# TEACHING AND LEARNING ONLINE DURING THE PANDEMIC: LECTURERS' PERCEPTIONS AND EXPERIENCES

Beauty Boikanyo. Ntereke
University of Botswana
Centre for Academic Development, Communication and Study Skills Unit
nterekeb@ub.ac.bw

Brigid Goitse Conteh
University of Botswana
Centre for Academic Development, Communication and Study Skills Unit
contehb@ub.ac.bw

Boitumelo Tiny Ramoroka
University of Botswana
Centre for Academic Development, Communication and Study Skills Unit
ramorokab@ub.ac.bw

Keokgale Basetsana Tlhobogang
University of Botswana
Centre for Academic Development, Communication and Study Skills Unit
tlhobogangbk@ub.ac.bw

## Abstract

The rapid transition from the traditional method of face to face classroom teaching to remote teaching during COVID-19 pandemic raised unprecedented challenges for lecturers as they were required to integrate digital technologies in learning and teaching. This study explores lecturers' experiences and perceptions of their competencies to effectively integrate digital technology in learning and teaching during the pandemic. Furthermore, institutional support provided to them in designing, implementing and sustaining online teaching and learning during this era is evaluated. The study employed qualitative research design and collected data from five (5) University of Botswana lecturers using individual in-depth interviews. The findings reveal that although lecturers acknowledged the benefits of using digital technologies for teaching and learning to be important, they lack the digital competencies and skills required for effective integration. Other challenges that are highlighted are inadequate professional development and the institutional support in designing, implementing and sustaining online teaching. Therefore, it is critical that the institution fosters a supportive environment and provides lecturers with the necessary technological and pedagogical skills to effectively integrate digital technology in teaching.

**Keywords:** COVID-19 pandemic, digital technology, online teaching and learning, competencies.

ISSN 1021-559X /12/2021 

## Introduction

Teaching entirely in a virtual classroom has become an integral part of higher education learning globally and in Botswana mainly due to COVID-19 pandemic. Prior to the pandemic, most teaching and learning was done mainly through the traditional methods of face-to-face and a small percentage through online teaching using different learning platforms (Sigh & Thurman 2019). Blended learning, which is defined as "a thoughtful integration of classroom face – to- face learning experiences with online experiences", afforded students the benefits of both face - to - face and online learning (Garrison & Kanuka 2004, p.96). This form of teaching and learning was disrupted in 2020 when governments enforced movement restrictions in order to contain the virus. In order to allow for teaching to continue, there was an abrupt change from blended learning to remote emergency teaching (ERT) mode of instruction (Camacho & Legare 2021, Heng & Sol, 2020; Ntshwarang et al., 2021; UNESCO IESALC, 2020). This rapid transition and change in the education landscape raised unprecedented challenges for educators, students, and the institutions.

Since the outbreak of COVID-19, studies have been conducted globally to examine the impact of the pandemic on higher education particularly focusing on students and teachers experiences with online teaching and learning. These studies focused mainly on: a) challenges brought by the transition from face – to - face to online learning (Heng & Sol, 2020 ; Khotimah, et al., 2020 ; Adedoyin & Soykan, 2020) b) educators' perceptions of readiness for online teaching in higher learning (Cherer, et al., 2021). The findings of these studies indicate that students, educators and institutions might not have been prepared for the transition to online teaching and learning in terms of technological and pedagogical support. The abrupt shift to emergency remote teaching required all educators to suddenly become experts in online teaching and learning by taking control of the course design, development and implementation using some tools they were not familiar with (Rapanta, et al. 2020). However, literature on online teaching shows that teaching online requires designing and providing teaching that is very different from that provided in face-to-face settings (Pagliari et al., 2009; Rossen, 2017). Redecker (2017) and Mishra and Koehler (2006) provide frameworks that describe digital competencies that educators need in order to be able to integrate technology into teaching and learning in a pedagogically meaningful way. The core competencies of the frameworks are that educators need to know how to make efficient and innovative use of digital technologies when planning, implementing and assessing teaching and learning.

## Review of Literature

In the COVID-19 pandemic emergency, lecturers have, 'almost overnight', been asked to become both online course designers and tutors with the expectation that they would quickly adapt to teaching and learning in online environments. However, not many are able to do so since they do not have the adequate knowledge, skills and confidence to effectively use the available technologies to support technology integration into the learning environment (Hartman et al., 2019; Somera, 2018). Studies show that lecturers have not been taught how to be facilitators in an online environment and thus need more preparation to teach with technology (e.g. Nicol et al., 2018; Bosch & Cardinale, 1993). This section will review n studies that have been done on lecturers' competencies and skills required in designing online teaching and the support institutions provide as well as lecturers' readiness to teach online during COVID-19 pandemic.

## Lecturers' Competencies and Skills Required for Online Teaching

Research has been conducted to examine university lecturers' competencies and skills in designing quality online courses. Findings corroborate that the ability to design instructional strategies and develop appropriate learning resources, implement instructional strategies, and facilitate participation and sustain motivation among students were the most important skills for online lecturers (Almazova et al., 2020; Bawane & Spector, 2009). In a study in which lecturers were asked to rank competencies required for designing quality online courses, the competency area ranked highest was " to develop instructional methods that utilize technology to enhance students' skills, enhance hands on experiences, manage different learning strategies, and develop higher thinking skills" (Fisher, 1997, p.143). Baran et al., (2011) conducted an extensive literature review to determine the key responsibilities of online educators. They found that planning, organizing, and structuring online courses were often considered the most important tasks for online lecturers. Several other researchers attest that the integration of ICT in online instruction changes elements of the teaching and learning process and conclude that there are teaching competencies that are specific to online teaching (e.g. Ghomi & Redecker, 2019; Redecker, 2017; Muñoz Carril et al., 2009; Yeung, 2003).

Several empirical studies conducted in diverse contexts show that effective teaching using emerging technology needs lecturer's understanding of how to use appropriate technology, approaches and teaching techniques to communicate the content of the lesson for

student centred learning (e.g. Sarjoni et al., 2020). Thus, lecturers should be equipped with sufficient knowledge and digital technology literacy to be able to design and teach online. They need to know how to match the uses of technology with the content and effective pedagogies for teaching the content as indicated by Mishra and Koehler (2006). In a study examining online instructor e-learning readiness Gay (2016) found that although the majority of online lecturers had technological expertise in the online environment, significant deficits were identified in their pedagogical readiness. This finding suggests that having just the technological knowledge by itself is not sufficient for lecturers to effectively teach using technology. There seems to be a connection between technological, pedagogical, and content knowledge which in turn guides effective teaching, hence educators have to negotiate a synergy of these three forms of knowledge (Koehler & Mishra, 2006; 2014). Further, Bates (2019) suggests that a good quality course should be characterized by clear learning objectives, carefully structured content, workloads for lecturers and students, integrated technologies, relevant and engaging activities for students, and assessment that is tied to the learning outcomes. Therefore, lecturers should be encouraged to take content, pedagogy, and technology into account when designing online courses (Koehler et al., 2004; Redecker 2017).

**Institutional Support**

Researchers emphasise the need for institutional support in designing, implementing and sustaining online teaching and learning in higher education learning (e.g. Rasheed et al., 2020; Naylor & Nyanjom, 2020; Rapanta et al., 2020; Bao 2020). However, Bolliger et al. (2019) in their study found out that lecturers in higher education had limited institutional support to design, implement and sustain online teaching. Another study carried out by Hondonga, et al. (2021) found out that institutions were not prepared to use online teaching platforms during the COVID-19 pandemic despite the fact that some of the institutions had established e-learning before the pandemic. Some researchers also observed lack of proper training for lecturers who were transitioning course content from face-to-face to online settings (Keengwe & Kyei-Blankson, 2011; Hondonga et al., 2021). Baran (2011) examined the literature to identify major challenges and issues in teaching online higher education courses. The results of the review indicated that higher education institutions need to provide professional development for lecturers, trainings for learners, and technical support for the content development and delivery of online courses. Rasheed et al. (2020) argue that when institutions do not support lecturers' professional development, lecturers are bound to fall

short in helping students to enhance their online activities. They opine that lack of sufficient technological competency and literacy from lecturers on using technology for instruction stems from insufficient training support from their institutions. Therefore, they propose that institutions should regularly assess how their lecturers and students' technological competency level and requirements have changed over time to accommodate the needed technology for instruction. They also point out that students' ability to self-regulate their behaviour as well as the motivation and zeal to learn and use online technology for study largely depends on the technological infrastructure and services provided by their institutions. Ali (2020) also recommends the need to empower lecturers and build their confidence so that they can implement ICT integrated teaching.

**Lecturers' Readiness to Teach Online**

Globally, several studies have been conducted to assess lecturers' readiness for online teaching and learning during the COVID-19 pandemic. These studies suggest that lecturers in higher education are not a homogeneous group with respect to online teaching and learning readiness. They have diverse backgrounds, academic disciplines and experiences in using online teaching methods that range from less experienced to expert ability and that less experienced lecturers have low perceptions of their ability to teach online (Cherer et al., 2021; Martin et al., 2019). Shea (2007) found out that less experienced lecturers are unfamiliar with effective online pedagogy and have inadequate time to learn about online teaching. In a study involving a cross section of lecturers, Portillo et al., (2020) found that there was a digital divide between teachers based on gender and age. They also found out that the lecturers felt less competent in using digital technologies to facilitate teaching and learning but felt more competent in the use of digital tools for general communication. These findings are consistent with the results of a study by Almazova et al. (2020) which indicate that lecturers who are older than 55 years needed more instruction and extra support from Information Technology teams.

According to Martin et al. (2019), readiness to teach online is the lecturers' beliefs about their preparedness which can be impacted by individual characteristics, contextual and cultural factors. In a study that investigated university lecturers readiness for online education and challenges they experienced during the COVID-19 pandemic in the Russian context, Almazova et al., (2020) found out that even though the lecturers had a fairly high level of computer literacy and IT support from the university, they believed that the work of

an lecturer in a digital educational environment is significantly different from that of face-to-face teaching. Similarly, findings of a study by Paliwal and Singh (2021) to assess higher education institutions (HEIs) lecturers' readiness to handle online education in India indicated that their level of competencies in course design was not sufficient.

In the context of higher education in Botswana, there are limited empirical studies that address educators' digital competencies, skills and general readiness for teaching online during the COVID-19 pandemic. A study conducted during COVID 19 pandemic indicated that lecturers at a vocational training institution had not received training in the use of the Learning Management Systems (LMS) and this limited their integration of technology in teaching (Hondonga et al., 2021). Further, based on literature review, their experiences and observations of online teaching and learning during the pandemic at the university of Botswana, Ntshwarang et al. (2021) reported that lecturers were not skilled to integrate ICT into teaching and learning, and that there was inadequate technological resources and infrastructure.

The rapid and forced transition to online teaching and learning provides an opportunity to assess the extent to which lecturers felt prepared. Hence this study will be one of the few studies in the context of Botswana that provides empirical evidence on lecturers' perceptions of their preparedness to competently integrate digital technology in learning and teaching especially during the COVID-19 pandemic. The overall aim of the study is to explore University of Botswana lecturers' experiences and perceptions of their competencies to effectively integrate digital technologies in learning and teaching. The study also aims to evaluate the existing institutional support provided to lecturers to design, implement and sustain online teaching during the COVID-19 pandemic. The following research questions guided this study:

I. How do lecturers perceive their knowledge and skills to integrate digital technologies into teaching and learning?
II. What support does the institution provide to lecturers to design, implement and sustain online teaching?

**Theoretical Framework**

To address the dynamics and complexity of digital technology integration into teaching and learning in institutions of higher learning, this study combines the constructivist

theory (Vygotsky 1978), and the Technological Pedagogical Content Knowledge (TPACK) framework (Koehler et al., 2014; Mishra & Koehler, 2006). TPACK framework builds on Shulman's (1986, 1987) idea of pedagogical content knowledge (PCK) by clearly incorporating the construct of technological knowledge into the model.

The constructivist theory provides a foundation of teaching and learning based on the premise that knowledge is not imparted by the lecturer rather it is constructed by learners through an active engagement with their environment and experiences. Students play a central role in this theory which highlights that learning is an active process through which students create their own meaning from their experiences and interaction with the learning environment (Vygotsky 1978). This theory has been embraced by several researchers who reiterate that creation of meaning only happens when the student is actively engaged in learning instead of passively absorbing and reproducing information from the lecturer (Chin & Williams, 2006; Cirik et al., 2015; Tunjera & Chigona 2020). These principles therefore require lecturers who possess competencies in designing teaching, learning environments, and learning activities that facilitate student's active engagement and creation of knowledge.

In this theory, lecturers are viewed as facilitators whose task is to provide students with suitable learning environments, active meaningful activities, and the ability to select instructional strategies that assist students in the creation of knowledge. They encourage learners to use prior experiences to assist them in meaning making inquiry and personal reflection. Thus, the constructivist lecturer should be flexible and creative in incorporating ongoing experiences in the classroom. The theory emphasises that for learning to be more effective and learners encouraged to engage in knowledge creation, the lecturer needs to have the knowledge to create meaningful learning activities and engaging environments (Anderson, 2017). Further, Jonassen (2008) argue that one way of developing students' 21st century skills would be to engage them in "meaningful learning with ICT". This refers to learning experiences in which ICT tools are used to support students in their inquiry, knowledge construction, and collaboration as they work on real-world problems.

To examine lecturers' perceptions on their preparedness to teach online, this study also draws on the TPACK framework (Koehler et al., 2014; Mishra & Koehler, 2006). The framework provides a lens to examine, the technological, pedagogical and content knowledge lecturers need to effectively integrate digital technology into learning and teaching (Mishra &

Koehler, 2006; Schmidt et al., 2009; Voogt et al., 2013) According to this framework lecturers need to effectively integrate technological, pedagogical and content knowledge for their teaching to be appealing. TPACK is a convergence of three main types of knowledge: Technological knowledge (TK), Pedagogical Knowledge (PK) and Content knowledge (CK). Each of these overlapping bodies of knowledge represent a distinct form of knowledge a lecturer needs.

Cox and Graham (2009) elaborated the TPACK framework and provided definitions that clearly reveal the breadth and complexity of each construct and the difference between the constructs. According to the elaborated framework TK is defined as knowledge of how to use emerging technologies while PK refers to a knowledge of the general pedagogical activities that a lecturer might use and CK is knowledge of the possible topic specific illustrations a lecturer might employ.

The three types of knowledge intersect to produce four types of knowledge: Technological pedagogical knowledge (TPK), Technological Content Knowledge (TCK) and Pedagogical Content Knowledge (PCK) and Technological Pedagogical Content Knowledge (TPACK) (see figure 1 below). Cox and Graham (2009) define these intersections as follows; TPK is knowledge of the general instructional activities that a lecturer can employ in using emerging technologies. They further explain that TPK might include knowledge of how to motivate students using technology or how to engage students in cooperative learning using technology. TCK is at the intersection of TK and CK and refers to a teacher's knowledge of the topic-specific illustrations in each content area that use emerging technologies. Emerging technologies are defined as "new technologies (typically digital technologies) that are being investigated or introduced into a learning environment" (Graham, 2011, p. 1956). PCK is an intersection of PK and CK thus combines knowledge of activities (or strategies) and knowledge of content to facilitate student learning. Cox and Graham (2009) explain that the knowledge of instructional activities is content-specific because PCK is found in a specific subject area. They further divide the knowledge into knowledge of subject-specific activities and strategies and topic-specific activities and strategies. Subject-specific strategies are instructional methods that are unique to a given discipline and topic-specific strategies are "specific strategies that are useful for helping students comprehend specific concepts" (Magnusson et al., 1999, p. 111).

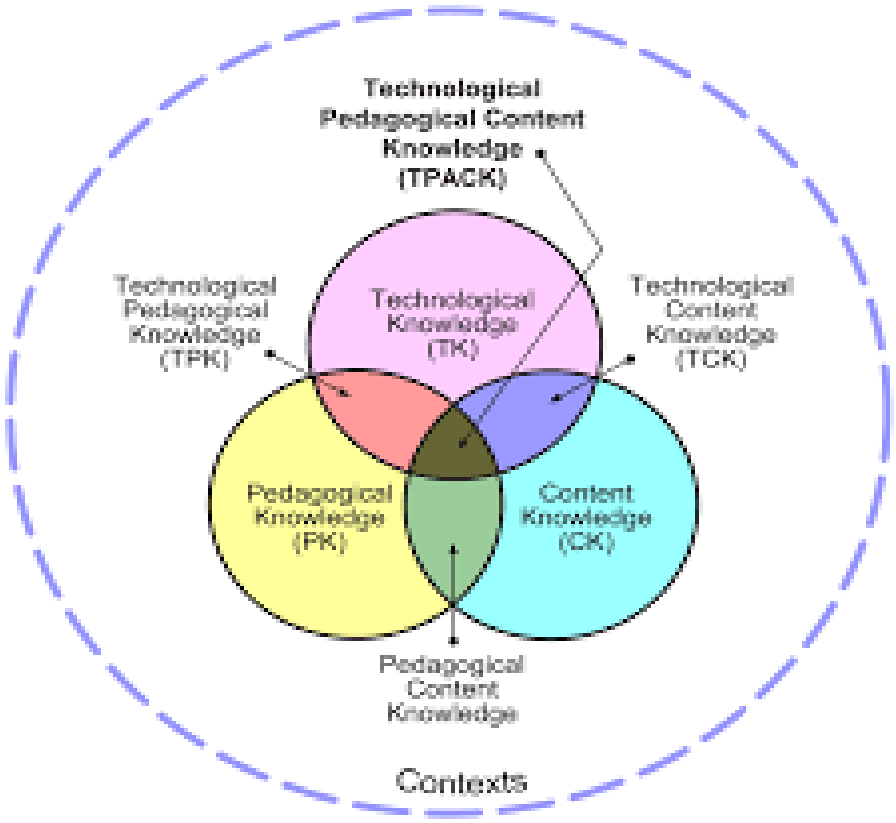


**Figure 1. TPACK framework (image from http://tpack.org)**

Where TPK, TCK and PCK converge they create Technological Pedagogical Content Knowledge (TPACK). Cox and Graham (2009) define TPACK as a lecturer's knowledge of how to coordinate the use of subject-specific activities or topic-specific activities with topic-specific illustrations using emerging technologies to facilitate student learning. Lecturers' TPACK is important in online teaching and learning because effectively integrating technology, pedagogy and content is key to meaningful instruction and learning. Therefore, this study uses the TPACK framework to assist the researchers to assess lecturer's knowledge of how they blend technology, activities, and illustrations in the classroom to facilitate student learning. This is because lecturers' perceptions of their technological, pedagogical, and content knowledge influence how they design their lessons. The TPACK is linked with the ability of lecturers to deliver content to students in an engaging way and enhance student creativity, innovation and stimulate student learning which is in line with the principles of constructivism that underpin the instructional approach at the University of Botswana. This study, however, mainly focuses on lecturers' perceptions and experiences on their TPK that is knowledge of the general instructional activities that they employ in using emerging

technologies, how they motivate students using technology and how they engage students in collaborative learning using technology.

## Methodology

### The Context

The University of Botswana (UB), a leading institute of higher learning in Botswana, has a student population of more than 13000 students. UB has departments that are tasked with ensuring that the technological infrastructure of the university is in place for use by the university community. The two main departments are: the Information Technology (IT) Department whose main function is to provide, manage and maintain the ITC resources for the university. For now, the university has a university wide Wifi provision and all lecturers have portable computers in their offices. The other department is the Educational Technology Department (EduTech) that is tasked with guiding the university on the integration of technology in teaching and learning. It provides in-service training to lecturers through workshops with the expectation that after the in- service training they would then develop and teach online courses. However, these professional development workshops are optional for educators.

The UB adopted the blended learning approach for teaching and learning with the aim to "improve teaching and learning by maximising the strengths and minimising the weaknesses of each method" (Learning and Teaching policy 2008: pp. 25-26). However, the adoption of blended teaching by academic staff has been optional and inconsistent between departments and even programmes. E-learning at UB is defined as "the appropriate utilisation of Information and Communication Technologies for advancing student-oriented, active, open, collaborative and life-long teaching and learning processes" (UB Digital Scholarship Report, 2008: p.4). The UB Learning and Teaching philosophy is based on the principle of "intentional learning", which in the context of UB, refers to the incorporation of classroom and educational technologies that are suitable to the content. The Learning and Teaching policy puts an emphasis on pedagogical strategies that "encourage active learning, the achievement of learning outcomes and the development of self-directed, independent learners who have learned how to learn" (Learning and Teaching policy 2008 p.3) hence lecturers are encouraged to integrate ICT in teaching and learning.

## Research Design

This study employs qualitative method to explore lecturers' perceptions and experiences of their competencies to effectively integrate digital technology in learning and teaching during the COVID-19 pandemic as well as the institutional support provided to them in designing, implementing and sustaining online teaching and learning during this era. Kambererelis and Dimitriadis (2005) posit that the qualitative research approach can be used to understand, interpret and explain complex and highly contextualized social phenomena. Hence using it enabled researchers to develop an understanding of lecturers' perceptions and experiences on the integration of digital technologies in teaching and learning during the COVID-19 pandemic. Making sense of how they interpreted their experiences and the meaning they attributed to their experiences (Merriam, 2009; Creswell & Creswell, 2017) was also important in this investigation because it highlighted their perspectives on the value of using these digital technologies for online teaching and learning.

Although the number of the research participants is small in a qualitative research in-depth interviews are suitable for investigating perceptions and actions as they provide rich in-depth data instead of numerical data (Russell & Gregory, 2003). The study also uses qualitative methods because studies that have evaluated lecturers' preparedness to integrate digital technologies using the TPACK framework have mainly used quantitative methods with statistical analysis.

## Participants

The participants of this study consist of five (5) lecturers ranging from 25 to above 55 years, who were drawn from a department at the University of Botswana. Purposive sampling, which is predominantly used in qualitative research, was used to select the participants with the ability to contribute rich, in depth data that could best inform the research questions and enhance researchers' understanding of lecturers' perceptions and experiences on use of digital technologies in teaching and learning during the COVID-19 pandemic (Schutt, 2006; Creswell & Creswell, 2017). Participants were informed about the purpose of the research and were guaranteed anonymity. Appointments for interviews were then made according to each participant's convenience.

## Data Collection

The data were collected through individual in-depth interviews which lasted for about 50 – 60 minutes. These were conducted at the end of the second semester academic year 2020/2021. In recognition of COVID-19 safety protocols, all interviews were conducted online and consent to record interviews was sought before the start of the interview. Researchers designed the interview guide based on the TPK construct of the TPACK framework. Not all the TPACK constructs were used in this study as the purpose of the study primarily focused on assessing educators' self-reports of their capability to integrate digital technologies into teaching and learning during the COVID-19 pandemic.

## Data Analysis

Thematic analysis (TA) is a flexible and useful research method that is used to provide a rich and detailed, yet complex account of data which was used in this study (Braun & Clarke, 2006). Recorded interviews were transcribed and analysis was started by reading through the data. The researchers reviewed the data several times during the analysis process to confirm that the results represented the participants' views. Statements were connected to the research questions as well as focused on what participants said about the knowledge and skills of integrating digital technologies in teaching and learning. In order to develop deeper understanding of participants' responses, preliminary codes were assigned to the data to describe the content, then themes were identified by physically sorting data with similar meanings. Major themes were then used to report the findings.

## Presentation of Findings

### Characteristics of the Participants

This section describes the demographic characteristics of the lecturers that participated in this study. Five lecturers took part in the in-depth interviews which lasted for about 50 to 60 minutes. Three of the participants were in the age range of 50 years and above, one participant was in the age range of 40 years and above and the last participant's age ranged between 25 and 30 years. Four of the participants reported that they were fairly proficient in the use of the official online learning platforms that were used by the institution for virtual classroom and one participant reported a high level of proficiency with the

platforms used. The platforms used were Microsoft Teams (MST), which was used for the virtual classroom and the Moodle learning management platform. Moodle was mainly used to upload teaching materials and post learning activities and announcements. The participants who indicated that they were fairly proficient pointed out that they could do basic things like making a presentation through Microsoft Teams and sharing of Power Point slides through this platform. The four participants indicated that they were not familiar with other tools provided by Microsoft Teams such as uploading materials, and organising students into small groups for class activities. They indicated that they had never explored other opportunities that the platform could provide. The participants also indicated that they usually use social media platforms like WhatsApp to send announcements.

All the participants reported that despite the disruption in the traditional mode of teaching brought about by the COVID-19 pandemic protocols of social distancing, they still found it a challenge to go completely online and were to some extent forced to engage in face to face teaching because of challenges such as lower bandwidth, network disruptions and the inability of students to attend online classes.

**Lecturers' competencies and skills required to effectively integrate digital technology in Learning and Teaching**

The first research question sought to understand whether the participants possessed adequate technological literacy skills and competencies to develop appropriate content specific online teaching strategies. The interview solicited responses on how proficient the participants were in the use of digital platforms, whether they preferred face - to - face over online teaching or vice versa, how much effort they put in order to teach online and how they facilitated student engagement during the virtual classroom. A number of subthemes emerged from the data and will be presented below.

**Technological competency in designing online instructional strategies**

On the question of whether the participants possessed adequate technological literacy skills and competencies to develop appropriate content specific online teaching strategies, the participants' general outlook was that online teaching was very demanding and a lot of effort, skill and time were needed in designing interesting and appropriate content. The participants expressed apprehension and lack of confidence in terms of technological skills they needed to

design effective online instruction. Some of the participants expressed their concerns in this way:

> *The teacher has to put in intensive work and time to design instructions and you may find that I am lacking in that respect. Designing appropriate instruction for online platform is a challenge for me. I prefer face to face because I am not technologically savvy. Online teaching requires more from me in terms of technological know-how and I need to put more effort to prepare than face to face teaching.*
>
> *I need to prepare something that will engage them (meaning students) and is interesting, so I think it needs a lot of preparation.*
>
> *Designing effective online course is a skill I need to develop. Sometimes I would realise after a lesson that I needed to do something but if I had the skill to design I would know when preparing for class what to include.*

One of the participants did not seem to have much challenges with designing online instruction and indicated that the training that she got was adequate to prepare her for the virtual classroom.

Interestingly, there seemed to be a contradiction in that the participants did not think that there was much difference in designing materials for the traditional classroom and for the virtual classroom. Their construct of the virtual classroom was that if one can teach in the traditional classroom, then they can teach in the virtual classroom. One participant summed it up by saying:

> *I don't think there is a lot of difference in designing face to face and online materials. I am using the same materials for face to face online. I just need to be creative in how I present it.*

**Facilitation of student participation and engagement in the virtual classroom**

The question of whether the participants were able to facilitate interaction and engagement with the students during the virtual classroom was also raised. All the participants expressed with deep concern that it was really difficult to enhance interaction with the students and that most often students are just passive. One of the participants indicated that one strategy that she uses to encourage participation is to upload content into

Moodle and ask the students to read before coming to class and as such when she asks questions in class she expects the students to answer. She said that it worked to some extent. Another strategy she mentioned was to assign students group work and expect them to present during the virtual classroom.

Participants also reported that it was a challenge to engage with students during virtual teaching. Some of the sentiments that were raised were that students had negative attitudes towards online learning and their motivation was very low. One participant argued that;

> *Because of the physical absence of the teacher, we have learners who take advantage of that and just login and go to do other things. You see we are surrounded by problems that we cannot resolve because we are not there, we are not seeing what is happening.*

Another participant made the following important observation;

> *I think my biggest worry when I am doing online teaching is I am never sure if my students are listening because they can switch on and go somewhere else and when I call their names they are nowhere to be found. So that is my biggest worry, I am never sure whether my students are on to it.*

In the same vein another participant expressed this;

> *In a physical classroom there are a lot of things that one can do to enhance interaction. Examples are group work, pair work and presentations where students can talk and participate. With online teaching it is difficult to employ these strategies. So the only way that I try to enhance interaction is by encouraging my students to speak. I even call their names even if they have not raised their hands and normally they end up talking.*
>
> *The ability to establish rapport with students in terms of putting names to faces is not there. The use of modern technologies cannot replace face to face in terms of establishing rapport with the students.*

Another participant responded to the question by saying;

> *In face to face teaching one can interrogate and probe students. You are sure that your students are attending. You see them and can read the non- verbal when they don't*

*understand anything. It is unfortunate that students don't want to interact. Only a few students participate as we teach and we just hope that others are listening.*

One of the participants indicated that she sometimes tries to make use of the chat to engage the students. Her comment on the question was that;

*The nice thing about Microsoft Teams is that you see which students joined the lecture so you can always pounce on them or write a question and those who cannot speak for whatever reason can write on the chat, so in that way there can be a bit of interaction*.

Generally the participants shared the same concerns that there was less interaction in the virtual classroom while there is a lot of engagement in face- to- face teaching. This was emphasised by this comment;

*The online platforms cannot replace the physical interaction because I am talking to people who are distant*.

One participant summed it well by linking the lack of interaction with the poor quality of internet connection.

*It is challenging to engage with students. We cannot have a flourishing virtual classroom without strengthening the bandwidth and internet connectivity. The lower bandwidth limits me from achieving my goals.*

When probed further about what online communication tools they used to ensure students are engaged the participants mentioned the discussion forum in Moodle that they sometimes try with students. They expressed worry that students were not keen in participating in the discussion forums even when the lecturers posted some discussion topics highlighting that only few students participated. Generally the participants were sceptical about whether the online communication tools could be effective. It was clear that their perception was that even with the use of online communication tools, online teaching cannot replace face- to- face teaching because of the afore-mentioned limitations. Other tools that can be used are online assessment tools which are provided in Moodle. However, the participants indicated that they never used these online assessment tools and would like to learn how to do online assessment.

**Institutional Support in Designing, Implementing and Sustaining Online Teaching**

The second research question solicited participants' views on the kind of institutional support they received to enable them to design and implement effective online teaching during this transition to online learning and teaching.

The participants expressed mixed feelings about the kind of support that was provided. On the one hand there was one participant who felt that the support was adequate as the institution really did its best in providing the necessary support. The following comment by the participant captured this issue;

> *The institutional support and the keenness to support staff is really pleasing*. Let me *tell you something, when we started Microsoft Teams I was anxious and wondered whether I will ever be able to use it but when I started being work shopped on it I realised that this is a very user friendly tool. I think the apprehension emanates from lack of knowledge of the benefits*

On the other hand the other participants felt that the support was not adequate. Their concerns were that they were only taught how to upload content either on Moodle or on Microsoft but not how to deliver content or teach online. This was summed up as follows by one of the participants;

> *We were taught how to operate Microsoft Teams, but not how to teach and as such training was limited. I still need support to develop quality online courses.*

The other participants made the following comment;

> *When we were taught Microsoft Teams we were not given much detail on how to use other tools within, somehow we have to do it on our own.*

And yet another one made this comment;

> *I think Edu-Tech thinks that we are able to teach online*

These sentiments were shared by the three participants. They felt that they were provided with the technical know-how support and not how they could deliver courses online or how they could package the online courses.

Lecturers in this group reported sufficiently high support from their institution (i.e., the context in which online teaching and learning is implemented) yet had little confidence in their online teaching and learning abilities and instructional practices. In this sense, these lecturers exhibited "contextual" readiness, and not "personal" readiness (Scherer et al. 2021).

**Discussion**

The aim of the present study was to explore lecturers' experiences and perceptions of their competencies to effectively integrate digital technology in learning and teaching. The study also aimed to evaluate the existing institutional support provided to lecturers to design, implement and sustain online teaching during the COVID-19 pandemic. To adapt to online teaching, lecturers had to quickly acquire a new set of skills and competencies to enable them to teach online.

Firstly, the study revealed that lecturers were generally not satisfied with the level of interaction with the students, and they felt that student participation in the virtual classroom was lower than in the traditional classroom. One can speculate that lecturers' inability to adopt strategies that can enhance student engagement in the virtual classroom could have contributed significantly to students' inability to engage in the learning process. According to Anderson (2017) learning and creation of meaning does not result from direct instruction but happen when students' learning activities and environments are engaging and meaningful. Furthermore, Hamid et. al. (2020, p. 93) argues that "if online learning is well prepared, especially the content of teaching material, it will attract students to be involved in it". This calls for instructional pedagogies that are student centred and learning activities that are highly engaging (even in a virtual classroom) to facilitate students' creation of their own meaning (Vygotsky, 1978; Keengwe et al., 2014). Online teaching and learning requires pedagogical strategies suitable for a virtual environment. Lecturers' perceptions were that the same content that can be taught in the traditional way can also be similarly taught in the virtual classroom. However, Fawns et al. (2020) argue that materials designed for face- to-face instruction cannot be merely moved online.

Secondly, the findings of the study indicate that there seemed to be a mismatch between what participants perceived as their level of competence in the use of digital technologies in general and the actual practice of designing and delivering content in the virtual classroom. This is drawn from the comments of the participants which indicated that

they were competent in the use of digital competencies for communication and other general uses but were not very competent in using digital technologies to teach online. The participants also indicated that they felt that they did not have control over the students when teaching virtually. The present finding seems to be consistent with those of other studies and suggest that digital competencies for communication are not enough to teach online. Gay (2016) found out that being digitally literate does not necessarily translate to pedagogical competence or ability to teach effectively online. This finding also agrees with Portillo et. al. (2020) finding which showed that lecturers felt that they were more skilled with the use of technologies for general purposes and less competent with tools needed to facilitate online teaching.

The participants acknowledged the benefits of online teaching and learning especially during the COVID-19 pandemic but also perceived online teaching as not very effective compared to the traditional mode of teaching because of the lack of classroom interaction. They felt that in the physical/face- to- face interaction the non – verbal cues are important as they strengthen meaning and help clarify intended meaning.

In terms of institutional support, the findings reveal that the sudden and unprepared shift to online teaching and learning heightened and highlighted both the inadequacy of lecturers' online teaching professional development and infrastructural challenges the university was experiencing. Participants felt overwhelmed and ill prepared to teach with technology. They seemed to attribute this to the professional development training the institution provided. They believed that the training and support was not adequate as they were trained on using the teaching platform and not on how to design content and teach using the platforms. These findings corroborate previous studies that explained lecturers' lack of preparedness to teach online and the importance of institutional support with online pedagogies (e.g. Heng & Sol 2020; Khotimah, et al., 2020; Adedoyin & Soykan 2020; Cherer et al., 2021). The participants suggested that professional development workshops should be flexible and be offered on demand. They further suggested more discipline specific training. TPACK framework (Cox & Graham, 2009), advocates for lecturers' knowledge on how to coordinate the use of subject-specific activities or topic-specific activities with topic-specific illustrations using emerging technologies to facilitate student learning. The World Bank Annual Report (2020) stresses that staff working online need to be trained and supported technically, socially and morally so

that they can effectively deliver online courses. Furthermore, online teaching experts like Bates (2020) estimate that blended learning will become the new norm post COVID-19 therefore institutions should adopt instructional design models that effectively equip the academic staff.

Additionally, the study found out that the university seemed to experience technical infrastructural challenges. The existence of efficient technical infrastructure is a vital requirement for ensuring online learning (International Association of Universities, 2020). It is evident that participants experienced challenges with internet connectivity and such challenges included low bandwidth and disruptions in the internet connectivity, which negatively impacted on the flow of the lesson.

**Limitations of The Study**

Several limitations of this study should be noted: the study used a small sample size derived from one department represented by a convenience sample rather than a randomly drawn sample. Thus, while the findings are insightful, they cannot be generalised and should be considered in the context of this study. Another methodological limitation involves the research approach which relied on one source of data. Future research could use mixed method approach by using surveys, interviews and evaluation of the courses to determine the competencies of lecturers in designing online courses.

Another limitation entails reliance on self-reported experiences on online teaching knowledge and skills. It is not clear to what extent lecturers take advantage of the professional development available to them and what aspects of the training are most helpful to their improvement as online lecturers. Future studies might increase the sample size and use a cross section of academic staff. Finally, this study focused only on the lecturers. Future research may benefit from including students concerns, needs, and perceptions on the quality of online instruction during COVID-19 pandemic. Finally, although this research was guided by the TPACK framework, it focused only on the technological pedagogical knowledge (TPK) of the participants, which is just one construct of the model. Further research can assess lecturer's knowledge and skills using all the TPACK framework constructs. This would provide the institution with information on lecturers' knowledge and skills training that need to be emphasised.

## Conclusion

This paper provides insights into educators' perceptions and experiences of their competencies in using ICT for teaching and learning during the COVID-19 pandemic and the support garnered from the institution to enable them to effectively use the technologies. The study concludes that while lecturers acknowledged that the university has made strides in providing technological infrastructure, it is however, inadequate for effective teaching and learning. Other challenges highlighted as impacting effective teaching and learning included; inadequate technological pedagogical knowledge by the lecturers and inadequate institutional support. Inadequate and inappropriate professional development was cited as contributing to low comfort levels for lecturers in terms of technological skills and competencies needed to design and deliver online content.

Collectively, the findings of this study indicate that technology-enhanced learning is a global phenomenon hence researchers in this study underscore the criticality of the institution to foster a supportive environment and provide educators with the necessary technological and pedagogical knowledge to effectively integrate digital technology into teaching and learning in order to increase the efficiency and the quality of education provided to the 21$^{st}$ century learners.

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