven platform such that new technologies have provided borderless and flexible learning, most often online applications (Xiao, 2018). Online learning environments are used extensively to improve student learning. Online learning facilitates the use of asynchronous and synchronous interaction and communication within a virtual environment and is becoming an integral part of global higher education (Bielenia-Grajewska, 2019). However, there is a need for research that focuses on teachers' pedagogical thinking in relation to integrating ICT, specifically online learning, into their teaching (Kanga & Isaboke, 2019). Consequently, the emphasis should shift from "providing access to increasing its quality" (Lee, 2017, p. 15).

Examining Technology: Evolving Questions

Technology integration makes the focus of global higher education more complicated and competitive each day where the computer and its evolving components were liberated from only data processing to a functional teaching and learning system. The personal computer put incredible capabilities into the hands of faculty and students. Computers and other technology have become the defining process of work and learning in global higher education (Gharai, Panigrahi, Das, & Satpathy, 2018).

Between the stable version of computer technology and the current disruptive present form of information technology, some things have become uncertain. It has become increasingly difficult to predict the future applications of technology in global higher education. Has technology become controlled or will information and communications technologies profoundly influence and perhaps deeply disrupt global higher education (Kasemsap, 2016)? Have things become so murky that only the present can be predicted or has global higher education arrived at a moment when change is so fast that it is only recognized when it is leaving (Altbach, 2019)? Technological changes typically outpace people's ability to recognize and respond to these changes. This could be called a time of emergence when the best advice is to observe and to be sensitive to areas from which change is emerging (Carayannis, 2018).

In the context of global higher education, the emergence of an instructional technology tool set for configuring the world is enormously powerful and beneficial (Camilleri & Camilleri, 2017). Institutions, faculty and students can consume more relevant information, faster, and share insights more effectively and efficiently than ever before (Lemoine, Hackett, & Richardson, 2016). In addition, how a global higher education institution manages its virtual presence has become as important as how it manages its physical presence (Rabah, 2017). The twin forces of consumerization and economics of technology represent an opportunity for global universities to search for new ways of increasing students and resources while remaining personal and affordable (Prakash, 2018).

Global higher education will likely operate in a continually fluid and uncertain environment where computers, networks and mobile applications will continue to become cheaper, better, and faster. Digital information will become cheaper to store, more plentiful, and easier to find (Brabazon, 2017), which leads to the need for technology policy, technology planning and a comprehensive examination of technology in global higher education.

2. CONCLUSIONS

- (1) Technology is invaluable to global higher education.
- (2) Technology enhances teaching and learning.
- (3) The uses and applications of technology should be examined and evaluated in global higher education institutions, especially in teaching and learning.
- (4) All stakeholders should be involved in the examination process.
- (5) Technology is a tool that must be used to support learning, faculty and students.

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