Exploring Tutor Experiences of 21st Century Skills during and after COVID-19: An ODeL Case Study

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ABSTRACT

In this study, the researchers argue that the changes in 21st-century socio-economic and educational environments have significantly determined the requisite tutor skills in the 21st century. With the advent of the COVID-19 pandemic, knowledge of technology education has become an additional determinant for effective teaching in a 21st-century environment. This study aimed to interrogate tutor experiences concerning teaching approaches and pedagogies adopted during this period. The pedagogical expectations now demand that tutors integrate technology into teaching as well as transform the traditional teacher-centred to a learner-centred pedagogy. It is imperative that tutors should not only embrace pedagogical strategies involving ICT but also align the teaching-learning strategies to subject knowledge. A qualitative exploratory approach was employed for this study with a sample of five part-time tutors and two Tutor Coordinators who were purposefully selected to be interviewed online following an open-ended interview schedule. The study was anchored on the following questions: What were tutors' teaching experiences during the COVID-19 pandemic, and how did they transition to online tuition? The findings depict the need for comprehensive training of tutors on digital literacy, combined with integrating pedagogical and disciplinary knowledge. The researchers applied the Technological, Pedagogical and Content Knowledge (TPACK) model as the theoretical lens to interpret the data. The findings should contribute towards bridging the literature gap but also equip the 21st-century tutor with the requisite skills for the complex teaching and learning environment dictated by the COVID-19 pandemic.

Keywords: COVID-19; Information Communication Technology integration; Technological Pedagogical and Content Knowledge; 21st Century Skills

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Introduction/ Background

The outbreak of COVID-19 was reported from Wuhan, China, on 31 December 2019. On 30 January 2020, the World Health Organisation (WHO) declared the outbreak a Public Health Emergency of International concern, and on 11 March 2020, the WHO Director-General declared COVID-19 a pandemic (Gabutti 2020, 241–253). By then, the number of cases outside China was rapidly increasing. The spread of COVID-19 inevitably affected the educational systems worldwide, and in some countries, it led to a total closure of schools and Higher Education Institutions (HEIs). The closure of educational institutions by most governments was to reduce the spread of the virus. In response to the closure and to encourage an early return to normality, UNESCO recommended using distance learning programmes and open educational applications and platforms to implement teaching and learning remotely and to ease the impact of COVID-19 on education (UNESCO, 2022). Lee, Fanguy and Bligh (2021, 460) reiterate, "This sudden disruption to face-to-face education reshaped pedagogical practices and led to the rapid adoption of online teaching among universities."

This study aimed to investigate the teaching approaches and pedagogies adopted by tutors in an Open and Distance e-Learning (ODeL) space, in line with the ever-changing teaching and learning environment. In this study, the researchers further argue that these educational environment changes, as dictated by the pandemic, have not only influenced the requisite tutor skills for the 21st century but have also added to the list of determinants of the 21st-century teaching and learning environment. The tutor in this century is arguably faced with new demands and, thus, a need to acquire new competencies. Furthermore, (Lee et al. 2021, 461) argue that the rapid adoption of online teaching in HEI resulted in academics in general being faced with "…enormous levels of pressure and disturbance to their professional roles and practices."

The COVID-19 pandemic has created a new normal that has further advanced the use of information technology, making it imperative not only for pedagogical strategies to embrace ICT but for the tutors to also align the teaching and learning strategies with sound pedagogical practices and subject knowledge. The pedagogical expectations now demand a tutor who integrates teaching with technology, transforming learning and teaching from teacher-centred to student-centred. (Telli, 2021, 1) identifies the following skills as crucial for a tutor of the 21st century: "critical thinking, problem solving, communication, creativity, leadership…effective character development and professional ethics." However, the author also added technological change as one of "the determinants of the 21st century learner characteristics, and therefore an important consideration with regard to teaching skills." By embracing technology in their teaching, the tutors have experienced a shift from overly relying on the traditional pedagogies, which required the tutor and learner to meet in the same place to learn. To curb the spread of the virus, COVID-19 protocols, such as social distancing, required the closure of higher education institutions to avoid face-to-face interactions in the teaching and learning environment. Subsequently, HEIs have experienced the

'emergency' adoption of remote learning worldwide, and Botswana Open University (BOU) has not escaped the brunt of digitalising its processes in the teaching and learning environment.

Problem Statement

The world became pressured by the unexpected COVID-19 pandemic, which not only compelled HEIs to embrace digitalisation but also to make changes to pedagogical practices. Digitalisation at BOU has always been part of the University's strategic intent, which in part states that "By 2023 BOU will be an innovative Open University recognised for its technology-enhanced programmes…" (BOU, 2020, 24) The implementation of this strategic mission has now been accelerated due to the dictates of learning, teaching, assessment and offering student support at a distance. However, some of the tutors who were not techno-savvy tendered resignations from their BOU employment. These have been the motivating factors for the researchers to investigate the tutors' authentic experiences and challenges in adopting the compelling demands of 21st-century skills as dictated by the advent of the COVID-19 pandemic.

The Research objectives:

1. To investigate tutors' experiences of teaching during and after the post-COVID-19 pandemic
2. To examine the strategies employed to navigate the transition to online tuition

Research Questions:

The study was anchored on the following question: Are BOU tutors adopting 21st-century skills in teaching, assessing and supporting students?

1. What were tutors' experiences of teaching during and after post COVID-19 pandemic?
2. How did Tutors transition to online tuition?

Theoretical Basis of the Study

This study is premised on the Technological Pedagogical Content Knowledge (TPACK) model. The model was developed by (Mishra and Koehler 2006, 1017–1054), based on the initial idea from (Shulman 1986, 4–14), Pedagogical Content Knowledge (PCK). The emphasis with TPACK is that "To be great teachers, we have to combine our knowledge of the subject with our knowledge of how to teach…learn also to combine teaching with our content and pedagogy to create an effective learning environment" (Mishra and Koehler 2006, 1033). According to (Craig 2017), the three components of TPACK are: "Technological knowledge which helps teachers to use and combine technology with teaching…Pedagogical knowledge which refers to the art and practice of teaching…the effectiveness of the teaching on the student's learning…Content

knowledge which is the teacher's knowledge about the subject matter to be learnt or taught, such as knowledge of concepts, ideas, theories and frameworks". Figure 1 best summarises the model and shows the integration of the concepts of technical knowledge, pedagogical knowledge, and content knowledge.

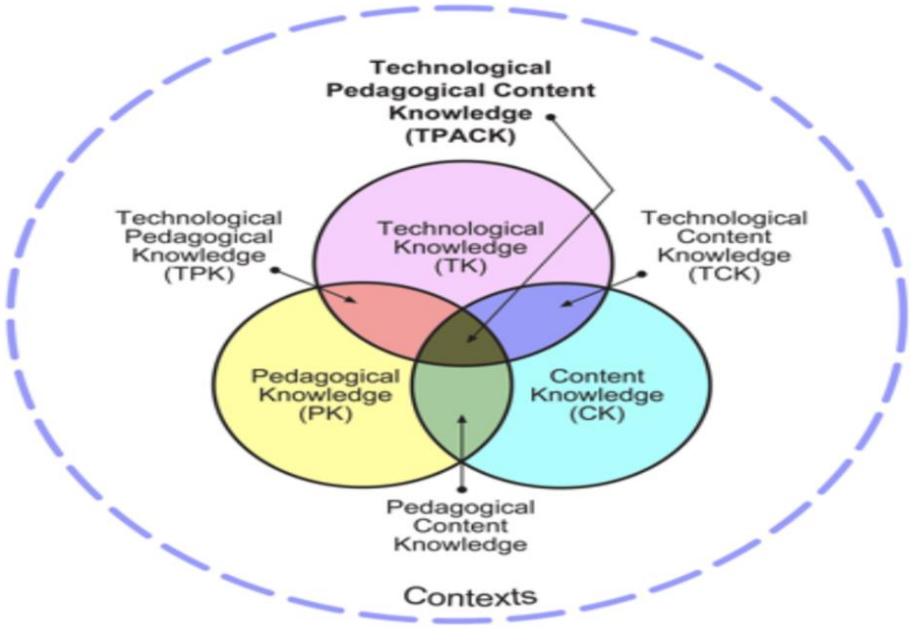

Figure 1: The TPACK Model

(Jacob, John, and Gwany 2020, 15) describe teaching as a "multifaceted human endeavour, involving a complex, moment-by-moment interplay of different categories of knowledge". They continue to argue that the success or failure of the teaching process relies mainly on the pedagogical approach adopted by the tutor. A tutor who adopts TPACK can integrate technology into teaching; they may select and use varied technology tools and utilise them in an appropriate and effective pedagogical way. Similarly, (Harris 2016, 192) indicated that effective Professional Development for teachers is highly contextualised, personalised, and variable in structure, purpose, orientation, and process.

Furthermore, (Jacob et al. 2020, 15) argue that (tutors) are expected to process and evaluate new knowledge relevant to their core professional practice and to update their profession's knowledge base regularly. However, for the tutor to be successful in the teaching process, there is a need to demonstrate not only the knowledge but also to showcase the ability to guide the students to comprehend the content of the knowledge. This means that the concept of "what is being taught should dovetail well with 'how it is being taught'" (Content knowledge and pedagogical knowledge, respectively). The

tutors at BOU, therefore, should adopt TPACK and embrace the 21st-century skills that emphasise ICT integration in teaching and learning. We advocate that they acquire knowledge for creating an effective teaching-learning environment that would enable them to overcome the challenges posed by technology-enhanced teaching and learning, which the impact of the COVID-19 pandemic on the education sector worldwide has dictated. Arguably, when the tutor's content knowledge is appreciated, the tutor's pedagogical content knowledge (PCK) would be regarded as sound.

Literature Review

This section presents a review of related literature to reveal the gaps in tutor experiences of 21st-century skills during and after COVID-19.

21st Century Skills- The Flipped Classroom

With the increasing pressure mounting on Higher Education Institutions, the revamp of instructional pedagogical practices will be in sync with the 21st century digitised learning and teaching environment. We argue that the COVID-19 pandemic has been the catalyst for this adaptation. (Bishnoi 2020, 31) posits that the flipped classroom "…has emerged as an enabling learning framework offering a convergence of technological advancements with active and collaborative learning." (Bishnoi 2020, 33) and further explains that the flipped classroom, by being "leaner centric …empowers the learners to exercise agency and play a dynamic role in framing their lessons." Effectively, the technological advancement in the Education 4.0 landscape sharpened the development of 21st-century skills in terms of "attitudes, persistence, stronger sense of empowerment, superior analytical thinking and problem-solving abilities". (Wanner and Palmer 2015, 2) opines that better learning outcomes are achieved when students are offered the opportunity to be responsible for their own learning.

An excellent example of a flipped class is one where the lectures, which traditionally are in-class activities, are instead completed as homework. Whilst the traditional homework activities are carried out in class. (Han 2022, 3) defines flipped class as "flipped learning, or reversed classroom, is an educational model in which the traditional way of lecturing and the way students do homework are changed." The instructor pre-records the lectures and then posts them for the students to watch prior to the lesson. Then the students are assisted in the class as they complete the homework or assignments. This blended instruction namely flipped teaching, allows the students to focus individually.

The approach creates a student-centred individual learning environment, which is a much-desired tenet in the advent of the COVID-19 pandemic. However, this type of teaching is not without challenges; with regard to students, they feel they do not learn as much as in traditional classes. In some instances, the newness of this model poses a problem because the students are not familiar with learning outside the classroom. On the flip side, there are advantages to flipped learning too. For a start, learners take full

responsibility for their learning. “In this way, they experience different ways of learning: learning by doing, learning by knowing, and learning by sharing with others” (Collado-Valero et al. 2021, 4). This strengthens the interaction between the teacher and the learners and thus provides an opportunity for timely feedback. In the flipped classroom, learners complete class assignments under the teacher's watchful eye. Bishnoi (2020, 33) summarises what a flipped classroom is by stating that “Flipping, results in greater interaction between teacher and learner, learners take greater responsibility for their learning, increased use of ICT and the teacher is more of a mentor and the student is more self-directed.” Furthermore, Bishnoi (2020, 34) reiterates that the impact of flipped learning is manifested in improved critical thinking skills, employment of technology for 21st-century learning and reduced learning anxiety. We argue that these are the requisite skills in teaching in the 21st century.

There is COVID-related literature that further provides valuable insights to the present study. For instance, (Zeleza and Okanda 2021) appealed to universities to develop curricula that impart skills for the jobs of the 21st century. In this, they suggest that such curricula should be holistic, integrating the classroom, campus, and community as learning spaces. Among the 21st century competencies would be inclusion, innovation, intersectional, and interdisciplinary teaching and learning; embedded in experiential, active, work-based, personalised, and competence-based learning and instil in students a mindset of creativity, enterprise, innovation, problem-solving and resilience (Zeleza and Okanda 2021).

(Stoloff and Goyette 2022) have acknowledged that the pandemic and its associated disruptions compelled teachers to adapt their practices quickly and have transformed them to embrace the digital environment in the 21st-century Education sector. In their article, these researchers conducted a multi-case study of primary and secondary schools in Quebec Province. The findings indicated that it was inevitable for teachers to switch to digital pedagogical practices in the advent of the COVID-19 pandemic. (Stoloff and Govette 2022, 10) posit that “Thanks to the pandemic, teachers have had to redefine themselves, discover meaning in their profession, adapt and/or abandon their usual practices and meet the new requirements of a profession in constant evolution”. Evidently, teachers/tutors have had to redefine their roles and adjust their pedagogical practices to adhere to the teaching and learning environments of the 21st century. This is mainly dictated by the COVID-19 pandemic and its associated protocols.

(Akram, Aslam, Saleem and Parveen 2021), examined the challenges of online teaching experienced by faculty members in public universities in Karachi, Pakistan, during the COVID-19 pandemic. In their research findings, several challenges that impeded learning and teaching included “Lack of sound experience in conducting online classes, and not being given adequate technical assistance or ICT infrastructure to cope with the technical challenges.” (Akram et al. 2021, 264) Based on their findings, it can be argued that teachers/tutors need to gain technological competency for effective online teaching and pedagogical practices. The teachers sampled in the study by Akram et al. were found

to possess limited technical competence. As a result, they faced challenges in virtual teaching, presumably meant that they did not cope with the requisites of teaching in the 21st century.

At the regional level, researchers (Mphahlele et al. 2021, 501–515) focused their study on the impact of the COVID-19 pandemic on students' access and participation in online learning in three ODL institutions in South Africa, Botswana and Zambia. The focus was on the students' learning experiences amidst the COVID-19 pandemic that ushered in a shift towards online learning. This brought forth uncertainties to the tutors and the students alike. Their study highlighted the issues of digital inequality and digital literacy. They argued that inadequate digital access during the pandemic was due to a lack of connectivity in the home, as determined by the financial status of a homestead. The results from their study indicated that some BOU students and tutors are technophobic, despite the availability of connectivity and associated devices, laptops, printers and smartphones. These findings manifested that some students solicited assistance from their children, grandchildren, and other relatives to type their assignments. Other challenges identified by the researchers included failure to navigate the Learning Management System (LMS), resulting in them being unable to participate in discussion forums or chats. In the same study (Mphahlele et al. 2021, 501–515), the South African case study's lack of or limited digital knowledge was also reported. This was evident in the student's inability to complete some learning tasks, such as online quizzes.

The literature discussed in this section affirms the significance of digital equity in accessing teaching and learning in an online learning space. The tutors and students require appropriate technologies and ample internet connectivity to be adequately equipped with the requisite 21st-century digital knowledge and skills. These would enable them to cope with the complex teaching and learning environment dictated by the COVID-19 pandemic. Therefore, the current study will investigate the experiences and challenges the tutors face in adapting to the compelling demands of the 21st century as dictated by the advent of the COVID-19 pandemic.

TPACK in the 21st Century Classroom

Tutors/teachers should adopt the TPACK model to successfully embrace the 21st-century skills that emphasise ICT integration in teaching and learning. TPACK denotes the relationship between technology, pedagogy and content. Emphasis is that appropriate pedagogical methods and technologies should accompany the teaching of the content.

The educational transformation ushered in by the Digital era in the 21st century has arguably redefined the role of a Tutor/teacher. It is no longer the transfer of knowledge. However, it is now a facilitator who is expected to constantly upgrade abilities in mastering ICT to be integrated into teaching and learning activities. Therefore, as advocated by Agustini, Santyasa and Ratminingsih (2019, 2), "…the teacher must have

competence on Technological, Pedagogical and Content Knowledge (TPACK)". However, as one of the aims of this research study, are the tutors willing to get out of their comfort zones, or are they still stuck to the traditional ways of delivering learning materials? TPACK competence requires 21st-century skills such as "Communication and collaboration skills, and the use of information technology in learning". (Agustini et al. 2019, 2). This is further reiterated thus: "The latest research explains that the success of the 21st century learning involves understanding material or content, teaching methods, and utilising Information Technology integratedly". (Agustini et al. 2019,2) TPACK is in sync with increasing creativity, collaboration and accountability in learning. (Ref to Figure 1 above)

This study will further explore whether BOU tutors are not only subject matter experts in terms of content; but also investigate to what extent they enhance their teaching with appropriate 21st-century skills in their pedagogical practices combined with varied technologies.

Methodology

A qualitative exploratory approach was employed for this study. According to (Denzin and Lincoln 2011), the qualitative design is ideal because it will help the researchers to accumulate a range of perceptions and ideas from the participants. It also effectively allows the researchers to comprehend the verbal expressions of the participants. A sample of five part-time tutors and two Tutor Coordinators were purposefully selected to be interviewed online following an open-ended interview schedule. The sample was purposefully selected from a population of tutors and tutor coordinators in the Schools of Education and Social Sciences. All the selected participants had been in their current posts for over two years. Literature about tutor experiences in adopting competencies relevant to the 21st century was also synthesised. The interviews were conducted online on a one-on-one basis. A set of seven questions guided the interview. They ranged from seeking the participants' opinions about online learning and teaching; their views on the significant changes that have occurred in the ODeL environment; the technologies that they have adopted as 21st-century tutors; the extent to which the COVID-19 pandemic had impacted their teaching approaches; how they had adjusted their assessment techniques amidst Covid-19 pandemic; whether they are aware of the 21st-century competencies relevant to the teacher and learner; and what are the challenges and opportunities they have experienced in the execution of their duties. The researchers applied for ethical clearance from the University Research Ethics Committee and were granted a Clearance Certificate, reference number 100391934. Furthermore, the respondents signed an informed consent form to participate in the interviews, with the assurance of anonymity, confidentiality and the right to withdraw as and when they saw fit.

Following data collection through the open-ended interview schedule, the researchers organised the participants' responses (ideas/views) into categories that shared similar patterns or sentiments. The ideas were then grouped into recurring themes and employed

thematic content analysis to analyse the data. In the next section, we present the findings according to the manifested themes, including the challenges and opportunities experienced by the tutors.

Findings

The following themes, which are discussed in this section, emerged from the findings: Enhanced and varied pedagogical practices, economic factors and technological advancement.

Enhanced and Varied Pedagogical Practices

While seeking the participants' opinions about online learning and teaching, the tutors, to some extent, shared similar sentiments about the advantages brought to the fore by the adoption of online teaching and learning in their pedagogical practices. The tutors' responses addressed the research question that quizzed the participants on the strategies to navigate the transition to online tuition. For example, Tutor A believed that:

> Online learning and teaching, I believe, is a strategy that allows everyone to learn, especially in the COVID-19 era. It is efficient… it offers teachers an efficient way to deliver lessons to students. And has a number of tools such as videos, PDFs, podcasts, [and] teachers can use all these tools as part of their lesson plans". She also emphasised that: "Another advantage of online education is that it allows students to attend classes from any location of their choice. It also allows schools to reach out to a more extensive network of students instead of being restricted by geographical boundaries.

Tutor B buttressed Tutor A's views by stating that:

> I am used to direct face-to-face interaction with students. However, I appreciated Online eLearning when I got a job at BOU. Online learning has its advantages and disadvantage. In this hour, I would like to say online learning offers teachers an efficient way to deliver lessons to students. I am personally not techno adaptive but try to manage online classes.

Tutor C also supported online learning and posited thus:

> Online learning and teaching is an exciting experience which needs adequate technological knowledge and commitment. It embraces the use of technology in ensuring that both teaching and learning take place. As such, learners can learn at their time and in different places. When online classes are conducted, learners learn at the same time but in different places.

Tutor D intimated that: "Online learning is relevant in today's era as it creates opportunities for learners to learn in the comfort of their homes and offices and tutors to reach out to many learners without being limited by distance."

These tutors' opinions portray support for online learning and teaching. To the tutors, online teaching accords them the opportunity to utilise efficient and varied pedagogical practices that enable them to adopt different technologies as they respond to the need to share and demonstrate 21st-century skills, all in response to the advent of COVID-19 and its attendant protocols. Subsequently, HEIs have been compelled to adopt online teaching and learning, despite the limited digital access that some tutors experience.

Economic Factors

In response to research questions on whether the participants as BOU tutors adopt 21st-century skills in their teaching, assessment and student support. The tutors pointed out the cost-effectiveness of transitioning to online teaching and learning. Arguably, the financial costs of transportation, student meals, and printing instructional materials have been reduced because teaching and learning are done virtually from the comfort of their homes**.**

Furthermore, Tutor A said:

> …online learning reduces financial costs. Online education is far more affordable as compared to physical learning. This is because online learning eliminates the cost points of student transportation, student meals, and, most importantly, real estate. Additionally, all the course or study materials are available online, thus creating a paperless learning environment which is more affordable while also being beneficial to the environment.

This is in addition to her argument: "The online learning system, with its range of options and resources, can be personalised in many ways. It is the best way to create a perfect learning environment suited to the needs of each student."

There were varied responses to the question that required the participants to mention two significant changes that occurred in the ODeL environment in the advent of the COVID-19 pandemic. In this regard and the cue of student support, Tutor B noted: "In research, we have face-to-face interaction, COVID interfered; hence we had to have a practical SPSS lesson online. It was a challenge due to network or grasping of content by students. Some students missed the classes due to COVID health protocols, but the recording was available for them to reuse*".*

Tutor C, however, explained that there have been changes because of the Covid 19 protocols. For example, "…the teaching and learning (tutorials and assessment) are done exclusively online, that is virtual lessons; online examinations. Again, Meetings, training sessions in various forms are also done online through Google Meet, Zoom, Microsoft Teams, etc."

Tutor D observed that "Online teaching has widened outreach and has increased enrolments. In the same way, the approaches and methods of teaching have become more varied and advanced."

Technological Advancement

Tutors have gained an appreciation of convenience by embracing technological knowledge and commitment that is ushered in by 'techno classes'. In adopting 21st-century skills, their teaching has shifted to being more student-centred than teacher-centred.

When asked what online environments/technologies she has adopted as a 21st-century tutor to interact with her students? Tutor B responded, "I hate techno-advances; I take long to adapt to the techno environment. However, I have come to appreciate it since I (now) can work from anywhere. The convenience that come(s) along with techno classes. I have adopted online classes."

In response to this question of how the COVID-19 pandemic has impacted the participants teaching approaches, Tutor B replied, "Definitely the setting of assessment sheets that are now online, Adjusting (from) strictly face-to-face interaction." At the same time, Tutor C mentioned conducting Virtual lessons, participating in online Discussion forums, Video conferencing and the increased and frequent use of social media to communicate with students. She, however, noted that: "Since teaching and learning are completely online, there has been a decrease in numbers of students who attend tutorials due to connectivity challenges, shortage of the relevant gadgets, and power cuts. There is adequate training of tutors, which needs to be done often so as to meet their teaching needs and the challenges encountered. The virtual lessons are sometimes ineffective because of poor connectivity".

For Tutor D, the response was: "My teaching approaches are interactive. I use more audio-visual teaching aids to grab the attention of learners and to make my teachings more interesting to my learners." Tutor D also acknowledged that "there is now increased use of electronic books, Audio recordings, WhatsApp platforms and the Use of Moodle."

When asked how they have adjusted assessment techniques amidst the Covid-19 pandemic, participant responses linked well to the research question of their transitioning to online tuition; a case in point was highlighted by Tutor B, who noted that "…we have resorted to multiple choice examination which are marked by technology. The change is that from an exam paper of section A- 10 multiple choice, B-10 matching C-20 short answer, D-Essay, we only have 100 questions being multiple choice. I still do not agree with having only multiple choice in an exam for a university student."

Tutor E, however, indicated that: "There are various assessment techniques used by the university, all of which are done online, such as assignments, sessional exams, forums, quizzes and research."

Tutor D's response was more general: "I use formative assessments that measure attainment of short-term learning goals, because they are specific and they explain how learning will be assessed, they allow learners to prepare for their summative assessments, and summative assessments that compare student achievement to standards /benchmarks of skills expected."

When it came to whether the tutors are aware of the 21st-century competencies relevant to the teacher and learner in this era of COVID-19 and post-COVID-19, most participants answered in the affirmative with Tutor B intimating that "Problem-solving and teachers' ability to use new technological tools effectively" was one such 21st-century competency. Tutor C, however, provided a list that included: Communication skills, Time management, Problem-solving, Report writing and Innovative skills. The tutor also indicated that another factor that came to the fore with the advent of the COVID-19 pandemic is that tutors have been compelled to embrace technology, with participant C intimating that*:* "My teaching approaches are interactive. I use more audio-visual teaching aids to grab the attention of learners and to make my teachings more interesting to my learners."

These skills resonate with those mentioned by Zeleza and Okanda (2021), who mentions that among the 21st Century competencies University tutors should possess, including but not limited to being inclusive, innovative, intersectional, and interdisciplinary teaching and learning, embedding experiential, active, work-based, personalised, and competence-based learning; and instilling in students a mindset of creativity, enterprise, innovation, problem-solving and resilience.

Challenges experienced in "techno-classes".

When asked what challenges and opportunities they have experienced while acquiring new skills for their pedagogical practices, Tutor B said: "The challenge is the ability to adapt to the ICT environment. I am not techno-friendly" The Tutor coordinators that were interviewed mentioned how some of the tutors who felt that they were not 'techno-friendly' tendered letters of resignation from the employment of BOU. Tutor C highlighted the problem of limited time and resources and connectivity challenges.

Tutor D reiterated the following: "The teachers need to equip themselves with the ICT skills, they need to be innovative and creative in their teaching methods/approaches so that they are able to meet the learners needs." Tutor E intimated that the main challenge was: "Network problems, reaching out to remote learners, who most of the time may not have access to internet." She singularly pointed to the "…increased access to the course by learners hence increased success rates" as a welcome opportunity from digitalisation.

In summary, the interviewees indicated that the adoption of technology had increased access to education because it is now possible to learn anywhere, any time, if one has access to the internet and the accompanying gadgets. As a matter of emphasis, one

participant was emphatic that technology has been instrumental in creating a friendly environment in terms of reduction of costs in infrastructure, reduction of pollution due to the use of environmentally friendly technologies, and reduced air travel which are some of the major global concerns of the 21st century.

Furthermore, the participants were also aware of the requisite 21st-century skills. Participant A intimated that: **"**Yes, I am aware of 21st Century competencies that are relevant to the teacher and learner. Some of them are critical thinking, problem solving, collaboration and digital literacy."

However, these benefits are not without challenges. The participants were unanimous that the significant challenges experienced from online teaching and learning include poor connectivity in many parts of the country where the learners are located, social media interfering with learning, especially among young learners, and problems of isolation and attendant psychosocial problems.

Discussion of Findings

The findings from this study have indicated the unwavering pressure on HEIs to 'revamp' their instructional pedagogical practices in their bid to embrace the 21st-century digitised teaching and learning environment. The COVID-19 pandemic and its associated protocols can be a catalyst for adopting online teaching and learning. The study's theoretical lens through the TPACK model compels tutors to integrate their teaching with technology and align their teaching, learning skills with sound pedagogical practices and subject knowledge. The tutors themselves have acknowledged how in their adaptation of 21st-century skills, they have had to transform from a teacher-centred to a student-centred learning environment. Palmer(2015,2), in the reviewed literature, reiterates that when students are offered the opportunity to be responsive to their own learning, better learning outcomes are achieved. Tutors redefining their roles and reviewing pedagogical practices are echoed well by (Stoloff and Goyette 2022). Tutor C also expressed similar sentiments by stating that with COVID-19 protocols, "…the teachings and learning (tutorials and assessment) are done exclusively online…"

The challenges that tutors advanced were reflected in the observations made by (Mphahlele et al. 2021, 501–515). They cited issues of digital inequality and literacy. In the researchers' view, the findings of this study and the reviewed literature are in sync regarding the requisite technologies and adequate internet connectivity for the tutors. It is inevitable for the HEIs to advance the need for comprehensive training of tutors on digital literacy, combined with integrating pedagogical and disciplinary knowledge.

Conclusion

The participants have acknowledged that they have acquired and adopted 21st-century skills, especially in technology-enhanced teaching, learning and assessment. They also indicated that technology has assisted them in diversifying their pedagogical practices. Some believe exposure to technology amidst the COVID-19 pandemic has resulted in their professional growth and increased efficiency, thus positively impacting the performance of their learners.

The results indicate that, to a certain extent, the BOU Tutors adopt the TPACK framework and the requisite 21st-century skills in their teaching and learning spaces. They employ varied technologies to disseminate their subjects' content. They also use appropriate pedagogical methods to integrate IT into classroom activities, such as discussion forums, quizzes and online meetings. The learning is student centred, and the tutors have adopted the role of facilitators as they collaborate and interact through digital platforms with the learners. These writers arguably wish to state that the outcome of this study can be representative of the tutor experiences worldwide in ODeL settings, in their employment of 21st-century skills and competencies as dictated by the compelling COVID-19 protocols even in the post-pandemic era.

Future Research

We suggest that future research could focus on the learners' experiences in ODeL settings and their adoption of 21st-century skills in the digital age. Another angle would be to conduct a study focusing on learners with the experience of flipped classroom interventions.

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