Curriculum Delivery and Digital Divide in South African Higher Institutions During the COVID-19 Pandemic: A Case of Social Injustice

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The emergence of the COVID-19 pandemic on the world has led to a drastic change in every sphere of mankind all over the world. The pandemic led to the collapse in all human activities, as well as physical contacts having been hindered and replaced with social distancing. One of the sectors that has been severely hit is the education system. This discourse article aims to explore the curriculum delivery and coverage in South African higher institutions of learning during the COVID-19 pandemic. Determining how curriculum can be delivered to ensure coverage of it, to salvage the academic year due to closure of all educational facilities during the phases of lockdown in South Africa therefore, is a worrisome concern to the stakeholders. Adoption of full online teaching and learning during the lockdown periods revealed that many students from poor economic background and rural areas suffered socio-economic inequalities that hindered them from benefitting effectively from various online platforms that have been adopted by the South African institutions. The study explores strategies to ensure curriculum delivery and coverage to ensure the fulfilment of the purpose of the education system. The study recommends adequate support to these students by the Department of Higher Education and Training, the Universities and other bodies through adequate provision of laptops, diverse internet data packages, etc. The study also calls for the evaluation of the situations for future planning as well as the inclusion of pandemic management in the university curriculum.

Introduction

COVID-19 is a severe acute respiratory infection, which was first recorded in Wuhan, China around December 2019. This infectious disease triggers difficulty in breathing for the infected victims; thus making them symptomatic or asymptomatic at the early stages of the infection conditional to an individual's immune system. Other symptoms of this deadly infection include fever, shortness of breath, dry cough, tiredness, headache and general body weakness (Zhong, et al., 2020). The novelty of COVID-19 makes it difficult to establish a comprehensive and wholly treatment for COVID-19 and the development of research studies for preventive vaccines. Based on rampant cases of COVID-19 and its global rampage, the World Health Organisation (WHO) declared it a global pandemic on March 11, 2020. Since its declaration by WHO, the pandemic has been ravaging, spreading and devastating all spheres of human lives globally. As of September 28, 2020, Coronavirus cases all over the world total 33,332,264 while deaths are 1,002,733 with 24,650,991 recovered cases. The first case of Coronavirus in South Africa was confirmed on March 5, 2020, and as of September 28, 2020, a total of 711,325 cases, 16,398 deaths and 603,721 recovered cases were recorded. Thus, putting South Africa at 10th position of the most affected countries in the world as well as the first in Africa. Scientific studies warn of close contact with one another as the medium of infection.

Transmission of Coronavirus is through contact with droplets from infected persons to another through physical contact. Such infectious droplets drop on surfaces that other people have contacts with through hands, and subsequently touching the eyes, mouth or nose with the same infected hands. Hence, the person becomes infected with the virus. Conversely, medical practitioners posit social distancing as the most effective way to hinder the spread of the virus. The South African government, like other governments in different countries, placed the country in lockdown to contain the spreading and to flatten the curve for Coronavirus cases. The declaration of the first country-wide lockdown by the South African government on March 27, 2020, of South Africa was an attempt to curb the spread of the virus. This was effective, though it had a great economic impact on the country (Fowler et al.; 2020). The implementation of a nation-wide lock forced all business activities, educational institutions, religious institutions and all other socio-economic activities to close down (Viner, R.M., Russell, S.J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C. & Booy, R., 2020).

Only those rendering essential services were allowed to operate with authorised permission obtained from the government during the lockdown. The abrupt closure of educational institutions disrupted the 2020 academic calendar as well as curriculum delivery and coverage for these institutions. To salvage the academic calendar, the Department of Higher Education and Training mandated South African higher institutions to embrace full online teaching and learning to engage their students. The use of full online teaching and learning as alternative approaches is blended learning. A blended learning approach became adopted by both rural and urban higher institutions in South Africa during the lockdown, to continue teaching and

learning activities, and to salvage the academic calendar (Ajani, 2021). This article aims to explore the impact of the online teaching and learning activities during the lockdown to deliver and cover the curriculum as well as strategies to ensure the effectiveness of blended learning among the students. Thereby, sustaining the approach after the lockdown for a future pandemic.

COVID-19 and Higher Education in South Africa

It is no longer news that the emergence of the COVID-19 pandemic forced all educational institutions all over the world to be abruptly closed and learners/students were temporarily forced to be at home (UNESCO, 2020). According to UNESCO (2020), more than 1.6 billion learners/students in all educational institutions across the globe were forced to be at home to curb the spread of Coronavirus. Some educational institutions, especially in developed countries where blended learning has been predominantly used as a regular approach alongside traditional teaching approach, have been able to continue unhindered active teaching and learning, thus did not experience a disruption in the academic calendar as such (UNESCO, 2020). However, most countries in Africa and South Africa were significantly affected as most learners/students in these countries could not access effective teaching and learning. UNESCO (2020) reports that 98% of learners/students in these countries have been unable to access education during lockdown due to some challenges. With the increase in the cases of Coronavirus and lack of scientifically proved medication to cure the virus presently, the World Health Organisation, based on medical precautions, advise practising social distancing, frequent hand washing and the wearing of nose and mouth masks as an effective prevention for the transmission of Coronavirus among people.

While the safety of individuals remains paramount, schools remained closed (World Economic Forum, 2020). The full adoption of online teaching and learning became prominent among South African institutions to continue the academic calendar as long as the lockdown continues. However, the use of fully online learning makes some students disadvantaged due to socio-economic inequalities. According to Kekić et al. (2016), the use of this approach in South African higher education will lead to temporary and permanent discontinuation of learning in the educational system. The disruption may lead to the withdrawal of some students from educational institutions afterwards while some may lose academic focus. Even though Coronavirus cases in African countries are significantly low compared to other countries of the world, the education system in African countries have greatly been disrupted and grounded due to inadequate technological systems to drive effective online teaching and learning as embraced by the developed countries to salvage the education system. The socio-economic inequalities have further disadvantaged rural-based students, thereby creating a digital divide between urban and rural-based students and rich and poor students (Ajani & Gamede, 2020; UNESCO, 2020). The UNESCO report further posits that African students remain the most affected after Asian students (WEF, 2020).

The disruption of the academic calendar for the year 2020 (Viner, R.M., Russell, S.J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C.,& Booy, R., 2020) through the forceful closure of schools led to the loss of time for curriculum delivery and coverage for every programme of study. On September 20, 2020, level 1 easing of lockdown commenced that allowed normal activities in South Africa, but the medical precautions of social distancing, hand washing and use of masks continued to be observed to curb the spread of the virus. However, the higher institutions posit that online teaching and learning will be continued despite the 100% student return to the institutions. Only a limited number of students would be engaged in contact teaching for those with laboratory activities. In a related outbreak, Kekić and Miladinović (2016) in their study highlighted the use of social distancing as one of the measures to curtail transmission of the infectious virus among the people. Thus, the continuous full implementation of online teaching would negatively affect the delivery and coverage of the curriculum in South African higher education.

Adoption of full blended learning for curriculum delivery during the pandemic lockdown

The attempt to save the academic calendar for the year 2020 in South Africa led many institutions of higher learning to adopt full blended learning as the only approach to avoid physical contacts to curb transmission of the deadly Coronavirus. Medical precautions advise social distancing, wearing of masks and regular washing of hands with soap or 70% alcohol-based sanitisers. Blended learning is not a new concept in the education system. Its origin is traced to the early 1960's in the education systems of developed countries (Mahaye, 2020). It is the use of different learning technologies to deliver learning experiences to learners through electronic devices using the internet service to avail the learning content to the learners (Dziuban et al., 2018). The adoption and integration of learning technologies into conventional face-to-face learning methods through online or digital approaches are known as blended learning (Dziuban et al., 2018; Hrastinski, 2019). Several studies have described blended learning in different ways, based on how digital learning is conceptualised or contextualised (; Garrison & Kanuka, 2004; Graham, 2006). According to Graham (2006), blended learning is a combination of various learning systems that integrate face-to-face learning with computer-based learning. Hence, blended learning is facilitated within school classrooms, where students and lecturers are involved in interactive teaching and learning.

Seemingly, Garrison and Kanuka (2004) opine that blended learning ensures the facilitation of learning experiences through different online platforms. Online learning, learning technologies, online experiences and face-to-face are significant components of blended learning as highlighted in various definitions of blended learning. For effective delivery of the curriculum, the need for pedagogical approaches culminates into the implementation of blended learning in the education system (Garrison & Kanuka, 2004; Graham, 2006). Curriculum delivery is enhanced through blended learning where conventional face-to-face instructions and online instructions are combined. Garrison and Kanuka (2004) aver that

learning experiences, teaching methods and learning technologies should be well integrated, to attain the learning objectives. Hence, its effective use ensures effective curriculum delivery when all components are integrated. Blended learning is the application of computer-designed learning experiences (Graham, 2006), while Garrison and Kanuka (2004) opine that blended learning refers to learning experiences acquired through online approaches. Hrastinski (2019) argues that computer-based learning and online-based learning are interchangeably referred to in the education system as the computer-based learning where learning is made online or use computers to access learning.

The introduction of learning technologies into the education system has paved the way for better curriculum delivery (Dziuban et al., 2018). The pedagogical approaches of curriculum delivery through Information and Communication Technology (ICT) promote the wide use of blended learning to deliver learning experiences. The adoption of blended learning provides learning with no barriers and its significance is critical to curriculum delivery during disease outbreaks, distance and other crises that hinder face-to-face learning. Graham et al (2013) posit that blended learning is set to replace conventional face-to-face learning that limits learning experiences to classrooms. Hence, the limitation of learners' academic activities to only classroom instructional delivery is addressed through blended learning. Siemens et al. (2015) affirm that blended learning encompasses the integration of both online learning systems with face-to-face classroom instructions through learning technologies, breaking barriers between learning facilitators and learners' access to learning experiences. The focus of blended learning is to provide learners with learning experiences that appropriately address their situational needs (Mirriahi et al., 2015).

The significance of blended learning for curriculum coverage

Using blended learning for curriculum delivery revolves around effective implementation of all that entails effectiveness of the education system as a whole. To achieve educational goals, learning is facilitated based on the designed curriculum through the selection of effective learning strategies for effective learning experiences (Nnabuike et al., 2016). Learning experiences entail all programmes of studies, activities and guidance which are integrated into the curriculum. Effective delivery of the curriculum implies that learners attain the stated goals of the education system. The emergence of COVID-19 in different parts of the world has disrupted global curriculum delivery. However, the blended curriculum has been fully embraced to continue curriculum delivery. The South African education system has suffered significantly and curriculum delivery has been disrupted because of the lockdown. The use of blended learning was encouraged by the Department of Higher Education and Training (DHET) to salvage the academic calendar. Full embracement of blended learning is to promote curriculum delivery, where learning experiences are facilitated despite the lockdown.

Curriculum delivery is significant to learners' access to regular and appropriate learning experiences. Blended learning is beneficial to both learners and the facilitators, its usage enables flexible access to effectively unlimited learning experiences (Onwusuru & Ogwo, 2019). The use of blended learning during and post COVID-19 era allows teachers or facilitators to present learners with learning experiences that can be accessed and delivered at any time or anywhere. Onwusuru and Ogwo (2019) posit that flexibility, appropriateness, and effective curriculum delivery necessitate blended learning for learning without boundaries or limitations.

To deliver curriculum using blended approaches, learning technologies are involved to plan, design and present learning content that can be accessed by learners as computer-based learning experiences that are contextualised for diverse learners (Hrastinski, 2019). The facilitators or teachers design appropriate content and implement how to deliver subject content that can be made accessible to the learners through the use of Information and Communication Technology (ICT). Individual learners access learning experiences or instructional materials from online platforms in the comfort of their homes. Blended learning does not allow learning experiences to be discontinued under a lockdown or during any disaster, thereby preventing loss of the academic calendar or learning opportunities. Blended learning is a virtual classroom that provides learners with opportunities to learn without limitations and for continuity in curriculum delivery (Onwusuru and Ogwo, 2019). Thus, virtual classrooms are computer-generated classrooms where learners use diverse online tools to continue classes outside physical classroom contacts. However, adequate and regular computer-training is needed by the facilitators and learners for effective use of computer-based instructional delivery for teaching and learning.

The Role of Learning technologies in teaching and learning during COVID-19

The education system has been impacted positively by the introduction of learning technologies in the global world. With the global waves of the Fourth Industrial Revolution (4IR) creeping into every sector of global society, curriculum delivery in educational institutions has been made accessible, flexible, concrete and significantly interactive between the facilitators and the learners. Hence, teaching and learning have been greatly influenced, where no barrier can limit learning experiences or exchange of knowledge. According to Wikramanyake (2014), implementation of curriculum delivery via online approaches or virtual platforms enables learning objectives to be achieved even outside the four walls of the classrooms. Hence, the adoption and usage of learning technologies (known as ICT) play a significant role in advancing knowledge as well as the attainment of learning objectives (Higgins, 2012; Onwusuru and Ogwo, 2019; Hrastinski, 2019). According to Wikramanayake (2005) and Mirriahi et al. (2015), the evolution of ICT in education has transformed the system from the traditional approaches of teacher-chalk-talk to the use of various sophisticated learning

technologies to share instructional materials or facilitate learning experiences without any distance barriers.

However, South Africa like most developing countries, has more of their schools located in different rural areas where the use and adoption of learning technologies are faced with challenges (Ajani & Gamede, 2020). These challenges may limit the effectiveness of learning technologies or hinder the adoption of blended learning. Du Plessis (2014) affirms that rural schools in South Africa are disadvantaged and their learners have limited access to quality education due to lack or inadequate facilities. However, the adoption of blended learning provides greater opportunities for all learners regardless of their locations, if all ICT facilities are made available to all learners. This implies that blended learning can be used to enhance curriculum delivery even to the learners based in rural areas, provided the learners are provided with all needed facilities. Computer literacy is necessary for teachers to maximise the features or benefits provided by the ICT in education. The teachers need to train their learners on computer usage for educational activities. According to Bester and Brand (2013), the use of blended learning in the education system allows the learners to access new ideas, knowledge, information and skills that can be used to build or construct new concepts of knowledge that can be contextualised to their immediate environments at different situations. Wikramanayake (2005) and Khan et al. (2012) argue that blended learning provides a significant impact on the education system including:

- Provision of unlimited access to learning resources
- Learning at the comfort of the learners
- Variety of learning resources
- Interactive assessment
- Immediate feedback
- Teachers are facilitators of learning, while learners' role is to construct meaningful learning from learning experiences.

The significance of blended learning in teaching and learning affirms why the use of blended learning among all students should be promoted by all stakeholders. Its full adoption allows students to be exposed to educational innovations as well as technologically-based innovation in blended learning approaches. Students' ability to access learning experiences on their own at their conveniences makes blended learning an effective approach for curriculum delivery. However, blended learning can be designed or structured to be classroom-based, where learners are provided with necessary ICT resources within the school premises while it can be off-site based where learners need to access learning experiences online with ICT resources. Adoption of blended learning for curriculum delivery of all learning experiences to the learners enables learning outcomes or learning without borders. In all the blended learning approaches, teachers are the facilitators of learning experiences or assessments. These explain the significant role of blended learning during the COVID-19 pandemic in South Africa. Blended learning enables learners to collaborate also with the teachers. This is advantageous to learning outcomes as the

approaches to curriculum delivery promote sharing of learning experiences, ideas, knowledge and challenges among the students, and between students and teachers. Students can be provided immediate feedback on any assessment or task at any location in their virtual learning classrooms (Onwusuru & Ogwo, 2019). Virtual learning is beneficial to curriculum delivery in so many ways as highlighted below:

- Students can be engaged in a collaborative and interactive learning session where they work in a group for learning tasks. This is peer learning, building the spirit of team building or teamwork in students. Students can be assessed online by the facilitators.

However, various approaches are adopted by various universities in South Africa to deliver curriculum to students. These are classroom-based and off-site based learning approaches or blended learning approaches. The approaches include:

Blended learning with audio-video classes

The use of audio-video classes allows the teachers to facilitate learning experiences with recorded classes of teachers' physical activities being recorded with audio for every teaching and learning experience or activity, students need to access. This approach is effective in engaging the students as well as establishing concrete learning. Contents of the curriculum can be prepared in a series and made available to the students online. The use of audio-video classes has resulted in educational successes and results.

Web conferencing

Blended learning has significantly used web conferencing to deliver curriculum content in different parts of the world. This approach promotes students and teachers' use of computer-based devices for visual and educative communication. Web conferencing adopts webcams to share knowledge or learning experiences. A web conference allows a virtual class/meeting through the use of various electronic conference technologies, which can be between a teacher and a student or between a teacher and a group of students, who are located in different separate locations. Web conferences are also known as webinars and webcasts, which are very effective for curriculum delivery and also for various meetings in the education system.

E-Learning Moodle

Moodle is a popular learning system adopted by most South African universities. Moodle is also referred to as a Learning Management System (LMS). It is a free and open-source learning system that utilises online platforms to deliver learning materials to the students. Moodle is well embraced and used by students and teachers to deliver learning materials, learning content and assessments.

Blended learning with educative blogs

To use educative blogs is a concise and brief approach to deliver curriculum content to students. Globally, a web blog is known as an online platform that was mostly used initially as an online newspaper or website for the presentation of information where new articles are shared with readers. With the modern trend, these blogs have been adapted into the education system, and are being used to facilitate learning experiences, deliver learning content as well as being an informative forum between the facilitators and students. Thus, educative blogs are encouraging interactive platforms for knowledge to be shared.

Challenges of online teaching in South African higher institutions

As much as blended learning can positively impact the education system, several challenges are mitigating against blended learning in the South African context. Shifting from conventional classroom teaching and learning to online modes where ICT plays a significant role is challenging. To deliver the curriculum effectively in South Africa, the adoption of blended learning (Pridmore, 2007) has increasingly been embraced as an effective approach to share knowledge in curriculum delivery and instructional practices, and thus, traditional learning approaches are no longer in vogue. The researchers highlight the significance of the paradigm shift from conventional traditional learning approaches to various online learning platforms available in the education system today. The researchers discuss the adoption of learning technologies in education to enhance effective curriculum delivery in the context of technology-driven learning experiences, especially during the COVID-19 pandemic (UNESCO, 2020) that limits physical contact between students and teachers to prevent the spread of the Coronavirus.

However, Brooks (2014) avers that access to blended learning by rural students is inadequate and of less benefit to the students. Many of the students in South African universities are located in rural areas. Despite, the global adoption of online teaching and learning, students in rural areas struggle with irregular electricity supply and poor network coverage that does not allow them to efficiently access blended learning in these remote areas of South Africa (Azzi-Huck & Shmis, 2020). Seemingly, some students have no computer knowledge to access or maximise ICT in education. Furthermore, some of these rural-based students lack laptops and find it difficult to access the internet from their rural homes.

Moreover, the historically disadvantaged rural universities have inadequate resources to adequately support these rural students as well as the teaching staff. The universities with open distance learning programmes are also challenged in providing blended learning experiences to their rural students in this pandemic.

Lack of internet data for some rural students is also another challenge to blended learning in South Africa. The cost of purchasing data bundles is expensive and cannot be afforded by students who are from poor homes. Lack of internet data therefore limits regular access to curriculum delivery.

The lack of a conducive environment for these students in their rural homes is affirmed as a challenge. Most rural students are family-oriented, and they live amid their families where spaces for academic activities are not available (Mahaye, 2020). Their homes do not provide them with spaces where they can meaningfully engage or interact meaningfully using online platforms. Rural students are disadvantaged in accessing blended learning in most South African universities and cannot adequately attain learning outcomes, ranging from the irregular electricity supply, unconducive classrooms and lack of other basic amenities in the rural universities as well as students' homes in the rural areas, which all hinder effective blending of learning technologies with conventional traditional teaching approaches (Dzansi & Amedzo, 2014). The socioeconomic situations of rural students make them disadvantaged from accessing quality education in South Africa (Du Plessis & Mestry, 2019). Seemingly, rural students may be marginalised in the use of technology-driven blended learning (Ajani & Gamede, 2020).

Conclusion

The emergence of COVID-19 in the global world has transformed every sector of society. Social distancing is one of the preventive measures that necessitate the adoption of blended learning in South Africa. With the declaration of lockdown, students were sent away from educational institutions to protect them from health threats or spreading of the Coronavirus in the education system. Blended learning is not a new phenomenon, it has been accepted globally in developed countries for decades and has been effectively used for curriculum delivery. Hence, with lockdown in different parts of the world, curriculum delivery remains undisrupted in those countries. Learning outcomes continue to be attained and the teaching and learning are salvaged. However, South Africa, like one of the developing countries, adopted full use of blended learning to deliver learning materials and learning experiences to the students. However, many challenges are limiting the effectiveness of blended learning in rural areas. Rural students suffer irregular electricity and they lack internet data to access blended learning. Also, studies establish a lack of laptops as part of the lack of learning resources for rural students. COVID-19 is a pandemic has ravaged many parts of the world and blended learning remains one of the effective approaches to deliver curriculum content to all students regardless of distance or locations of the students. The full adoption of blended learning may be adopted for curriculum recovery as advised by the Department of Higher Education and Training, during and in the post-pandemic era. Online platforms can be massively used to provide learning materials and other learning experiences to the students.

Implications of the study

This article explores how blended learning can be effectively adopted to promote teaching and learning during the COVID-19 pandemic as well as after the pandemic. The adoption and acceptance of the online platforms by all students can be used to promote sharing of knowledge, skills and information between the students and teachers. The evolution of the Fourth Industrial Revolution (4IR) has crept into every sphere of life and needs to be promoted in every developing country. Education is dynamic and needs to be driven by digital technologies and can be used to minimise the spread of COVID-19 in the education system. Effective adoption of blended learning in South African universities, and for all students regardless of their locations, will provide them with unlimited access to online learning materials and avenues for them to collaborate, interact and share knowledge and information with the teachers or facilitator. This articles therefore recommends:

- Rural students should be provided with internet data bundles that can be used to access online materials regularly. Also, the universities should provide the individual rural students with personal laptops for their academic tasks.
- Most rural students do not possess computer literacy skills that can be used for online teaching and learning, hence, the universities should design how these students can be empowered with necessary computer literacy skills for blended learning.
- Rural students who experience irregular electricity can be using community libraries around or within their communities, where they can comfortably access blended learning and also meaningfully benefit from the online platforms. This will also solve their problem of an unconducive environment at home.
- The community libraries can also provide the students with other facilities they cannot get at homes. Community libraries can provide support to disadvantaged rural students.

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