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COVID-19 pandemic and online learning: Challenges and opportunities

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Abstract

The ongoing outbreak of COVID-19 was declared as a pandemic by WHO on 12 March 2020, that posed a substantial threat to humanity. This pandemic has successfully resulted in the global suspension of educational institutions including colleges and universities across the globe. This pandemic switched the educational activities from offline campus-based mode to online teaching. The resultant crisis-response conversion of educational institutions with online mode of learning was to counteract the risk of disease spreading. This crisis-response and shifting paradigm of educational institutions, faculty and students, challenges and opportunities discussed in the current research signifies that online learning was different from traditional mode of teaching. In the light of the present context the online mode of learning will be more sustainable and instructional activities more hybrid. The challenges experienced during pandemic were highly explored and transformed to new educational opportunities.

Keywords: Pandemic, risk, education, online, challenges, opportunities

Introduction

According to Huang *et al.* (2020) ^[12], a novel corona virus, known as COVID-19, was discovered in the last month of the year 2019, in a seafood market in Wuhan. Clinical analysis results of the virus showed person-to-person transmission (Li *et al.*, 2020; Paules *et al.*, 2020; Wang, Cheng, *et al.*, 2020) ^[12, 16, 19, 23]. The Director General of WHO in March 2020 declared COVID-19 as a pandemic after assessment of the rapid spread and severity of the deadly virus across the globe with additional announcement of social distancing as a means of curbing the spread of the pandemic. Merriam-Webster Online Dictionary (2020) referred to pandemic as “an outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population”. Social distancing is conscious increment in the physical gap between people in order to curb dissemination of disease. This pandemic has forced global physical closure of businesses, sport activities and schools by pushing all institutions to migrate to online platforms. Online learning is the use of internet and some other important technologies to develop materials for educational purposes, instructional delivery and management of program (Fry, 2001) ^[9]. Hrastinski (2008) ^[11] stated that the two types of online learning, namely asynchronous and synchronous online learning, are majorly compared but for online learning to be effective and efficient, instructors, organizations and institutions must have comprehensive understanding of the benefits and limitations. This article discussed the crisis-response migration methods of institutions of learning, students and faculty members into online learning, the opportunities and challenges with respect to COVID-19, and also add value to the existing body of literature on online learning by providing comprehensive awareness on the migration methods of instructional delivery adopted by universities, faculty and students, challenges and opportunities as the world battle to eradicate the pandemic.

Related Literature

Online learning is the educational usage of technological devices, tools and the internet (Means *et al.*, 2009) ^[17]. Added that the persistent increase in technological innovation and internet accessibility has increased the motivation for online learning since the beginning of the millennium, but Joshi *et al.* (2020) ^[15] concluded that the instructional achievement of online learning is debatable because it causes absence of face-to-face relationship among

learners, learners and instructors. Differentiated adequately planned online learning experiences from courses presented online as response to crisis. These researchers went further to refer to online education during this pandemic as “emergency remote teaching” because the latter is in contrast with quality or effective online learning. Effective online education consists of online teaching and learning, boosting of several research works, principles, prototypes, theories, ethics and appraisal of benchmark concentrations on quality online course design, teaching and learning (Bozkurt & Sharma, 2020) ^[4], since it has been confirmed that effective online learning is a byproduct of cautious design and planning of instruction with the application of organized model for designing and development of instruction (Branch & Dousay, 2015) ^[5]. The absence of the cautious design and development process (Branch & Dousay, 2015) ^[5] in the migration process gave birth to the rejection of the contemporary online education experience during this pandemic as effective online education but rather as emergency remote teaching (Bozkurt & Sharma, 2020) ^[4].

Challenges

With COVID-19 pandemic, it has become clearer that education system is susceptible to external dangers (Bozkurt & Sharma, 2020) ^[4]. Feldman (n.d.) while addressing student assessment during this pandemic on how districts can legislate unbiased and even handed grading policies based on these recommendations; (i) pandemic related anxiety will have negative effects on student academic performance, (ii) academic performance of students might be affected by racial, economic and resource differences, and (iii) the larger parts of instructors were not effectively ready to deliver high-quality instruction remotely. The challenges discussed here are limited to digital transformation of instructional operations during the period of COVID-19 pandemic.

Technology

Online learning in its entirety is dependent on technological devices and internet, instructors and students with bad internet connections are liable to be denied access to online learning. The dependency of online learning on technological equipment and the provision of the equipment was a big challenge for institutions, faculty and learners.

Socio-economic factor

As a result of inequality in the socio-economic status of students, some rely on the computer and free internet in school (Demirbilek, 2014) ^[6], and due to the closure of schools, the migration process of these set of students is expected to be slow. It becomes undeniable that students with low socioeconomic background will definitely find it difficult to migrate as early as expected since they cannot come to school due to the pandemic. Fishbane and Tomer (2020)'s ^[8] research findings on what students with no internet access are to do during this COVID-19 pandemic show that as the level of poverty increases in the community, the rate of internet accessibilities declined rapidly and by implications, students with no or low socio-economic power to afford broadband connection are most vulnerable to fall behind or encounter additional challenges to meet up with others in online learning.

Human and pets' intrusions

Human and pets' intrusion here is the unexpected appearance or interruption of family members, friends and or pets that may cause disruption or diversion of online learning participants' attention during the online teaching and learning process. Malcolm Brown, the Director of Learning Initiatives at EDUCAUSE also cited pets' intrusions, through situations where online learners are in progress via videoconference and someone's pet such dogs will be barking, or cat will walk across the table. Another intrusion linked to family members of online learning participants, when classes are in progress, can be found on a video file from St J. D.S.G. Pietermaritzburg (2020).

Digital competence

Digital competence is the group of skills, knowledge and attitudes needed when using ICT and digital devices to perform responsibilities, such as problem solving, information management, collaboration with respect to effectiveness, efficiency and ethics (Ferrari, 2012) ^[7]. In this jet age, not all digital natives possessed digital competence that are not limited to education but all spheres of life. Students and instructors with low digital competence are liable to lack behind in online learning. According to a video file there are situations whereby online learning participants go naked unconsciously by either visiting the comfort station or dressing up for the online class, and this can be linked to unconscious use of the platform as a result unethical use of digital devices that can be avoided through digital competence. Due to digital transformation of instructional activities during this pandemic, libraries are to follow the trend in order to deliver effective services to faculty, students and other stakeholders through digital library, students and faculty with low digital competence might find it difficult to make optimal utilization of the digital library. Has established digital competence as a variable with positive correlation and substantial effects on the application of digital library by higher education learners.

Assessment and supervision

After instructional delivery here comes assessment where instructors measure learning activities to ascertain the instructional objectives through test, quiz and examination. Osterlind (2002) ^[18], there exists numerous literature on test and measurement theory and analysis with little details on planning, development and test items writing by instructors. In online learning, assessments are often carried online whereby instructors are limited to proxy supervision of learners making it impossible to regulate and control cheating (Arkorful & Abaidoo, 2015) ^[3]. There are several students testing formats that are applicable with e-learning and according to Osterlind (2002) ^[18], such ICT-enhanced testing formats include constructed-response, performance-based formats, sentence-completion or short-answer, matching, true-false and cloze-procedure.

Heavy workload

The quick and sudden digital transformation process of universities has huge workload on ICT units of institutions to build e-platforms, integrated existing external applications into their systems and as well as full migration into external applications. Instructors also share part of the workload because they are responsible for transforming

their course contents to be e-platform-friendly to the learners. This heavy workload is expected to cause unforeseen financial and time cost (Akkoyunlu & Soyly, 2006) ^[1]. Monique Sendze, the Chief Information Officer for the Colorado School of Mines in interview granted to EdTech Magazine, stated that they were on crisis-response mode of acquiring new licenses and improvement of current licenses to cater for the tremendous increase in the number of users that will be using e-learning tools of the school simultaneously.

Compatibility

The compatibility of online learning with social science and humanities has been proved effective while researchers have also contested its compatibility with sports sciences, engineering and medical sciences where hands-on practical experiences are required as part of instructional activities. Remote laboratories are used as alternative laboratories in online learning and such virtual laboratories offered by online learning can only fill the theory-to-practice hole (Iqbal *et al.*, 2015). Online learning cannot be effectively and efficiently applied in some disciplines and this compatibility gap is yet to be filled. Boczkowska *et al.* (2018) recommended that e-learning programs are necessary systems of continual education and to advance the value education in emergency nursing, additional work need to be directed to the enhancement of online learning programs.

Opportunities

Online learning on its own has advantages, such as flexibility (Smedley, 2010) ^[21], interactivity (Wagner *et al.*, 2008) ^[22], self-pacing (Amer, 2007) ^[2] and opportunities, the current increase in its adoption by universities is born of their desire to direct their actions toward alignment with both local and global practices and policies to overcome the spread of COVID-19 pandemic and maintenance of academic calendar. Universities and other educational platforms have responded to the pandemic with quick digital transformation of their educational activities. Apart from the educational and economical roles of universities, Wang and Zha (2018) ^[24] also recognized the social roles of universities as the world battle for the eradication of the pandemic. Greg Flanik continued by adding that online learning has provided a clear roadmap that educators need to take advantage and engage major stakeholders in education to create novel market for instructional delivery and the longer the pandemic lasts, the more likely online learning becomes a general acceptable mode of teaching and learning.

Research innovations

This pandemic is, no doubt, a threat to humanity (Poon & Peiris, 2020) ^[20], considering the state of emergency declared by WHO as a result of the rapid spread and severity of the deadly virus across the globe. As researchers spring into actions on finding short-term and long-term solutions to the threat posed on humanity by the virus, there is a need for instructional technologists most especially researchers in distance education to also take advantage of the sudden increase in participants of online learning as opportunities for research advancement in order to provide novel innovations to meet latest challenges of online learning. These research advancements should cover the following: (a) the need to provide models to accommodate

the contemporary changes in online learning, (b) review the process of digital transformation of institutions, (c) designing of more scalable and personalized online learning models, (d) designing of online learning model that will reduce the workload on the instructors, (e) redesign the learning process. N. N. Hameed (personal communication, April 4, 2020) added that there is global diversion of academic attentions to COVID-19, it is expected that most researchers will spring into research activities because of the topical issue and massive research publications and innovations will be recorded.

Technological innovations

Universities and other research centers across the globe are saddled with the responsibilities of providing research avenues for researchers' collaboration in order to produce positive results as early as possible for the prevention and control of the pandemic. Likened the technological innovation opportunities brought by COVID-19 to that of Second World War that ushered in rocket technology and digital computer, and according to this World Economic Forum writer, some of the urgent technological innovations brought by COVID-19 era include 3D Printed Hands-Free Door Openers, Basic Ventilators, Spiderman Wrist-Mounted Disinfectant Sprays, Wristband that rings whenever someone wants to touch his/her face. Monique Sendze as rightly quoted in interview, Information Technology professionals responded quickly to the crisis like a SWAT crew to provide solutions, with the current technological interventions provided by IT professionals during this COVID-19 pandemic, there is no doubt that they are up to the task in providing more if more crisis erupts. Thus, this can be adopted in continuity of business, adversity rescue strategies.

Socio-economic interventions

Developed nations have been offering palliatives to their citizens and residents in order to cushion the effect of the global lockdown on the people and to a large extent, these palliative measures do not exempt public and private organizations, institution donations etc. These socio-economic supports include food items, stoppage of increment in tuition debt policy on students, psychological and medical assistance to students and residences. According to Fishbane and Tomer (2020) ^[8], some Internet Services Providers have stated providing socio-economic intervention programs such as provision of free broadband to college and K-12 learners in the USA, while digital inclusion campaigner Everyone has opened a search engine to assist people according to their ZIP code find low-cost internet bundle programs. Joosub (2020) ^[14] also in the spirit of reducing the financial burden of internet data subscription on university students in order to access their online learning platforms during this COVID-19 pandemic, Vodacom has launched special bundles and also increased their zero-rated offer to all public citadels of learning in South Africa for students and faculty of those institutions to have internet access.

Discussion and Conclusion

It is visible that instructional technology, as a research field with several sub-divisions, has played a major role in cushioning the effect of this pandemic on educational activities by serving as the only platform for instructional

design, delivery and assessment platforms. Wang, Cheng, *et al.* (2020) ^[23] as researchers across all disciplines strive to invent preventive and control mechanism for the pandemic, there is a need to share contemporary research findings in order to promote collaborative enquiry and technological networking for the assurance of viable COVID-19 studies. Online education is deeply rooted in adequate planning and designs of instructions with several available theories and models, but the migration process of the universities to online education becomes questionable because these processes witnessed the absence of proper planning, design and development of online instructional programs due to the pandemic. The crisis-response migration methods adopted by institutions are limited to delivery media without taking cognizance of effective online education theories and models. Thus, the crisis-response migration due to the pandemic should not be equated with effective online education or digital transformation of universities but rather be seen from the perspective emergency remote teaching platforms. To address digital competence as an emergency remote teaching problem, suggested that educational institutions need not design a separate platform for learning digital skills, but it should be embedded in teaching and learning process of all subjects, while also added that learners must be motivated to get digital competency for them to remain relevant in modernity. There exist needs for researchers in educational technology to direct research advancement toward the development of alternative assessment approaches that will be devoid of cheating and plagiarism with adequate attention on the recommendations of Feldman (n.d.) for unbiased and equitable assessment systems for future reoccurrence of such pandemic, since education system is vulnerable to external problems of this kind (Bozkurt & Sharma, 2020) ^[4]. Online learning elements are technology driven and dependent on internet facilities, educational institutions can collaborate with telecommunication industries to either subsidize the cost of internet subscriptions or provide free browsing data to the students and instructors as part of their corporate social responsibilities. For educators, research actions need to be also geared toward the development of a uniform online learning model that will be applicable to all disciplines to solve the problem of compatibility. The global acceptance and experience of contemporary online learning (i.e. emergency remote teaching), as some may call it, will definitely lead to situations where students and faculty will get used to application of technological devices and tools for teaching and learning, and this usage will, no doubt, go beyond school into the place of work. Han and Ellis (2019) ^[10] suggested the need for faculty to assist students in recognizing the values of learning via blended discussions and also elucidate on the integration of online discussion and traditional face-to-face learning. Additionally, implementation of technical solutions to test and measurement in remote emergency teaching need to consider test item analysis and field trial as opined by Osterlind (2002) ^[18]. Human and pets' intrusion can also be either reduced to the nearest minimum or totally eradicated through setting up of separate online learning studio/library where those intrusions will be restricted. Despite the sudden migration of instructional delivery to online platforms by universities and other citadel of learning during this pandemic, provided the challenges experienced by faculty and students are well explored and transformed to

opportunities, it is evident that online learning will be sustained and educational will become more hybrid. Development of emergency remote teaching evaluation instrument is to have more revealing information on the crisis-response migration methods and challenges experienced by the students and faculty as discussed in this study for further research becomes recommendable.

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