Understanding Remote Teaching and Learning Challenges amidst the COVID-19 Pandemic to Enhance Professional Development: A Systematic Review of Peer-Reviewed Journal Articles, 2012–2020

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Abstract

Remote teaching and learning for many higher educational institutions nationally and internationally have become a growing response to enacting contingency plans to contain and manage the effects and impact of the COVID 19 virus pandemic. This chapter explores the challenges experienced with novice online teaching and learning practices in a systematic review of 2012 to 2020 literature as a means of professional development of academics for the remote teaching experiences.

There is a need to identify credible novice online teaching and learning practices during the transition from face-to-face to online learning and provide a contemporary picture of challenges that can be avoided with the implementation of remote teaching and learning. Although several reviews exist that focus on specific aspects of online teaching and learning and blending learning practices, there has been no broad overview of literature exploring recent trends and challenges of remote teaching and learning. Data sets were divided into three main themes: the student, lecturer, curriculum needs. Research analysis over this period suggests that challenges in remote education need to be addressed through ongoing provision of professional development for lecturers, trainings for students, and technical support for content development.

Keywords: Challenges, Remote teaching and learning, COVID 19 pandemic and higher education

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1 Introduction

The Covid-19 pandemic has resulted in the closure of contact universities globally with regard to face-to-face teaching and learning. All teaching and learning have transitioned to remote teaching and learning. According to Hodges, Moore, Lockee, Trust and Bond (2020), there is a difference between online learning and remote learning. Remote learning strives to recreate the classroom environment as the student learns through the computer. This means the student logs in to the virtual classroom environment at scheduled times to view lectures or participate in group learning activities. In contrast, online learning is not designed to mirror the traditional classroom and is more flexible by nature. Although remote learning is said to mirror the traditional classroom, all the benefits of the classroom are not realised in the home environment.

The coronavirus pandemic has resulted in a rise in 'emergency remote' teaching and learning, as colleges and universities had to shut their doors to protect their faculty and students (Hodges *et al.* 2020). Students were sent home to study remotely. In higher education globally, the impetus has been to ensure that students complete their university semester uninterruptedly, despite the tragic disruptions of the Covid-19 pandemic. Multiple online teaching guides, resources, webinars and videos are being prepared in rapid fire to this end to support academics to upskill and transition to remote teaching platforms ,or go fully online in the interim amongst uncertainty with respect to the control of the pandemic. Prolific online resources have flourished and the internet and social media are brimming and bursting with new tools, tips and tricks and techniques for the new (quick) fixes to go online with teaching and learning.

The University of KwaZulu-Natal is no different, where academics have been advised to move their lecturing online as part of the effort to salvage the academic year and support students during this uncertain time. As academics grapple with the new ways of communicating with their students away from lecture theatres, it is a good time to reflect on how this disruptive Covid-19 crisis can help us redefine what learning should look like for the Generation Z student. However, in the same breath we need to be aware of the challenges as well as the opportunities that the new method of remote teaching and learning might unfold for both students and academics.

A large number of students in our educational institutions today are from Generation Z, a generation that has grown up with a truly global

perspective of the world.

> This generation is defined by technology, where the terms FOBA (Fear of Being Alone) and FOMO (Fear of Missing Out) express their expectation of instant communication and feedback, effected through apps like Instant Messenger, Snapchat and WhatsApp (Luthra 2020).

Despite them being technology canny, they may lack the theoretical knowledge base required for digital navigation. Evidence in support can be found in the study by O'Sullivan (2018), who strongly advocates that many young people, the so-called digital natives, have shown limitations in their use and knowledge of technology. In considering the Covid-19 pandemic, the World Bank further reiterates that most students will have great difficulty accessing online learning, especially those in rural areas and areas with poor Internet access and who are subject to numerous other social and academic disadvantages (World Bank 2020b). However, in our decisions for change, never before have we had such an acute understanding of modernity, advancement, internationalisation, and our human interconnectedness in our global community.

This systematic research review is aimed to support academics by highlighting credible research findings of novice online practices to improve the educational outcomes for students experiencing remote learning. Further, the World Bank has stressed that academics working remotely need to be trained and supported (World Bank 2020b). Subsequently, they urge that staff be supported technically, socially and morally so that they can deliver remote classes effectively.

The aim of this chapter is to highlight how these challenges may or may not influence or guide the remote teaching and learning strategies that are proposed within the context of the Covid-19 pandemic. The trends and advances in knowledge from 2012 to 2020 will be highlighted, with particular focus on the challenges experienced in newly developed online courses. This period was chosen as the frequency of publications in the area of online education was greater for the South African context. In addition, this research aims to highlight ways to navigate through remote teaching and learning and will indicate possible directions for future research. A systematic review of this nature will serve as a repository which can be employed positively by faculty members, having to improvise quick solutions in less-than-ideal circumstances (Hodges *et al.* 2020).

This systematic review can serve as an effective body of knowledge while we grapple with ways to effectively engage the greater majority of our student body with respect to curriculum conceptualisations, technical skills development and pedagogical innovations to protect the integrity of what is being taught, learnt and assessed across different programmes during the Covid-19 lockdown. Further, as we observe in many countries around the world, many students in rural areas are unable to access online content, while television or radio broadcasting is often found to be more effective (Martin & Furviv 2020). It is therefore envisioned that a systematic review that highlights potential challenges and suggests possible solutions with online practices might inspire capacity building and implementation of remote quality teaching.

2 Systematic Review as a Methodological Framework

A systematic literature review can be defined as a method of critically appraising, summarising and attempting to reconcile existing research on a particular issue of concern (Andrews 2005a; Hallinger 2013). Hence it is a 'secondary research activity which reviews primary and secondary research in attempt to take stock of what is known in a particular field' (Andrews 2005a:207). However, the essential quality of a systematic literature review is that it is an exploratory review of the evidence from clearly formulated questions that uses systematic and overt methods to identify, select and critically appraise relevant primary research in a way that is explicit, transparent, replicable, and accountable (Andrews 2005a; 2005b).

A systematic literature review was conducted by adopting the guidelines proposed by Kitchenham (2004). In this review, a highly structured process is followed that involves:

(1) Specifying research questions;
(2) Conducting searches of databases;
(3) Selecting studies;
(4) Filtering the studies by evaluating their pertinence;
(5) Extracting data;
(6) Synthesising the results; and
(7) Writing the review report.

Hence, papers published between 2012 and 2020 inclusive were reviewed. Publications outside this range are not included in the formal analysis, but may

be included in discussion, where appropriate. In selecting papers for review, a clear distinction between those involving novice online teaching and learning challenges within the South African context formed the focus for this review. Furthermore, this study has a limited scope pertaining to online teaching and learning or blended learning within higher education. Some papers in these areas which are not within the South African context are still included in the discussion, only if they contribute to the principal focus on novice online teaching and learning courses.

The results were then depicted in a model which shows the challenges affecting the teaching of online courses and the relationship among these issues. For the purpose of this study, remote teaching and learning are defined as tertiary education and credit bearing coursework completely delivered through online courses via a learning management system (LMS) such as Blackboard or Moodle. The focus of this study is on challenges affecting online courses offered via a LMS by higher educational institutions including public and private universities in South Africa.

2.1 Research Questions

This review aims to explore the literature of novice and remote teaching and learning practices by identifying publications that create awareness about the challenges and trends in online teaching and learning, the contributions of these publications, and the evidence for any research findings that they report. The specific research questions are:

1. What aspects of novice online teaching and learning challenges have been the focus of the literature within the South African context?
2. What trends and challenges have been reported in novice online teaching and learning practices between 2013 and 2020?
3. What evidence has been reported when addressing challenges and trends in different aspects of novice online teaching and learning practices?

2.2 Conducting Searches

The following databases were utilised in scanning literature on online teaching and learning: SABINET, EBSCO Host, JSTOR and Google Scholar. Selecting

search terms for a broad and inclusive review of introductory online teaching and learning literature proved challenging. Terms that were too general resulted in an unwieldy set of papers, while specific terms were likely to miss relevant papers. The following combined search phrases were selected with a focus on the area of interest in higher education:

> 'remote teaching challenges' OR 'introduction to online teaching and learning 'OR 'novice online teaching' OR 'blended learning' OR 'learning to teach online in South Africa' OR 'challenges of teaching emergency remote classes' OR 'Online distance learning'.

2.3 Selecting Studies

Based on the described procedure, 246 articles were found. The next stage of the systematic review was to select the papers that would form the basis for this review. The search results were examined with each title and abstract, and the corresponding full paper, if required, to determine its relevance to the review with respect to answering the research questions. Papers that were less than four pages long (such as poster reviews), and papers that were clearly identified as work in progress were eliminated.

2.4 Filtering and Data Analysis

After the selection process, 25 research studies fulfilled all selection criteria. Content analysis approach (Strauss 1987) was used to analyse the collected articles based on research on online teaching and learning. Following the selection of papers, a brainstorming of general categories followed, which was then refined and rationalised. The categories were then gathered into three high-level groups: the student, lecturer and curriculum. In a systematic literature review conducted according to Kitchenham's (2004) guidelines, available papers should be filtered at this point according to quality. This process was followed to a limited extent: some papers were eliminated upon initial perusal and others upon closer examination. However, the focus was more on the relevance of papers to the subject area than on their intrinsic quality, so at this stage there was some deviation from Kitchenham's guidelines.

3 Results and Discussion

Table 1 shows the number of papers in each group and the subgroups into which some or all of these papers were classified. Table 1 answers research questions 1 and 2. Three main aspects of novice online teaching and learning challenges have been the focus of the literature within South African context, broadly categorised as challenges facing the student, the lecturer and the curriculum. The majority of papers were classified into the 'student' category, describing either students' lack of self-regularity skills, technological skills or time management skills. A substantial number of papers focused on the challenges lecturers experienced. Curriculum content and papers on assessment of online teaching and learning was minimal. Assessment as a category was not considered, as it featured with other broad categories.

Table 1: Classification of papers, some classified into two or more groups or subgroups with respect to online teaching and learning trends /challenges.

Group	**Papers**	**Trends / Challenges (RQ 2)**	**Related Sources**
Student	15	Assessment student engagement, peer learning, External factors, technological skills, student experience, student literacy, student ability, underrepresented groups, student motivation,	▪ Mafenya (2013) ▪ Letseka & Pitsoe (2013) ▪ Padayachee *et al.* (2018) ▪ Sibanda & Donnelly (2014) ▪ Bayat & Naicker (2016) ▪ Maboe (2016) ▪ Venter (2019) ▪ Msomi & Bansilal (2018) ▪ Queiros & De Villiers (2016) ▪ Mtshali *et al.* (2015) ▪ Bharuthram & Kies (2013) ▪ Botha (2019)

		time management, financial resources, self-regulated learning	▪ Bagarukayo & Kalema (2015) ▪ Kgovinyane (2019) ▪ Geduld (2013)
Lecturer	7	Teaching tools, teaching styles and experiences, training, communication, digital divide, perceptions and challenges, lack of confidence, time management pedagogical approaches	▪ Upfold and Bell (2019) ▪ Van den Heyde (2019) ▪ Czeniewicz & Trotter, Haupt (2019) ▪ Isabirye & Dlodlo (2014) ▪ Tshabala & Ndeya-Ndereya (2014) ▪ Vaughan, Reali, Stenbom, Van Vuuren & Mac Donald (2017) ▪ Balfour, Van der Walt, Samer, Tshivhase (2015)
Curriculum	3	Role of academic developer, paradigms	▪ Van de Heyde & Siebrits (2019) ▪ Cloete (2017) ▪ Mpungose (2020)

In attempting to answer research question 3, the discussion which follows will explore the evidence reported when addressing challenges and/or trends in different aspects of novice online teaching and learning practices within the three broad categories:

3.1 Issues Related to Students

A review of literature on novice online learning challenges experienced by students revealed that issues related to students may be broadly summarised into:

Students' expectations,
Student readiness,
Student identity, and participation as shown in Table 1.

Student's expectations can be challenging and can also interfere with teaching online courses effectively (Luyt 2013). Some students may have untimely expectations such as expecting instant feedback on their online comments and assignments, or may appear rude and demanding in their emails. Some may question their grades and others may not take the assignment deadlines seriously (Li & Irby 2008). It is therefore suggested that clear guidelines be communicated to students at the beginning of the course to circumvent these inappropriate expectations by students.

The ability to identify and adopt online learning styles and skills, which is a prerequisite for online courses, can be challenging for students (Mayes *et al.* 2011; Luyt 2013). It was established that students need to be self-motivated and self-directed to be successful with online learning. Other key findings indicate that student training for online learning as well as facilitator assistance can offer the support required to students for online participation.

It is believed that training reduces anxiety and increases technological self-efficacy, which in turn, increases motivation to study online (Wang, Shannon & Ross 2013). This positive feedback loop discovered by Wang *et al.* offers hope to struggling students. It is suggested that the more online courses they take, the more the students become accustomed to effective learning strategies, which results in increased motivation to study online.

In addition, students may feel isolated and disconnected in online courses (McInnery & Roberts 2004), which may affect learning. A study by Venter (2019) reveals that the students' identity can be engaged through an affiliation with the online learning community. Students engage in various formal and informal collaborative learning activities that constitute the creation of personal learning environments (PLEs). PLEs reveal the role of student agency as students coordinate their options. Social capital theory demonstrates

how different types of social ties in PLEs provide for bonding and bridging of social capital in the learning process.

Further, hesitance to participate in collaborative work and discussion forums emerged in studies by Bharuthram and Kies (2012). Freeman (1997) proposes systems where students could remain anonymous and where new online students are guided in participation techniques. It is believed that for the African student, learning in support groups is a cultural practice and without such, students tend to experience isolation and frustration (Geduld 2013). It is suggested that to prevent feelings of isolation by students, lecturers are encouraged to create discussion forums and WhatsApp groups within which students could operate during remote lessons.

A strong lecturer presence is said to be vital in online learning, perhaps more so in developing countries (Roll & Ventresca 2020). As the driver of the learning experience, the lecturer is encouraged to stimulate the acquisition of technological skills, constructivist learning techniques, nurture the online learning community, encourage and facilitate discourse, and provide prompt feedback on assessment (Butcher 2014; Mbati 2012). While students hold some responsibility for creating social presence, most of it resides with the lecturer (Blackmom & Major 2012). It is therefore advised that lecturers be trained adequately for this role. Cook (2012) advises considering the group profile and creating a social presence that builds and supports learning while establishing a sense of belonging. Technological tools and activities can engage students via content, peers, and the lecturer.

In the study by Bagarukayo and Kalema (2015), which was an evaluation of e-learning at South African universities, several challenges were reported, such as insufficient time for studies, which indicated students' inability to manage time. They experienced anxiety and role conflict in their efforts to prioritise and manage their time, career, family and community responsibilities. Most of the participants in the qualitative data phase relied on external regulation and lacked the confidence to work independently with limited support from lecturers. It is suggested that these requirements, challenges and demands of Online Distance Learning (ODL) in the study are not unique and also apply to ODL students in developed countries. However, the prevailing challenges and barriers for this group of ODL students were their poor English proficiency, their dependence on lecturers and peers, and their inexperience with technology. These challenges of poor time management and lack of organisational skills seem like a common problem experienced by the

greater majority of students who learn online. However, it is proposed that, when compounded with poor language proficiency and the lack of self-regulated learning, this could result in devastating results with the lack of training and support.

3.2 Issues Related to Lecturers/ Facilitators

Issues related to the lecturer included the five specific categories of e-teaching tools, training to transition from face-to-face to online, communication with students, the digital divide and teaching styles. A few of these categories will be discussed to highlight the current trends and challenges in novice online education. The research findings by Van de Heyde and Siebrits (2019) add to the debate on physics education specifically, and provide a new way of conceptualising an e-learning ecosystem. It is advocated that an academic developer-mediator should step in to mediate between academics, tutors and emerging e-tools through a structured developmental process for learning and teaching.

Czeniewicz (2020) brings to the fore three important aspects of remote teaching that educators need to consider for effective online teaching, namely training of both lecturers and students to counteract under-preparedness for online teaching and learning; effective communication between students and lecturers to ensure that nobody is left behind; and lastly, to take cognisance of the digital divide and be aware of students who might have issues with technology and/or connectivity.

In analysing issues of teaching and curriculum development, the article by Balfour *et al.* (2015) highlights two problems in connection with blended learning. The first, in view of the dynamic and fluid nature of the field, 'blended learning' cannot be defined conclusively, and the other is, that 'best practice' has not been examined in connection with blended learning. Hence, blended learning 'can involve a mix of delivery modes, teaching approaches and learning styles ... ways that support and enhance the teachers' role, the students' individual cognitive experiences, as well as the social environment; three key elements in successful learning and teaching' (Bath & Bourke 2010:1). Secondly, it is suggested that the teacher engages with curriculum design, considers the implications technology will have for students' learning styles, especially those involved in distance learning and blended learning. It is further proposed that if the design element (the blend of technology with

learning) is foregrounded, this will enable better access to, and engagement with, the content and delivery mode.

The qualitative study by Isabirye and Dlodlo (2014) explored the perceived inhibitors of online teaching practice through the experiences of ten academics at a university of technology (UoT). These inhibitors were identified in the study as technical problems, logistical issues, staff resistance to change, absence of e-policy and lack of staff motivation and training.

In addition, a study by Vaughan *et al.* (2017) compares and contrasts four international faculty development programs for blended learning to understand the benefits, challenges, lessons learned, and recommendations from such initiatives. In terms of challenges, all four programs emphasize the lack of time and resources to support a faculty through the complete cycle of designing, developing, implementing and evaluating blended courses. The biggest challenge appears to be a lack of common institutional definition and understanding of blended learning, as well as a lack of time and resources to support a faculty in the redesign of its courses. With regard to lessons learned, each program emphasises the need for all institutional stakeholders to be involved in supporting the initiative and that blended learning does not simply imply adding digital technologies to an existing face-to-face course. The key recommendation from this study is that faculty development programmes for blended learning need to be clearly aligned with the institution's vision and mission.

The selected papers were further analysed with respect to year of publication to determine current trends and practices and the evolution of certain trends in online teaching and learning, which is depicted in Fig. 1 below.

From Figure 1, which attempts to answer research question 2, it is clear that the number of publications with respect to novice online or blended learning courses within the South African context is increasing over time. Further, the number of publications on all three categories established for novice online teaching and learning have increased from 2017 to 2019. It is apparent from the sample that there has been limited research and publications in all three categories within the South African context until 2017. Most of the papers derived in the category of curriculum development from the data searched had to be eliminated, as they were global in horizon and approach. This indicates a gap in the knowledge with respect to curriculum design, innovation and challenges within the South African context. Also, we see that

studies from 2012 to 2016 focus more on the students' experience. This is probably due to the increase in technology-enhanced pedagogical practices during this period, referred to as the fourth phase of technological learning or 'an era of mobile learning and social media' (Ng'ambi, Brown, Brozalek & Gachago 2016:15). This phase was said to increase professional development of higher education staff to improve their technical skills and the development of pedagogical strategies.

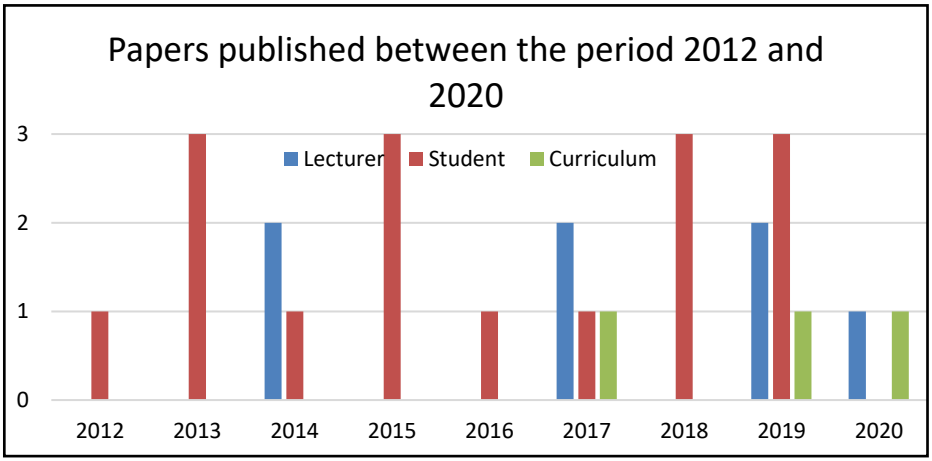

Figure 1 shows the number of papers that were identified in the data set, arranged by year.

Providing a detailed model such as shown in Figure 1 is very valuable, as it highlights major issues in online education and informs academics, curriculum developers, and policy makers. Additionally, papers about topics that apply across the broader spectrum of online teaching and learning are unlikely to refer specifically to novice online practices, so while they may inform the field, they are not discussed here. It should be clear that by no means does this review cover all possible papers on novice or remote teaching and learning. However, a broad cross-section of the literature has been identified and should be regarded as a relatively large and objective sample of the work on novice online teaching and learning challenges, which will be able to inform remote teaching and learning.

4 Conclusion

Due to the threat of COVID-19, colleges and universities in South Africa and globally are facing challenges on the continuation of teaching and learning while keeping their faculty, staff, and students safe from a public health risk. Many institutions have opted to cancel all face-to-face classes, including labs and other learning experiences, and have mandated that faculties move their courses online to help prevent the spread of the COVID-19 virus. Moving instruction online can enable the flexibility of teaching and learning anywhere, anytime. However, the limited time for transitioning to online instruction is unprecedented and overwhelming, while being acutely aware of the anxiety and uncertainty that online teaching and learning present for both academics and students. The world as we know it is in a state of flux, and it will take collective courage, agility and commitment to fend off the effects of this pandemic and to adapt to new ways of teaching and learning.

Adopting an online learning environment is not just a technical issue as reflected by the reviewed literature; it is also poses a pedagogical and instructional challenge. As such, ample preparation of both teaching and curriculum materials and assessment knowledge is vital to online education. Technology is the means for delivery and requires a close cross-collaboration between instructional, content, and technology teams. Closing universities and taking students and lecturers out of the classroom is a pedagogical transformation that requires rapid mobilization across all university staff and resources (CoSN, 2020).

One challenge is recreating the dynamics of face-to-face instruction in an online teaching session. This systematic review of literature suggests that; firstly, maintaining a successful relationship between students and lecturer during online education is crucial; and secondly, that both lecturers and students be trained and supported to maintain an engaging interaction through the new system of teaching and learning in South Africa.

Not all faculty members are comfortable with virtual classrooms. There is a digital divide among those who have never used the basic technological equipment, relying on blackboards and flipcharts, in contrast to younger faculty members, who are aware of and adept at current communication technology trends (Govindarajan & Srivasastava 2020). Therefore, as students across the nation enter online classrooms, they should be adequately prepared and supported to take on this new form of learning.

This systematic review of literature, although not exhaustive, has provided an overview of current trends and described as well as delineated major patterns of challenges found in the literature for teaching online courses. It is hoped that higher education institutions and academics in South Africa as well as the international community would consider these challenges when initiating their online courses. As recommended, institutions are advised to provide the necessary professional development for online facilitators. In addition, training for students and adequate support for technical issues and multimedia integration must also be considered to further enhance the quality of online education.

5 Recommendations

Based on the foregoing analysis, the study makes following recommendations with respect to online or blended learning:

- There should be institutional promotion of student involvement in the process.
- There is a need for greater variety of support for blended and online courses in order to meet the needs of different faculty groups, students and programs at the university.
- Institutional change takes time and is a dynamic process that requires continuous review and perseverance of blended learning.
- Online and blended learning should be a strategic initiative aligned with the mission and vision of the institution and supported with time and resources for development.
- There is a need to build the online initiative on a solid research-based foundation.
- The four support areas of research, education, development, and technology should be considered as one that will become more integrated with supporting the design, development, implementation, and evaluation of online courses.
- A series of workshops will help a faculty and its students to understand concepts, models, and planning processes required to succeed with online or blended learning.
- Opportunities should be created for the sharing of best practices by working with other faculty members.

6 Limitations of the Study

The literature search for the studies was extensive and systematic, using a framework to find as many related studies as possible; however, the review was not exhaustive. The findings were limited to the results that emerged in the searched databases using the aforementioned keywords. It is reasonable to assume there were other related studies in the literature that did not emerge and were not included in this review.

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