THINK PIECE

# The Shifts to Online Learning: Assumptions, Implications and Possibilities for Quality Education in Teacher Education

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## Abstract

With the advent of coronavirus disease (COVID-19) which has spread to the majority of countries across the world, the World Health Organisation (WHO) declared a global pandemic on 11 March 2020. Governments all over the world, including in southern Africa, introduced measures such as the banning of large gatherings, closure of borders, schools and institutions of higher learning to curb the spread of COVID-19. To ensure ongoing teaching and learning, institutions of higher learning made resolutions to transition to remote/online teaching and learning. While online education has long preceded the pandemic, the spiraling of COVID-19 all over the world resulted in the upscaling of online teaching and learning in higher education institutions. Mandatory online teaching and learning was a relatively new practice to most lecturers and students in southern Africa. Drawing on two case stories from Botswana and Namibia, this paper offers a think piece on the shifts to online learning, considering assumptions, implications and possibilities for quality learning in teacher education, through a reflection by teacher educators of environment and sustainability courses. The assumptions in online learning were that students and teacher educators had the capacity and infrastructure for remote/online teaching and learning. This paper thus opens up opportunities for institutions of higher learning to scale up their Information Communication Technology (ICT) infrastructure and support for both students and teacher educators for online teaching and learning which have the potential to improve on quality education during times of crisis.

**Keywords:** *Online teaching and learning, ICT infrastructure, Education for Sustainable Development (ESD), quality education*

## Introduction

The World Health Organisation (WHO) declared a global COVID-19 pandemic on 11 March 2020 after observing that most countries had reported thousands of confirmed COVID-19 cases (WHO, 2020). By July 2020, in Africa, countries that were most affected were Algeria,

Egypt, Ghana, Nigeria and South Africa, with South Africa accounting for more than 70% of all cases on the continent (OECD, 2020a; OECD, 2020b). The number of cases continued to increase across the globe, with Africa predicted to be the most vulnerable continent to the coronavirus (World Economic Forum, 2020). Specifically, countries like Botswana, Namibia and Zimbabwe which border South Africa, were rendered vulnerable because of their high dependence on South Africa for labour provision, goods and services. The vulnerability was also due to the continent's weak health care system and a large immuno-compromised population owing to high prevalence of malnutrition, anemia, malaria, HIV/AIDs, tuberculosis,  high rates of diabetes and poor economic discipline (World Economic Forum, 2020). The COVID-19 pandemic has also exacerbated the economic challenges already faced by many countries, with many people losing their livelihoods (United Nations, 2020).

Research and trials on different vaccines for coronavirus are underway (Defendi, Madeira & Borschiver, 2021). In response to the disease outbreak, governments around the world have taken measures inclusive of quarantine, travel restrictions, social distancing and lockdown, in a bid to suppress the spread of the virus (OECD, 2020b). These measures, while helping to control the spread of COVID-19, subsequently hit the global economy thereby pushing nations towards recession (OECD, 2020a; United Nations Human Rights, 2020). African economies, including Botswana, Namibia and Zimbabwe, already struggled with inadequate healthcare systems when COVID-19 hit the continent and the pandemic has significantly worsened economic conditions (OECD, 2020b).

In terms of education, COVID-19 has affected the education of over 1.6 billion children and youth (UNESCO, 2020; UNHCR, 2020), as governments all over the world enforced total or partial closure of schools to contain the spread of the virus (OECD, 2020b). As governments transitioned to home education, many children were disadvantaged as they experience uneven access to distance education and online learning opportunities and resources. The 2020 Global Education Monitoring (GEM) report provides an in-depth analysis on the key factors (such as learners' gender, attitudes, language, disability, ethnicity, poverty, migration and displacement) that cause exclusion of learners in education systems (UNESCO, 2020). The report revealed a state of exclusion from education as a result of the COVID-19 pandemic with estimates such as 40% of low and lower-middle income countries having not been able to support disadvantaged learners during the temporary school shutdown.

The COVID-19 pandemic has significantly affected institutions of higher learning with many universities and tertiary institutions having to close (World Bank, 2020). Over 91% of the students who had enrolled for formal education programmes have been affected by COVID-19 (Holmes, 2020). The effects of the COVID-19 pandemic were, however, experienced more intensely in lower and upper-middle income countries (World Bank, 2020). Most universities and tertiary institutions had to move to mandatory remote/online teaching and learning (Marinoni, Van't Land & Jensen, 2020). Remote/online teaching has experimented with radio, email, phone, television and mobile applications (World Bank, 2020). Remote teaching and learning is not new; most countries globally, including

Botswana, Namibia and Zimbabwe, offer online or distance education as a mode of study (UNESCO, 2005; Moore, Dickson-Deane & Galyen, 2011; NOLNet, 2016). However, institutions of higher learning were faced with issues related to equity, infrastructure, broadband capacity and pedagogic capacity challenges due to the sudden unprepared shift to online learning (Marinoni et al., 2020; World Bank, 2020).

It has been widely documented that Education for Sustainable Development (ESD) provides alternatives to reassess and evaluate education and learning during times of crisis, raising the importance of how knowledge, skills, values and attitudes are developed among learners and students (UNESCO, 2018). ESD enables learners to make informed decisions and take action on local and global challenges such as COVID-19. ESD has further been reported as a key enabler to the achievement of the Sustainable Development Goals (SDGs), particularly SDG 4 (UNESCO, 2018), thereby preparing the world for crises such as COVID-19 (UNESCO, 2020). ESD is committed to education being inclusive of all learners irrespective of their socio-economic backgrounds and gender (Pigozzi, 2010; Didham & Ofei-manu, 2018). ESD therefore suggests that the type of online learning offered during pandemics such as COVID-19 should promote the well-being of all people and should be inclusive.

Drawing particular examples from two countries in southern Africa, Botswana and Namibia, this paper offers insights into shifts to online learning, and the assumptions, implications and possibilities for quality teacher education. This has the potential to inform how governments, particularly of Botswana and Namibia, could reassess learning systems in order to provide quality education that meets the challenges faced during pandemics such as COVID-19.

## Quality education and Education for Sustainable Development

Like most African contexts, quality has been at the centre of discussions about teacher education in Botswana and Namibia. Lotz-Sisitka and Lupele (2017) contended that for many years quality has been measured primarily through metrics of enrolment, retention and achievement. They further argued that in an attempt to define quality education in most African contexts, this has only expanded to:

> … set out the desirable characteristics of learners (healthy, motivated, students), processes (competent teachers using active pedagogies), content (relevant curricula) and systems (good governance and equitable resource allocation). (p. 10)

However, Lotz-Sisitka and Lupele (2017) viewed quality of education as a dynamic concept that evolves with time and changes in the social, economic and environmental contexts of a place. Issues of social justice and connections between learning and changing contexts, such as with the COVID-19 pandemic, need to be foregrounded. Tikly (2010, p. 1) defined quality education as:

> [education] that enables all learners to realise the capabilities they require to become economically productive, to develop sustainable livelihoods, to contribute to peaceful and democratic societies, and to enhance wellbeing.

Tikly (2010) further argued that quality education should be inclusive, democratic and relevant. UNESCO (2020) described quality education as including appropriate skills development, taking into consideration gender parity, and providing relevant school infrastructure, equipment, educational materials and resources, scholarships or teaching force. Barrett et al. (2006) reviewed literature on quality of education in low income countries and identified five dimensions of quality education which are effectiveness, efficiency, equality, relevance and sustainability. Building on their work, Nikel and Lowe (2010) undertook a conceptual review on the concept of quality education in low income countries. They developed a fabric model of quality in education which consists of seven dimensions: effectiveness, efficiency, relevance, equity, responsiveness, sustainability and reflexivity.

Lotz-Sisitka (2013, p. 29) asserted that quality education emphasises the 'sociocultural' or the processes of meaning-making that occur at the interface of existing experience and context in the teaching and learning processes; this is important for education to be relevant in responding to the emerging environmental and socio-ecological issues for sustainable development in that place. The role of ICTs in enhancing quality education can also lead to sustainability. This is indicated in SDG 4.7 which brings into focus ESD competences for quality education such as critical and systemic thinking, collaborative decision-making and taking responsibility for present and future generations (UNESCO, 2015; 2018), to be foregrounded in ICT based teaching and learning environments.

ESD is described as holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment through technology mediated innovations that scale up teaching and learning (UNESCO, 2018) even during challenging periods such as the COVID-19 lockdown. ESD empowers students to be 'global citizens' who can engage and assume active roles, both locally and globally, to face and to resolve global challenges and ultimately to become proactive contributors to creating a more just, peaceful, tolerant, inclusive, secure and sustainable world (UNESCO, 2015; 2018). A sustainable world can be enabled through re-orienting teacher education as a vehicle towards the achievement of ESD competences (UNESCO, 2015). Re-orientation of teacher education to promote sustainability means that education can contribute to sustainable development and a sustainable future for nations like Botswana, Namibia and Zimbabwe in the face of their sustainability challenges such as COVID-19. SDG 4 within the framework of ESD provides focus on distributed teaching and learning processes (Edwards, 2011) in that it emphasises education and wider community links and issues of context, place and relevance (Silo & Ketlhoilwe, 2020).

ESD learning processes within the SDG focus should not only be about pedagogies of empowerment, but also about epistemological changes in the way in which knowledge is viewed and worked within teacher education settings (Silo & Ketlhoilwe, 2020) to create

agency that is distributed across the community of learning (Edwards, 2011). The idea that is at the centre of the distributed agency involves a capacity for educators and students to work together to strengthen purposeful responses to complex environmental and social problems (UNESCO, 2018) that can arise from pandemics like COVID-19. This expands the tasks being worked on by recognising the motives and the resources that others bring to bear within a constant dynamic process (Evans et al., 2017). The aim is to achieve quality in education through innovations in teacher education, that should include quality technology mediated teaching and learning processes.

SGD 4 emphasises the integration and implementation of ESD in education contexts, including the provision of professional development for teachers with a view to enhancing the delivery of quality education for all school learners by 2030 (UNESCO, 2018). Implementation of ESD is heavily reliant on the appropriate application of teaching and learning methods as well as on relevant sustainability learning content (Laurie et al., 2016). Armstrong (2011) argued that an ESD orientation is underpinned by a constructivist epistemology whereby learning is not only characterised by a learner-centred pedagogy but also by active engagements and social interactions. ESD pedagogies are intended to  stimulate students to be inquisitive, analytical, critical thinkers and decision makers (UNESCO, 2018). The role of ESD in contributing towards the improvement of quality education was highlighted by Didham and Ofei-manu (2018, p. 92) who wrote:

> Because of its emphasis on the importance of student-centred learning pillars and the progressive reframing of pedagogies, ESD is viewed as a powerful tool for reforming education systems and achieving overall improvements to the quality of education.

The relationship between quality education and ESD has been widely documented (UNESCO, 2015; Laurie et al., 2016; Lotz-Sisitka & Lupele, 2017, Didham & Ofei-manu, 2018; UNESCO, 2018; Silo & Ketlhoilwe, 2020). Both quality education and ESD are future oriented; they promote common skills, enable learning as connection, involve critical thinking and action competence, make education relevant, promote innovative teaching methodologies and promote learning outcomes that empower students to address local and global pandemics such as the COVID-19 (ibid.). Online teaching as the new pedagogical norm in response to the lockdowns resulting from the pandemic, provides new opportunities for enhancing quality education and ESD.

## Online teaching: Assumptions and possibilities

While online education has long preceded COVID-19, and has been growing steadily for more than a decade (UNESCO, 2005; Moore et al., 2011), the advent of COVID-19 all over the world has resulted in rapid re-orientation (UNESCO, 2013) of the education system from a face-to-face mode to upscaled online teaching (Marinoni et al., 2020). Following the COVID-19 outbreak, one common trend in education systems globally has been to respond to the pandemic with emergency online protocols, marking the rapid transition of face-to-face mediation to online learning systems (Murphy, 2020). According to Moore  et al.

(2011), online learning is commonly described as providing "access to learning experiences via the use of some technology" (p. 130). 'Wholly online learning', according to Oblinger and Oblinger (2005), encompasses a range of technologies such as the worldwide web, email, chat, new groups and texts, audio and video conferencing delivered over computer networks to impart education (Dhull & Sakshi, 2017). The fundamental change to online mediation has had a dramatic impact on the relationship between teachers and learners. Online pedagogy now focuses on the activities of the learner and sees teaching primarily as a means of support, with the teacher as a facilitator (UNESCO, 2005).

Though most countries in the SADC region (Botswana, Namibia and Zimbabwe included) have emphasised the importance of ICT integration in education in their policies and national development plans (SADC, 2012), the pandemic has made implementation even more urgent and mandatory. In terms of ICT integration in education in, for example Botswana, the Ministries of Basic Education and Tertiary Education, Research, Science and Technology have committed to implement, amongst others, the Education and Training Sector Strategic Plan (ETSSP, 2015), which is expected to greatly change the human development landscape by introducing new strategies and reforms. These include the national domesticated SDG 4 indicators that emphasise the utilisation of ICTs (Botswana National Commission for UNESCO, 2018). The Botswana ICT policy (2004) states that successful integration and sustainability of ICT in the education system requires a supportive policy environment and framework at the national level. The Botswana government invested successfully in the roll-out and implementation of e-Centres across the country, as platforms for bringing e-services, which include e-Health, e-Education, e-Commerce, and e-Government, especially to rural communities (Botswana Government, 2017).

Similarly, the Namibian government has acknowledged the significant role that ICT can play as the country moves towards a knowledge-based society aspired to in Vision 2030 and its development plans (Republic of Namibia, 2004; 2016; 2017). To contribute towards the realisation of Vision 2030, the Namibian ICT policy for Education emphasises the need for all teachers to be exposed to ICT in order to improve the quality of education through integration of ICT in the teaching and learning process to facilitate learning for the benefit of all learners (Ministry of Basic Education, Sport and Culture (MBESC) and Ministry of Higher Education, Training and Employment Creation (MHETEC), 2001-2006). In addition, institutions of higher education, such as the University of Namibia (UNAM) have introduced eLearning policies aimed at responding to the University's major challenges of efficiency, equity and quality of learning, and at enabling students to pursue education in a flexible learning environment outside of a conventional classroom setting (UNAM, 2018).

Thus, in terms of online learning before COVID-19 related lockdowns, Botswana and Namibia had some basic ICT policies in place that could be used to spearhead online teaching and learning. The assumptions on the upscaling of online or eLearning during the lockdown period in the different countries, inclusive of Namibia and Botswana, is hinged on the premise that the 21st century has seen an increased demand in the use of ICTs.

In terms of ESD implementation, Mireku (2016) indicated that the use of ICT lends itself to more learner-centred settings, enabling students to collaborate with their peers and engage more deeply with content and practical skills. Willis, Weiser and Kirkwood (2014) observed that educators can integrate technology and media in ESD through activities that encourage children to explore, create, solve problems, communicate, collaborate, investigate, and demonstrate their learning about the world outside their classrooms. However, despite policy emphasis and the benefits that ICT can offer to ESD, before COVID-19, not all educators had made the shift from traditional conventional ways of teaching to the use of ICTs as teaching and learning tools. Where ICTs are used, there are many challenges. This can be attributed to factors such as inadequate infrastructure and lack of capacity (Mireku, 2016). Too often, online facilitators do not take their lesson preparations as seriously as they could, and this lack of commitment has a profound and negative effect on the quality of online learning (Mireku, 2016). Moreover, the learner is challenged to own, manage and schedule their learning (Mtetwa, 2020). This can be a difficult task for some students who, for the first time, may be experiencing the ability to control what was typically controlled by the facilitator.

## Case examples of online teaching implementation

Based on personal experiences of two educators, two case stories from Botswana and Namibia, on online teaching and learning during the COVID-19 lockdowns, are presented.

### University of Botswana

In the face of the COVID-19 pandemic, Botswana went into total lockdown for a period of six weeks. The University of Botswana called on staff to either intensify or initiate technology mediated teaching through existing online platforms like Moodle, the university official Learning Management System (LMS). The Centre for Academic Development (CAD) which coordinates and maintains the university LMS, was tasked with the responsibility of up-scaling the teaching staff's capacity and to assist in the virtual system of teaching and learning with clear instructions with no compromise on quality in this mediation. Other suggested modes of mediation included WhatsApp, Zoom and other platforms. Even after the university opened again there was an emphasis on online teaching and learning especially for classes with large numbers and with international students who had travelled to their home countries and were unable to return due to travel restrictions. Students were provided with 2GB mobile data to enable them to access the internet from home. This sudden move to online learning highlighted some challenges, assumptions, implications and possibilities for quality education and SDG 4 in the teaching of courses in Environmental Sustainability Education.

The two environmental education courses covered here were taken by pre-service students as single semester content courses with some sections of the courses being methods in teaching environmental and sustainability issues. The courses have ten and eleven students registered. Key components of the courses are teaching and learning with

continuous assessment and a single examination at the end of the semester. Each course has three contact hours in a week and the courses need to have a balance of the various delivery components as suggested by Moorhouse (2020). This includes a balance between lecturing, discussions, students' presentations, micro-teaching and field trips but with an emphasis on experiential learning. As with other courses, the courses are to a large extent designed to be delivered face-to-face with the course lecturer acting as a facilitator in a highly dialogic classroom (Moorhouse, 2020). The course lecturer uses WhatsApp mainly as an instant messaging platform to facilitate out-of-class communication (ibid.), emails and LMS for online content dissemination and storage of readings and materials which are mainly PowerPoint presentations.

The sudden national lockdown meant students stayed at home; some travelled to their home villages across Botswana where access to internet is a challenge. But because face-to-face contact mediation had stopped and the courses had to be delivered online, the course lecturer immediately used WhatsApp to inform students about the new mode of communication for lectures during the lockdown period. Though all students were registered on the WhatsApp platform, from the two courses taught, only four of eleven students, and three of the ten students responded to this message. From those who responded, only three students agreed that teaching and learning could continue online while the other students described the challenges they were facing regarding internet access. Connections often depended on minimal signals which did not allow clear communication between the course lecturer and students. These were some of the messages from the students:

> Student A from Course 1:
> Good morning maa'm. I tried to submit my assignment, my only challenge is that I do not have access to internet. I went to the village internet café but it is closed.

> Student Y from Course 2:
> Hello ma'am I've completed my assignment, but problem this side is network that's why I haven't submitted mine but I've asked someone to submit for me later today…

Issues such as these illustrated above resulted in time being wasted and sometimes observable signs of frustration from both the lecturer and the students. Generally, communication and discussions with students were characterised by total silence and brief responses from a few. This was a disappointment for the lecturer especially with fast-moving developments on the environmental, social, economic and political impacts of COVID-19 with obvious links to the SDGs, both positive and negative. This would have been a good opportunity for discussions with students regarding their reflections on these impacts, enhancing SDG 4's main imperatives. After lockdown, students able to meet face-to-face generated insightful debates, unlike international students who were unable to participate effectively partially due to the lecturer's lack of experience and skills on online platforms. Giving online feedback was also a challenge for the lecturer. Where online assessment was used, particularly for international students, there could have been adverse effects on the consistency, honesty and gradings of these students. For example,

in one case of an international student, network glitches during test writing meant the student needed more time to complete her test than the rest of the students. After the test, face-to-face assessment allowed students to co-create more meaning in their interactions and discussions (Yang & Carless, 2013; Ryan et al., 2019) which highlighted the challenges and opportunities that COVID-19 presented in socio-ecological and economic contexts. An example was the assignments and tests that required students to interrogate challenges and opportunities presented by COVID-19 in local and regional contexts. Feedback from the course lecturer and students generated more intense yet worthwhile debates during the face-to-face interactions in alignment with SDGs, than the online interactions with international students.

## University of Namibia

In response to COVID-19 Namibia went into lockdown for 35 days. This affected all institutions of higher learning including the University of Namibia (UNAM). One of UNAM's resolutions to COVID-19 was to transition to remote/online teaching and learning. This meant students had no access to face-to-face teaching and learning and to the university's physical resources such as libraries and computer laboratories. Online learning is not new to UNAM. The university offers open and distance learning as "an approach to learning that focuses on freeing learners from constraints of time, space and place, while offering flexible learning opportunities" (NOLNet, 2016, p. vi) offered through the Centre for Open and Distance and eLearning (CODeL). CODeL contributes towards UNAM's vision and mission by providing high quality open and distance learning programmes through the use of innovative technologies and blended learning approaches (CODeL, 2017). The main platform for learning for CODeL, and thus the University, is the Moodle Learning Management System (LMS).

COVID-19 has necessitated the need for increased remote teaching using eLearning solutions, in particular the use of Moodle LMS. Teaching and learning online meant lecturers would be facilitating learning by sharing learning materials (such as notes, schemes of work, reading materials, PowerPoint presentations, pre-recorded lessons and assessment activities) through Moodle LMS and by conducting discussions in the form of on online sessions or using any viable social media platforms. UNAM in collaboration with Telecom Namibia (the national telecommunication operator) offers students TN Mobile Pocket Wifi (with monthly data of 10-14GB) at a special rate annually. During COVID-19, through this collaboration, Telecom Namibia also offered special data packages to UNAM staff exclusively. Each data package included: a Pocket Wifi, a 4G, 5GB monthly data (for a period of 12 months), subsidised and affordable bundles after monthly bundles are depleted and free unlimited access to UNAM ICT resources. However, being new to the virtual learning environment, both lecturers and students needed continuous eLearning support. Staff offering online support remotely were increased. Lecturers were invited to training on how to create and upload materials and assessments online and other technical issues regarding the use of Moodle LMS. The next section highlights the challenges, assumptions

and opportunities associated with online mediation of the Integrated Environmental Education course in one of UNAM campuses. The course is taken by pre-service students in the Faculty of Education as a year-long course and includes sections on methods in teaching environmental and sustainability issues. The course has 77 students registered.

The Integrated Environmental Education course focuses on the knowledge of the natural environment, nutrition, health and safety measures (UNAM, 2020). During online teaching and learning, the course lecturer posted materials (PowerPoint presentations, videos and audios) on Moodle LMS and in most cases had communication with students on WhatsApp. Of 77, 73 students had access to WhatsApp but less than 30 students responded to communications. Students found WhatsApp easily accessible even though limiting with large files. The approach to online learning posed challenges to students in terms of access to technology (laptops or smart phones, connectivity to the internet) as well as sufficient resources to purchase data from service providers. Some students had little or no access to technology, data, or internet connectivity. This is reflected in the student extracts below:

> *Student B*
> Good morning mam, can you please download the notes for me, my network is very poor, can't access Moodle.

> *Student C*
> TN-mobile is not available throughout the country. Most villages don't have it.

> *Student D*
> I have not been able to access any materials because I was at the village with no internet and no-one have a smart phone, only my mother who is always at work.

Assessment is a key component of teaching and learning (UNAM, 2020). During remote teaching and learning, assessment was undertaken online. The lecturer used alternative modes of assessment such as students recording themselves doing practical activities or submitting online individual assignments. Quizzes and tests with objective questions such as multiple choice, true or false and matching questions were given. Although the lecturer had a choice for subjective questions such as essay type items, considering individual students' internet connectivity and data availability, more objective questions were given to ensure that students were able to complete the online assessments in allocated time. Due to limitations in terms of size on Moodle LMS, the videos and audios uploaded were limited. Group work was also limited. Students experienced challenges to complete online assessments. This is reflected in the extracts below:

> *Student E*
> Mam it is not fair because not everyone have access to internet, why should some students be excluded for things beyond their control? Moodle is always misbehaving and TN-mobile is too slow and it takes time for things to load.  Imagine waiting for 10 minutes to move to the next question and you just have 40 minutes for the test...

*Student F*
We have network issues and no data, the test must run for the whole day or two days because some of us only have connection after midnight – we don't have internet access at the same time because of the location where we are.

Due to the above, the tests were open for a whole day to accommodate all students depending on their connectivity; in some cases, they were postponed because students did not have access the internet. The lecturer posted questions for discussions on Moodle LMS for students to reflect on issues of hygiene, nutrition and safety during COVID-19. Students gave very brief answers and often did not respond to follow-up questions, resulting in limited or no discussion.

## Implications of online teaching on quality of education

A rapid assessment of the experiences of COVID-19 disruption to the teacher education institutions exposed many significant short- and long-term challenges facing higher learning as shown in the two cases of Botswana and Namibia. This includes diminished resources for institutions, personal and academic challenges for institutions and students, demand for improved infrastructure to support continued distance and blended learning models, reduced mobility placing pressures to improve regional and local tertiary institutions, and more (World Bank, 2020). This resonates with Mukute et al. (2020) who researched education in times of COVID-19 in Southern Africa (see previous edition of this journal, Volume 36). From an SDG 4 perspective, issues of accessibility to education are central to quality education (UNESCO, 2015, 2018). From the two case examples, it was evident in the transition to online teaching and learning that it was assumed all students and course facilitators had access and capacity to online platforms. However, it was clear during the COVID-19 lockdown that there was unequal access to education for student teachers in Botswana and Namibia. As argued by Willis et al. (2014), while most course facilitators were able to engage with ICT, not all students were able to access teaching and learning resources, due to lack of access to ICT infrastructure (Mireku, 2016; UNESCO, 2020) which negatively impacted on the quality of education (Lotz-Sisitka & Lupele, 2017). The content taught was not problematic but the pedagogical processes and assessment strategies were (Armstrong, 2011), in terms of meeting SDG 4's indicators on accessibility to tertiary education. Laboratory experiments and practicals were not easy online and this was one area that needed capacity enhancement. COVID-19 lockdown revealed that challenges also included lack of holistic quality assurance systems for online teaching and learning in the two cases presented. This resonates with research by SADC (2012) that although many countries in southern Africa introduced open and distance learning that uses eLearning platforms, there are ineffective quality assurance systems. Quality, according to Lotz-Sisitka (2013), in these two cases would be the meaning-making that occurs at the interface of the students' and facilitators' online experiences and context in the teaching and learning processes for education to be relevant in responding to COVID-19 and all it entails. This

could include not only the technical and resource challenge experiences, but also the social and emotional experiences that challenged both the facilitators and the students in the process of online mediation (Zhu & Liu, 2020).

Despite the above challenges, the COVID-19 pandemic provided Botswana and Namibia opportunities to translate their ICT policies into practice by reflecting on online teaching and learning for ESD as a mandatory mode of lesson delivery and assessment. For this to be a success, however, there is a need for:

- improved evidence-based policy-making mechanisms and more user-friendly digital learning systems (Zhu & Liu, 2020);
- capacity building of both course facilitators and students inthe use of online tools and systems;
- opportunities to explore flexible teaching and learning opportunities;
- an increase in innovation in the field of teaching pedagogies as well as delivery modalities of teaching and learning; and
- reviewing of assessment approaches in order to build on the experience (Marinoni et al., 2020).

For long-term integration of online teaching and learning in institutions of higher learning in the two countries, quality which requires conceptual and philosophical rethinking of nature of teaching and learning needs to be considered. This includes looking at the new roles, as well as the connections among teachers, learners, and teaching materials, in the digital mediation learning communities (Jandric et al. 2018; Zhu & Liu, 2020). This might require rich theoretical and analytical insights that cultural historical activity theory (CHAT) can provide as a conceptual framework for collaborative learning in online mediated environments. Meaning needs to be socially negotiated in the constructive alignment of both facilitators and students' roles with digital tools in use, mediation rules, the universities' digital learning communities, and their objects in the various contexts (Kaptelinin & Nardi, 2006; Rambe, 2012).

Many educators believe the socio-constructivist viewpoint that CHAT draws from (Engeström, 2001) can usefully contribute to student-centred learning. This implies to support effective learning and promote student satisfaction in online courses, a community participating in online mediation activities must be developed (Cacciamani et al., 2019). Therefore, conceptualising the activities relating to online mediation in these two institutions can help the institutions to understand their activities as they unfold, in particular, the underlying systemic tensions and contradictions (Kaptelinin & Nardi, 2006) that give rise to the challenges encountered by both facilitators and students in the online mediation processes. The emerging tensions and contradictions can lead to opportunities for the construction and adoption of new approaches, strategies, assessment procedures, teaching methodologies, resources and tasks, in line with Engeström's (2001) expansive learning,  that could result in the expansive transformation of the structure of the online

mediation activity in these two cases. This will ultimately also enhance the opportunities to support distance learning in the event of emergencies like COVID-19 and provide the potential to scaffold student cognitive learning processes to promote quality online academic engagement (Engeström, 2001; Rambe, 2012) for students to access quality lifelong learning opportunities (Marinoni et al., 2020).

## Conclusion and recommendations

It is evident that COVID-19 exposed inequalities among students in institutions of higher learning as observed from the two case stories from Botswana and Namibia. The pandemic further exposed that ICT and ICT infrastructures are essential for teaching and learning. The pandemic has revealed that although technology mediation is now a common practice in higher education institutions there is little evidence of significant impact on teaching and learning practices, therefore giving the institutions of higher learning an opportunity to rethink their online mediation systems and approaches to enhance quality. This change will not happen quickly and there is scope to mediate teaching and learning differently. With adequate support, students and staff can continue learning and teaching, although physically apart. This requires an investment in ICT and ICT infrastructures, capacity building of both students and staff, provision and affordability of ICT gadgets and data. The experiences as shown in this paper also provide a professional reference base for online teacher education, which leads to opportunities for a framework for enhancing competencies for teacher educators in conducting online teaching and the development of other standards to enhance quality. This can be done in collaboration with international and national ICT organisations for training and provision of infrastructure.

## Notes on Contributors and their Contributions

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**Percentage contribution**

| Areas of contribution | Author | Percentage contribution |
|---|---|---|
| Conception or design of the paper, theory or key argument | Tshiningayamwe | 40 % |
| | Silo | 30 % |
| | Dirwai | 30 % |
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