

Online Teaching and Learning Experiences of Higher Education Lecturers and Students in the COVID-19 Era: A Leap to Digital Pedagogies?

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ABSTRACT

The swift transition from face-to-face contact to online learning due to coronavirus (COVID-19) in teaching and learning is unprecedented on the globe, fraught with a myriad of challenges, and many developing economies being hardest hit. However, several efforts have been made, albeit at different levels in the various parts of the world to adjust and to continue with tuition under the difficult circumstances. The study intends to determine the potential of online teaching and learning in a developing country to propose a more applicable and sustainable integration of information and communication technologies (ICT) in teaching and learning in crises and unforeseen circumstances. The study was conducted as a survey based on a case study of a tertiary institution. The objective was to find out lecturers' and students' experiences of online instruction since the beginning of lockdown periods due to COVID-19 in early 2020 so as to map future trajectories. The major findings include a lack of digital literacy among both lecturers and students; inadequate data and properly functioning gadgets; resistance to change revealed in limited adoption on the part of both lecturers and students despite efforts to provide training being made; a lack of systematisation of integration of ITCs in teaching and learning making commitment to transition to online modes difficult; a lack of commitment to attending online sessions and plagiarism in assignments by students. However, adequate commitment to online instruction is crucial to embrace the fourth industrial revolution.

KEYWORDS

COVID-19; online teaching and learning; digital literacy; attitude change; fourth education revolution

INTRODUCTION

South Africa is one of the countries which halted business and educational activities in the dawn of COVID-19 in March 2020. Many institutions were not ready for online instruction because students and lecturers were used to face-to-face contact. The lockdown restrictions due to the COVID-19 pandemic prompted swift transition to remote education whereas under normal circumstances, effective planning for an online university course has been estimated to be six to nine months Du Preez and Le Grange (2020). This measure had to be taken to salvage the academic programme in a crisis. The major implications were more investment in technological resources and unprecedented support from information technology (IT) divisions as well as teaching and learning centres within universities. This project could not be achieved easily, thus, online instruction has been fraught with myriad challenges since the dawn of lockdown though the situation improved with time in some contexts. That is why Ali (2019) emphasises adequate training and support of end-users before information and communication technologies (ICT) can be effectively utilised.

On the other hand, students were also not ready to be taught online because some of them did not have gadgets and others struggled with connectivity, digital literacy, and data issues despite expectation by universities that students utilise technology in their education. There is evidence that university students in South Africa have increasingly adopted mobile phones, and lately, universities across the country have made some efforts in providing technological support to students such as laptops, tablets, and data. However, it remains to be answered whether these efforts have yielded positive results. Notably, many developed nations managed to shift to online learning with less difficulty than developing countries, for example, in Zimbabwe, the major challenges are attributed to the cost of access, and inadequate digital literacy (Hove and Dube, 2021). There is consensus in research that challenges with digital technologies have led to commoditisation of education and hence a digital divide of inequality of access to online learning between the advantaged and disadvantaged communities in many developing countries (Etherington, 2019; Hove and Dube, 2021; Tarman, 2009).

Meanwhile, the difference between online and e-learning must be drawn to avoid misinterpreting the two concepts. Anderson (2011, as cited by Rapanta et al., 2020) describes online learning as instruction in which the learner is away from the tutor/instructor, and interaction as well as access to learning content is mediated using technology. Online learning has a narrower focus than e-Learning and digital education, where the latter include a wide variety of digital tools and resources, not just the Internet, Rapanta et al. (2020), to provide instruction. Larsen and Vincent-Lancrin (2016) clarify that e-learning is a general term referring to different uses and intricacies of ICT, from complete online education to physical contact instruction and other varied forms of remote instruction supplemented with ICT in some way. The current study focuses on online teaching and learning which is also herein termed online instruction.

The White Paper on e-Education (DBE, 2004) had projected that every South African learner in the General Education and Training and the Further Education and Training categories will be ICT-competent by 2013. However, more than eight years after that projected time, education institutions in South Africa are still struggling to integrate and standardise ICT in teaching and learning. Research findings of Sianou-Kyrgiou and Tsiplakides (2012, pp. 64-65) assert that “Internet access alone does not automatically guarantee an informed and knowledgeable public” and that “the digital divide widens, despite that access to technological hardware has improved”. In the wake of COVID-19, several studies have recommended that students are more inclined towards learning with technologies, for example, using mobile devices (Al-Emran et al., 2016; Ayub et al., 2017; Korucu and Bicer, 2018; Odede, 2021), thus insinuating that instructors and IT support departments should come on board. Therefore, an inquiry of students’ and lecturers’ online instruction experiences in South Africa during the COVID-19 era can assist in the planning of more effective and sustainable integration of ICT in education. In this study, lecturers’ and students’ experiences are elicited using a qualitative survey and a quantitative survey respectively.

Rationale, aim and objectives

The swift transition from physical contact to distant, online instruction is unprecedented in South Africa, and many developing economies, fraught with myriad challenges. There are some wide variations in the demographic, geographic and digital literacy profiles of students and lecturers. Therefore, it cannot be assumed that the availability of technological gadgets and data to access online platforms warrants teaching and learning. Yet it is apparent that the fourth and in some parts of the world the fifth industrial revolutions are manifesting themselves across the globe. Therefore, it is time that strategies to embrace the fourth education revolution are sought and embraced in developing economies. Thus, the current exploration is aimed at yielding possible ways of integrating ICT in education in diverse student-lecturer communities of such a developing economy as South Africa. The aim is intended to be achieved by exploring the following objectives: 1. to find out lecturers’ and students’ experiences of online teaching and learning since the national lockdown due to COVID-19 in South Africa; 2. to determine an applicable model of ICT integration in teaching and learning.

Research Question

The study sought to answer the following research question:

- What are the lecturers’ and students’ experiences of online teaching and learning in the COVID-19 era and do their experiences translate to smooth transition to digital pedagogies?

LITERATURE REVIEW

Literature was reviewed to tap into experiences of online teaching and learning since dawn of COVID-19 in 2020. This perspective was intended to probe the challenges faced as well as the opportunities noted to develop a more applicable and sustainable model of blended teaching

and learning, considering that the university where the research was conducted is a contact institution. Therefore, insights from this literature will shed light into what must be researched in this overarching subject.

Challenges of Online Instruction

The leap to online distance instruction caused by coronavirus restrictions has revealed already existing challenges of the digital divide. For example, Mahyoob (2020) reiterates earlier sentiments such as those by Brown et al. (2008), Mlitwa and Van Belle (2011), Venter et al. (2012), Isabirye and Dlodlo (2014), citing varied disparities that impact negatively on online instruction, particularly infrastructural challenges. Some empirical studies such as that by Ching et al. (2018), cite complexity of planning and preparing for online courses as some of the main difficulties reported by university teachers. This could explain the generally notable preference of physical contact to online instruction by both teachers and students. As such, findings of a study conducted by Journell (2020) in India, cite social presence, engagement, gratification, and overall quality as benefits of physical contact. Elsewhere, in the developed world, the use of ICT has become widespread, even at primary and secondary school levels. Interesting. Yet digital incompetence is still reported in these developed countries as in the case of a study by Konig et al. (2020) in Germany. Digital illiteracy is also reported by (Heng and Sol, 2020; Rajab et al., 2020; Marek et al., 2021). In South Africa, some universities have made considerable effort in promoting online learning, such as the University of Johannesburg, the University of Cape Town and Sol Plaatje University by allocating resources for technological gadgets to students (Brown and Pallitt, 2015). What is missing in these studies is the motivation of both lecturers and students to uptake relevant training and a system of integrating these ICT in teaching and learning.

Opportunities of Online Instruction

Despite notable challenges in online instruction during the COVID-19 era, there has been some significant benefits, and these should be embraced in the light of the fourth and in some cases the fifth industrial revolutions that have seized the world. Online instruction can allow many students to access education and physical barriers such as the size of the learning spaces and the students/teacher ratio, are surpassed (Larsen and Vincent-Lancrin, 2016). ICT allow multi-media forms of delivery thus, enhancing wider accessibility, for example, a digital recording can be diffused on TV, radio or the Internet (Larsen and Vincent-Lancrin, 2005; Diep et al., 2017), though social isolation should be acknowledged. In this way, online platforms using technologies yield unprecedented learning experiences that enable graduates to fit into the digitised world of work. Furthermore, costs can be cut when physical campuses can be replaced by virtual campuses and library materials become digitised (Larsen and Vincent-Lancrin, 2016). South African Higher Education institutions should maximise opportunities provided by international associations, including the International Association of Universities, the African Research Universities Alliance, the Association of Commonwealth Universities (Nawangwe, 2021),

including local ones such as the Universities South Africa (USAF). These associations enable sharing of resources by the affiliated universities, and provision of links to research grant agencies. Czerniewicz et al. (2020) describe the physical lockdowns caused by COVID-19 as a space for professional growth among educators, learning new ways of giving instruction and handling technology. Both the challenges and the opportunities noted should be considered and addressed in context.

Digital Divide and Online Teaching and Learning

The study largely draws from the broad concept, digital divide. Littlejohn and Foss (2009, pp. 310) defines digital divide as “the gap between populations that have easy access to communication and information technologies and those who remain underserved by these technologies”. Digital divide describes the broader social strata, such as “poverty, status, caste, class and inequality” (Journell, 2020). Suffice it to say, the digital divide entails varied indicators, including “language and literacy ability, computer skills, ..., availability of instruction or social support that enable or constrain meaningful ICT use” (Warschauer, 2010, pp. 1552). The realities of the COVID-19 pandemic have revealed how Internet access has remained a treasure for the privileged few in developing economies. However, the COVID-19 pandemic has forced universities in South Africa to invest more in technological gadgets for students to allow continuity of tuition. Nonetheless, myriad challenges have continued to prevail in online instruction and its effectiveness is yet to be synthesised. According to the Independent Communications Authority of South Africa (ICASA) (2021), total fixed broadband subscriptions decreased in all categories in 2020. When benchmarking with the BRICS countries, “South Africa’s speed test ranking for fixed broadband was at 87, which is the lowest ranking in the grouping” (ICASA, 2020, pp. 42-51). Effective online instruction in South Africa can only be enhanced through a multi-faceted support system to address myriad challenges emanating from the digital divide, including “pedagogical challenges and epistemological access” (Du Preez and Le Grange, 2020, pp. 100). The current findings will reveal the nature of the digital divide experienced in the case study, and that can inform what models to be developed for effective integration of ICT in teaching and learning in populations with similar characteristics.

Diffusion And Adoption of Innovations in Online Teaching and Learning

Apart from the digital divide being a hindrance to adoption of online teaching and learning, inadequate diffusion of innovations and negative attitudes could also result in poor adoption of online instruction. Rogers’ (2003) diffusion of innovations theory is a process with five stages adapted in the current study that an individual goes through to utilise technology effectively. The first stage is the knowledge stage where end-users should be informed about ITC available for online instruction. Then, prospective users should be mobilised to uptake training, which is the persuasion stage where the benefits of the ICT are displayed. This enhances decision (third stage) to implement (fourth stage) the strategy. After being adequately convinced of the benefits, then users can confirm (fifth stage) utilisation of an ICT tool. These stages imply that

with adequate mobilisation, training and evaluation, online instructional tools are likely to be adopted at a larger scale.

In his quest to determine factors influencing adoption, Rogers (2003) suggested five innovation characteristics that promote or hinder an innovation's adoption, and these have been found relevant in the current study. The relative advantage of one teaching method over the other influences its utilisation. Though not replacing traditional face-to-face interaction, online methods are more convenient beyond geographical boundaries, with tools stimulating interest. As such, institutions of higher learning in South Africa are strengthening their efforts towards providing online learning by broadening the use of ICT tools to include YouTube, Zoom and WhatsApp in their teaching and learning (Moloi & Mhlanga, 2020). Furthermore, if an online instruction tool is found compatible with the nature of the subject content and delivery, it is likely to be adopted. Importantly, the complexity of an ICT tool determines its adoption, the more comprehensible an ICT tool is, the higher the chances of its utilisation. Yet, the COVID-19 crisis heightened uptake of ICT in education without adequate training time in South Africa as on other parts of the globe. Apparently, end users are likely to try an ICT tool, then implement it based on notable merit, but unfortunately there was no time for that in the wake of COVID-19. Therefore, knowledge instructors had to utilise available tools based on convenience. Thus, if educators and learners partake in training of the various online tools available, then they can be able to identify those tools most applicable to their situations and curricular. Despite several benefits in education, it is difficult to observe the extent to which ICT-mediated instruction has improved teaching and learning outcomes since it has not been applied systematically in tertiary institutions of South Africa Moyo (2019), and this calls for further research.

RESEARCH METHODOLOGY

Design

This study employed a mixed-methods research design, that is, we used a combination of qualitative and quantitative approaches to correlate lecturers' and students' experiences in online teaching and learning to determine a model of integrating ICTs in teaching and learning at the Central University of Technology (CUT), in South Africa. Questions for both the qualitative and quantitative surveys were drawn from the same research question. The institution has around 20,000 learners and 307 lecturers according to the statistics from the university enrolment department 2021.

Sample

Qualitative data were collected from a purposive sample of 38 lecturers from all faculties of the university. Of the 38 respondents, 16 came from the Faculty of Humanities, 12 from the Faculty of Engineering, Built Environment and Information Technology, 6 from the Faculty of Health and Environmental Sciences, and 4 from the Faculty of Management Sciences. The data shows that most lecturers are within age bracket 42 and above (46%). Survey questions targeted lecturers' experiences of online teaching and learning from since the national COVID-19 lockdowns.

Quantitative data were drawn from the student population of the two campuses in Bloemfontein and Welkom. We used a convenience sample to draw 49 students across the four faculties and study levels at the university. Eighteen students were drawn from the Faculty of Management Sciences, 16 from the Faculty of Humanities, 12 from the Faculty of Health and Environmental Sciences and 3 from the Faculty of Engineering, Built Environment and Information Technology. Representativeness could not be achieved due to the challenges of COVID-19 where students were inundated with responsibilities of adapting to the new normal. However, we believe that these 49 voices can tap into the student's learning experiences during the COVID-19 era that can give insight on future teaching and learning planning.

Instruments

In the qualitative survey, questionnaires/interview schedules were distributed physically and via email to lecturers across the four faculties based on availability.

In the quantitative survey, we used a self-administered questionnaire to collect data from students and responses were presented based on the Likert Scale of measurement. Questionnaire guides were distributed via email. Face-to-face interaction was not possible since students were away due to COVID-19 restrictions.

Presentation and Analysis

Qualitative data were coded manually and analysed using descriptive themes. Quantitative data were coded using Statistical Package for the Social Sciences and analysed using descriptive statistics.

FINDINGS

Section A presents the lecturers' experiences while section B presents the students' experiences of online teaching and learning in the COVID-19 era and whether their experiences translate to smooth transition to digital pedagogies.

Section A: Qualitative Findings on Lecturers' Online Teaching and Learning Experiences

Responses on lecturers' experiences of online teaching and learning since lockdown periods due to COVID-19 are presented based on descriptive categories to develop themes to be corroborated with current and previous literature and with the quantitative findings wherever possible. Examples of the respondents' exact words are given to emphasise major concerns noted.

Accessibility of Online Platforms

Our study found that most lecturers, 14 (41%) view WhatsApp messaging as an accessible online mode for teaching students while 14 (41%) say e-Thuto, the CUT's version of Blackboard, is accessible. This was evident even in cases where lecturers mentioned WhatsApp alongside other modes of online learning, such as video and Skype. The apparent popularity of WhatsApp could be due to the portability of mobile phones, and little amount of data it consumes as compared to other platforms that lecturers use for online teaching. One lecturer says, "Students

respond and in time via WhatsApp because they are always on their phones.” The indication of Blackboard is also significant likely because it is formal where lecturers can give tests and assignments and conduct sessions with a formal record. Another lecturer indicates “Students are forced to log onto Blackboard it is where we post learning materials.” Only 3 (11%) lecturers prefer either e-mail or Zoom to other online platforms of teaching. It is interesting that only 2 (7%) say videos as well as Microsoft Teams and Discord are preferable.

Comparing Online with Face-To-Face Methods of Teaching

We noted that 23 out of 38 (61%) respondents suggested that face-to-face learning is preferable to online learning. Of these 23, 7 (30.4%) said they preferred face-to-face learning because it encouraged actual interaction between learners and the lecturer, which ensured immediate feedback. Moreover, 4 (17.4%) respondents said face-to-face is preferable due to its efficiency. Yet, another 4 (17.4%) respondents said they preferred face-to-face learning but did not give reasons why. Only 2 (8.7%) respondents said face-to-face was preferable because students lacked the equipment necessary for online learning. Another 1 (4.3%) respondent said face-to-face is better because students prefer it to the online method. Lastly, 1 (4.3%) respondent said face-to-face is better because students generally performed worse in online learning. One lecturer says, “Face-to-face teaching has better impact on learning while online can help enhance learning after.”

On the other hand, 9 (29.6%) of the 38 respondents were of the view that online learning is preferable to face-to-face. A total of 6 (66.7%) out of the 9 respondents gave efficiency as the main reason for their preference of online to face-to-face learning. Only 1 (11.1%) respondent said the online method is preferable because it allows learners to do a lot of research using Google. Another 1 (11.1%) respondent did not give the reason why online learning is better than face-to-face. However, 6 (23.6%) out of the 38 respondents were undecided and non-committal on which mode was better than the other.

The Problems Lecturers Encounter with Online Teaching

The study found that lecturers come across various problems with online teaching. A total of 26 (68.4) out of 38 respondents mentioned lack of gadgets in good working condition and data both on their part and on the part of the students for learners’ participation in learning as the main problem affecting online learning. Moreover, 14 (36.8%) respondents said students do not attend online classes or participate during the classes. Further, 10 (33.3%) feel that online teaching leads to late submission of class assignments by learners. Only 9 (30%) respondents said there is a problem of plagiarism as learners copy ideas they have taken from fellow students. A concerning indication by one lecturer is “Students do not attend ... students fail to submit on time using technology as an excuse”.

Lecturers’ Needs Related to Online Teaching

The study also sought to determine lecturers’ needs based on the challenges they faced with online learning. A significant number, 21 (55.3%) mentioned that the university should provide

data to both lecturers and students to enhance their ability to attend and participate in online learning remotely. Moreover, 16 (42.1%) lecturers felt that learners and educators needed more training on how to handle technology, to assist in the realisation of efficient online learning. Importantly all the 38 (100%) respondents indicated the need for technological gadgets in good working condition as well as adequate technical support to enhance smooth online instruction. One lecturer indicates need for the following resources “teaching material, laptops which are in good condition, and printer. Data since we are using our own personal internet. We need more support from the university, workshops”

Section B: Quantitative Findings on Students’ Online Learning Experiences

Responses of students to each statement are analysed using a descriptive and exploratory approach to identify those online instructional approaches that can be integrated into teaching and learning in preparation for unknown future scenarios. The acronyms are as follows: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

Table 1. Distribution of students to each statement

NO.	STATEMENT	RESPONSE CATEGORY			
		SA	A	D	SD
1.	I easily receive learning materials via WhatsApp	23 (46.94%)	22 (44.90%)	4 (8.16%)	0 (0.00%)
2.	I easily send learning feedback via WhatsApp	14 (28.57%)	30 (61.22%)	4 (8.16%)	1 (2.04%)
3.	I easily share learning materials via WhatsApp	19 (38.78%)	28 (57.14%)	1 (2.04%)	1 (2.04%)
4.	I engage in meaningful formal learning discussions with via WhatsApp	16 (32.65%)	23 (46.94%)	7 (14.29%)	3 (6.12%)
5.	I respond to assessments easily via WhatsApp	14 (28.57%)	20 (40.82%)	11 (22.45%)	4 (8.16%)
6.	I easily receive learning materials via e-Thuto	16 (32.65%)	18 (36.73%)	11 (22.45%)	4 (8.16%)
7.	I easily send learning feedback via e-Thuto	6 (12.24%)	13 (26.53%)	20 (40.82%)	10 (20.41%)
8.	I easily share learning materials via e-Thuto	3 (6.12%)	11 (22.45%)	25 (51.02%)	10 (20.41%)
9.	I engage in meaningful formal learning discussions with via e-Thuto	6 (12.24%)	11 (22.45%)	17 (34.69%)	15 (30.61%)
10.	I respond to assessments easily via e-Thuto	8 (16.33%)	16 (32.65%)	12 (24.49%)	13 (26.53%)
11.	I easily receive learning materials via e-mail	12 (24.49%)	12 (24.49%)	17 (34.69%)	8 (16.33%)
12.	I easily send learning feedback via e-mail	14 (28.57%)	16 (32.65%)	15 (30.61%)	4 (8.16%)
13.	I easily share learning materials via e-mail	9 (18.37%)	16 (32.65%)	18 (36.73%)	6 (12.24%)

14.	I engage in meaningful formal learning discussions via e-mail	6 (12.24%)	8 (16.33%)	26 (53.06%)	9 (18.37%)
15.	I respond to assessments easily via e-mail	12 (24.49%)	16 (32.65%)	19 (38.78%)	2 (4.08%)
16.	I easily receive learning materials via Zoom	2 (4.08%)	2 (4.08%)	23 (46.94%)	22 (44.90%)
17.	I easily send learning feedback via Zoom	1 (2.04%)	1 (2.04%)	26 (53.06%)	21 (42.86%)
18.	I share learning materials via Zoom	2 (4.08%)	0 (0%)	25 (51.02%)	22 (44.90%)
19.	I engage in meaningful formal learning discussions via Zoom	4 (8.16%)	7 (14.29%)	20 (40.82%)	18 (36.73%)
20.	I respond to assessments easily via Zoom	3 (6.12%)	2 (4.08%)	19 (38.78%)	25 (51.02%)
21.	I easily receive learning materials via YouTube	4 (8.16%)	8 (16.33%)	10 (20.41%)	27 (55.10%)
22.	I easily send learning feedback via YouTube	2 (4.08%)	2 (4.08%)	16 (32.65%)	29 (59.18%)
23.	I share learning materials via YouTube	3 (6.12%)	3 (6.12%)	14 (28.57%)	29 (59.18%)
24.	I engage in meaningful formal learning discussions via YouTube	4 (8.16%)	4 (8.16%)	12 (24.49%)	29 (59.18%)
25.	I respond to assessments easily via YouTube	4 (8.16%)	2 (4.08%)	11 (22.45%)	32 (65.31%)
26.	I am receiving learning instruction via other platforms than those mentioned Table 1 during the lockdown period. Tick yes or no.	YES: 12 (24%)		NO: 37 (76%)	

Table 1 reveals the following information pertaining to students' responses to each statement:

Statement 1: I easily receive learning materials via WhatsApp

Twenty-three (46.94%) students strongly agreed that they easily receive learning materials via WhatsApp and twenty-two (44.90%) of them agreed. Only four (8.16%) who disagreed, and no one (0.00%) strongly disagreed with the statement.

Statement 2: I easily send learning feedback via WhatsApp

Fourteen (28.57%) students strongly agreed that they easily send learning feedback via WhatsApp and a relatively high number of them, thirty (61.22%) agreed. Four (8.16%) disagreed and only one (2.04%) strongly agreed.

Statement 3: I easily share learning materials via WhatsApp

Nineteen (38.78%) students strongly agreed that they easily share learning materials via WhatsApp and a relatively high number of them, twenty-eight (57.14%) agreed. Only one (2.04%) disagreed and only one also (2.04%) strongly disagreed.

Statement 4: I engage in meaningful formal learning discussions with via WhatsApp

Sixteen (32.65%) students strongly agreed that they engage in meaningful formal learning discussions via WhatsApp while twenty-three 23 (46.94%) agreed. Seven (14.29%) disagreed and three (6.12%) strongly disagreed.

Statement 5: I respond to assessments easily via WhatsApp

Fourteen (28.57%) students strongly agreed that they respond to assessments easily via WhatsApp and twenty (40.82%) agreed). Eleven (22.45%) disagreed and four (8.16%) strongly disagreed.

Statement 6: I easily receive learning materials via e-Thuto

Sixteen (32.65%) students strongly agreed that they easily receive learning materials via e-Thuto while eighteen (36.73%) agreed. Eleven (22.45%) disagreed and four (8.16%) strongly disagreed.

Statement 7: I easily send learning feedback via e-Thuto

Six (12.24%) students strongly agreed that they easily send learning feedback via e-Thuto and thirteen (26.53%) agreed. Twenty (40.82%) disagreed and ten (20.41%) strongly disagreed.

Statement 8: I easily share learning materials via e-Thuto

Three (6.12%) students strongly agreed that they easily share learning materials via e-Thuto and eleven (22.45%) agreed. A relatively high number of students, twenty-five (51.02%) disagreed and ten of them (20.41%) strongly disagreed.

Statement 9: I engage in meaningful formal learning discussion via e-Thuto

Six (12.24%) students strongly agreed that they engage in meaningful formal learning discussion with via e-Thuto while eleven (22.45%) agreed. Seventeen (34.69%) disagreed and fifteen (30.61%) strongly disagreed.

Statement 10: I respond to assessments easily via e-Thuto

Eight (16.33%) students strongly agreed that they respond to assessments easily via e-Thuto and sixteen (32.65%) agreed. Twelve (24.49%) disagreed and thirteen (26.53%) strongly disagreed.

Statement 11: I easily receive learning materials via e-mail

Twelve (24.49%) students strongly agreed that they easily receive learning materials via e-mail and another twelve (24.49%) also agreed. Seventeen (34.69%) disagreed and eight (16.33%) strongly disagreed.

Statement 12: I easily send feedback via e-mail

Fourteen (28.57%) students strongly agreed that they easily send feedback via e-mail and sixteen (32.65%) agreed. Fifteen (30.61%) disagreed and only four (8.16%) strongly disagreed.

Statement 13: I easily share learning materials via e-mail

Nine (18.37%) students strongly agreed that they easily share learning materials via e-mail while 16 (32.65%) agreed. Eighteen (36.73%) disagreed and six (12.24%) strongly disagreed.

Statement 14: I engage in meaningful formal learning discussion via e-mail

Six (12.24%) students strongly agreed that they engage in meaningful formal learning discussion via e-mail and eight (16.33%) agreed. A relatively high number, twenty-six (53.06%) of them disagreed and nine (18.37%) strongly disagreed.

Statement 15: I respond to assessment easily via e-mail

Twelve (24.49%) students strongly agreed that they respond to assessment easily via e-mail and sixteen (32.65%) agreed. Nineteen (38.78%) disagreed and only two (4.08%) strongly disagreed.

Statement 16: I easily receive learning materials via Zoom

Two (4.08%) students strongly agreed that they easily received learning materials via Zoom and two of them (4.08%) also agreed. Twenty-three (46.94%) disagreed and twenty-two (44.90%) strongly disagreed.

Statement 17: I easily send learning feedback via Zoom

Only one (2.04%) student who strongly agreed that he easily sends learning feedback via Zoom and one (2.04%) who agreed. A relatively high number of students, twenty-six, (53.06%) disagreed and twenty-one (42.86%) of them strongly disagreed.

Statement 18: I easily share learning materials via Zoom

Two (4.08%) students strongly agreed that they share in meaningful formal learning discussion via Zoom and no one (0.00%) agreed. A relatively high number of students, twenty-five (51.02%) disagreed and twenty-two (44.90%) strongly disagreed.

Statement 19: I engage in meaningful formal learning discussion via Zoom

Four (8.16%) students strongly agreed that they engage in meaningful formal learning discussion via Zoom and seven (14.29%) agreed. Twenty (40.82%) disagreed and eighteen (36.73%) strongly disagreed.

Statement 20: I respond to assessment easily via Zoom

Three (6.12%) students strongly agreed that they respond to assessment easily via Zoom and two (4.08%) agreed. Nineteen (38.78%) disagreed while a relatively high number of them, twenty-five (51.02%) strongly agreed.

Statement 21: I easily receive learning materials via YouTube

Four (8.16%) students strongly agreed that they easily receive learning materials via YouTube and eight (16.33%) agreed. Ten (20.41%) disagreed while a significant number, twenty-seven (55.10%) strongly disagreed.

Statement 22: I easily send learning feedback via YouTube

Two (4.08%) students strongly agreed that they easily send learning feedback via YouTube and another two (4.08%) agreed. Sixteen (32.65%) disagreed and a relatively high number, twenty-nine (59.18%) strongly disagreed.

Statement 23: I share learning materials via YouTube

Three (6.12%) students strongly agreed that they share learning materials via YouTube and three (6.12%) agreed. Fourteen (28.57%) disagree and a significant number, twenty-nine (59.18%) strongly agreed.

Statement 24: I engage in meaningful formal learning discussions via YouTube

Four (8.16%) students strongly agreed that they engage in meaningful formal learning discussions via YouTube and four (8.16%) agreed. Twelve (24.49%) disagreed and a significant number, twenty-nine (59.18%) strongly disagreed.

Statement 25: I responded to assessment easily via YouTube

Four (8.16%) students strongly agreed that they responded to assessment easily via YouTube and two (4.08%) agreed. Eleven (22.45%) disagree and a relatively number, twenty-nine (59.18%) strongly disagreed.

Statement 26: I am receiving learning instruction via other platforms than those mentioned in Table 1 during lockdown period.

Twelve (24%) said 'yes' while a very significant number, thirty-seven (76%) said 'no'.

DISCUSSION

The findings of this study corroborate current research that higher education institutions in South Africa are strengthening their efforts towards providing online learning by broadening the usage of ICT tools to include among others, YouTube, Zoom and WhatsApp in their teaching and learning (Moloi & Mhlanga, 2020). The current findings regarding lecturers' experiences of online teaching during the national COVID-19 lockdown revealed that apart from using the standardised campus learning management system, that is, e-Thuto at CUT, the lecturers indicated using few other platforms such as WhatsApp, e-mail and Zoom in their teaching and learning. The findings determined that in terms of accessibility of online platforms, most of the respondents cited WhatsApp messaging and e-Thuto the most accessible online teaching modes. Similarly, a study conducted by Marek et al. (2021) to determine instructional technology teachers used in classes that shifted to distance learning in the COVID-19 pandemic, uncovered that 84.5% of the respondents were using "chat applications, such as Messenger, Line, or WhatsApp", while 43% of the respondents used the standardised campus learning management system. These findings confirm Roger's 2003 relative advantage, compatibility and complexity of an innovation as influencing adoption.

Concerning online learning versus face-to-face methods, our findings show that most lecturers prefer face-to-face learning to online instruction, indicating immediacy of face-to-face learning as weighed against online learning. This immediacy is in the form of social interaction that happens between the lecturer and learners, and the feedback lecturers receive as a pointer to whether learning has taken place or not, contending with Journell's (2020) finding of students' and teachers' preference of face-to-face instruction in India. On the other hand, the few lecturers who favour the online mode of teaching point out its efficiency and importance as when learners do their own research. Apart from this, the respondents note that the unavailability of data and other equipment on the part of the students interferes with the efficiency of online learning. It is noteworthy that even though most lecturers in our study

prefer face-to-face as opposed to online instruction, it is not because they deem online learning devices to be “unwanted distractions, rather than critical learning tools” as reported by ECAR (2014 cited by Brown & Pallitt, 2015, pp. 2). Therefore, it can be implied that some lecturers acknowledge the importance of online instruction. This, in turn, supports Brown & Pallitt’s (2015) observation that in the last decade or so, South African universities began to appreciate the pivotal role of educational technologies as vehicles that can facilitate teaching and learning. Importantly, the lecturer respondents indicate the need for gadgets in good working condition and technical support to enhance effective online instruction, agreeing with Warschauer (2010) that technological infrastructure enhance or constrain adoption.

Data regarding the problems lecturers encounter with online teaching as well as lecturers’ needs related to online learning can be summed up in the following. Students’ lack of data is the main obstacle lecturers face when doing online teaching. This is followed by learner absenteeism, which leads to other challenges such as late submission of assignments and copying each other’s work. Lastly, lecturers believe the best way CUT can enhance effective online instruction is by providing constant data to students. Additionally, the university should devise a systematic way of training lecturers and students on how to handle technology to enhance adoption of online instruction. This aligns with Ali’s (2019) findings that “students and staff need the support and guidance to be more receptive to ICT based pedagogy and practice” (p. 91).

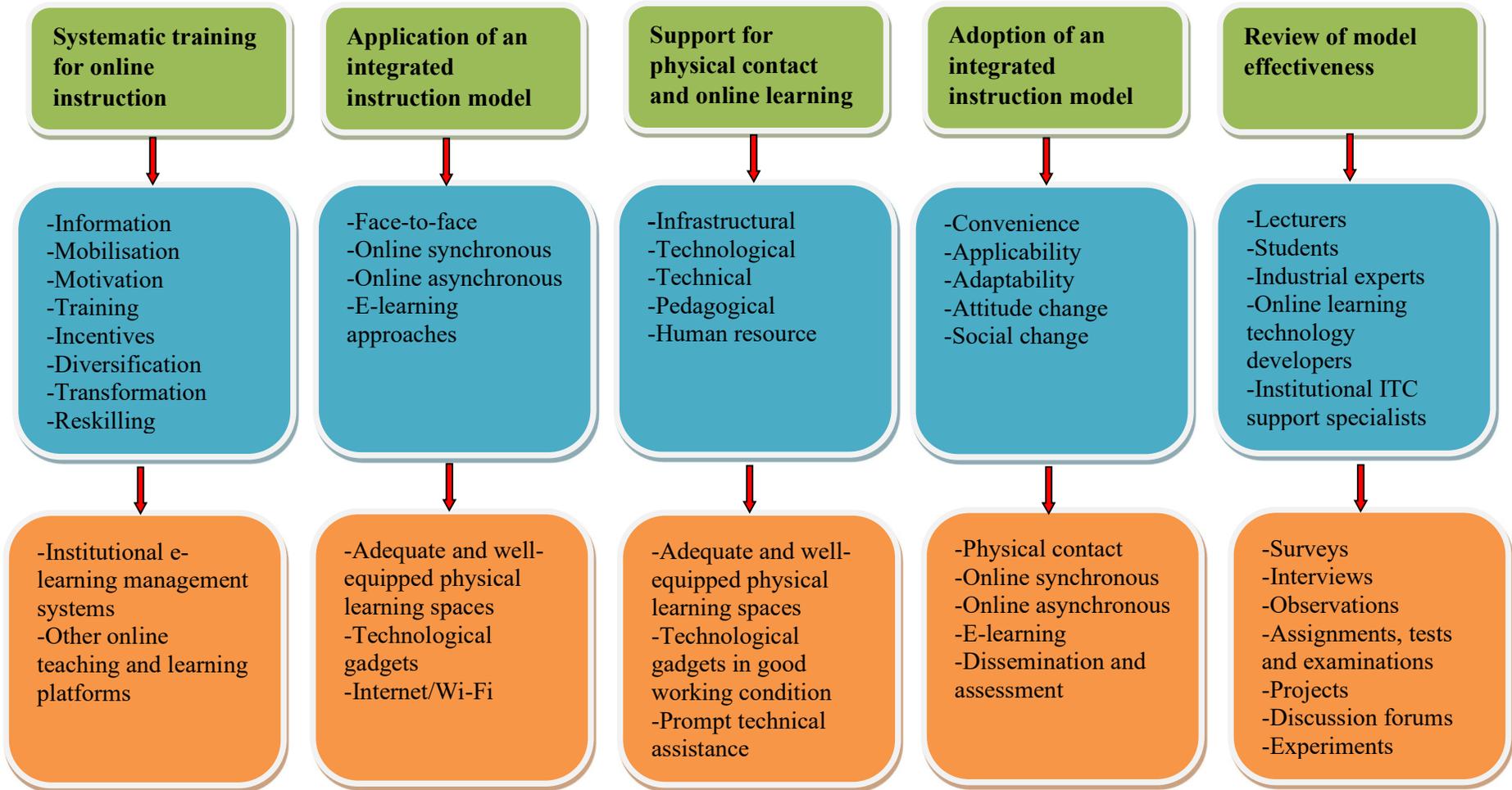
The findings concerning students’ online learning experiences reveal that students have a positive experience of online learning mostly regarding the usage of WhatsApp as a tool for online learning. Table 1 illustrates that out of five statements related to the usage of WhatsApp for online learning, a very significant number of learners strongly agreed and agreed to them (a total of 91.84%, 89.79%, 95.92%, 79.59%, and 69.39% to statements 1,2,3,4 and 5 respectively). In addition, the findings indicate that students have a positive experience of online learning regarding the usage of e-mail as a tool for online learning. Table 1 shows that out of five statements related to the usage of e-mail for online learning, a significant number of learners strongly agreed and agreed to three of the five statements (a total of 61.22%, 51.02%, and 57.14% for statements 12, 13 and 15 respectively). These findings corroborate the lecturers’ findings that WhatsApp and email are the most accessible online instruction modes. The findings agree with Mahyoob (2020) whose study looked at e-learning challenges experienced by English language learners during the COVID-19 pandemic. His findings conveyed 72% of the students used WhatsApp to send and receive homework and other tasks, followed by e-mail with 53% of the respondents.

Regarding the usage of e-Thuto, Zoom, and YouTube as tools for online learning, our findings convey students have a negative experience. As demonstrated in Table 1, out of five statements related to the usage of e-Thuto for online learning, a relatively high number of learners strongly agreed and agreed to only one of the five statements. A total of 69.38% of learners strongly agreed and agreed to only the statement that they easily receive learning

materials via e-Thuto and the majority disagreed/strongly disagreed with statements 7, 8, 9 and 10 (a total of 61.23%, 71.43%, 65.30%, and 51.02% respectively). Moreover, Table 1 illustrates that out of five statements related to the usage of Zoom and out of five statements related to the usage of YouTube for online learning, a very significant number of students disagreed/strongly disagreed to all of them. A total of 91.84%, 95.92%, 95.92, 77.55%, and 89.80% disagreed/strongly disagreed to Zoom usage 16, 17, 18, 19 and 20 respectively while a total of 75.51%, 91.83%, 87.75%, 83.67%, and 87.76% disagreed/strongly disagreed to YouTube usage 21, 22, 23, 24 and 25 respectively. Our findings suggest that online teaching and learning is effective and sustainable with usage of WhatsApp and e-mail as tools for online learning, only effective to some extent with e-Thuto, but not effective with the usage of tools like Zoom and YouTube. By contrast, Mahyoob (2020) found that 69.80% of the students used Blackboard for most activities such as joining classes, submitting assignments, and completing assessments. It is not clear why most students in our study have a negative disposition towards e-Thuto, Zoom and YouTube but it could be surmised that they had problems with data, internet speed, accessing and downloading study materials and a lack of training as reported by the lecturers as well as lack of exposure by the instructors. Thus, a model of an integrated teaching and learning approach is developed to motivate both lecturers and students to adopt online instruction to embrace the fourth education revolution.

The model in Figure 1 is drawn from the current study findings, the literature reviewed as well as from the theoretical underpinning. The findings indicate a very limited adoption (WhatsApp and e-mail) of the wide variety of online instruction tools. Therefore, the model emphasises a holistic approach to training for online instruction skills, mainly hinged upon mobilising and motivating both lecturers and students to uptake training in a systematic manner. An integrated approach is proposed where both physical contact and remote online and e-learning approaches are integrated in preparation for unknown future scenarios. This approach can be realised through a carefully planned support structure in all the required facets as indicated in the model. Once the lecturers and students have observed the benefits of this integrated approach, adoption is likely. Consistent reviews as indicated in the model will enable collaborative efforts to improve on and make the model sustainable thus embracing the fourth education revolution. This integrated model responds to the challenges of the digital divides indicated as well as to lecturers' unique instructional dispositions and to learners' various learning needs. Largely, the model enhances production of graduates who can easily fit into a world of work seized by technologies.

Figure 1. A sustainable integrated teaching and learning model developed by the researchers



CONCLUSION

The study findings indicate a limited use of the wide variety of online tools available for teaching and learning by both lecturers and students, with WhatsApp and e-mail being the most prominent tools due to their easier accessibility and use. On the contrary, students, to some extent, have a negative experience of online learning regarding the usage of e-Thuto, and to a great extent regarding the usage of Zoom and YouTube as tools for online learning. Meanwhile, lecturers indicate preference for face-to-face instruction. Apparently, the institutional online management system, e-Thuto, is underutilised by both lecturers and students. The findings indicate inadequate data, a lack of properly functioning gadgets and inadequate training as the major constraints to adoption of online instruction. Therefore, in response to the research question, online teaching and learning experiences of the lecturers and students do not transition to effective digital pedagogies. Although, these findings cannot be generalised beyond the studied case, some important insights have been drawn from which an integrated instruction model has been developed. These insights include devising a systematic approach to enhance uptake of training, integrating online tools with face-to-face approaches, providing adequate technological and human resource support to allow adequate preparation, and consulting with the developers of online tools such as the dominant WhatsApp to modify it so that it can fit the scope of a more formal learning tool. Future studies should elicit the effectiveness of online as well as integrated teaching and learning models to modify them in response to the fourth and in some cases the fifth industrial revolutions and in preparation for unforeseen circumstances and an unknown future.

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