

EMERGENCY REMOTE LEARNING IN THE TIMES OF COVID: A HIGHER EDUCATION INNOVATION STRATEGY

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Abstract

Innovation in a time of crisis is not a new concept. Natural disasters and pandemics through the ages have continued to necessitate emergency adjustments on many levels, including education. Globally, the outbreaks of the COVID-19 pandemic resulted in the unexpected and wide-spread disruption of society, and in higher education. These challenges call for crisis innovation measures. The Covid-19 pandemic has forced education providers to revert to a pandemic pedagogy as a philosophy underpinning their teaching and learning strategies.

The private higher education institution (PHEI) in this study has a distributed federal model, offering undergraduate and postgraduate programmes in Education, Law, Commerce, Engineering, Social Sciences and Humanities across 24 campuses. It has nearly 45 000 students in South Africa. The compulsory rolling out of the learning management system (LMS) used by the PHEI understudy across all programmes in 2014 enabled the PHEI to adapt to an emergency remote teaching model. This was done by expanding online synchronous and asynchronous learning to the rest of the programmes by employing a crisis-driven innovation strategy. This extended the blended learning approach. The emergency innovation strategy the PHEI adopted responded to this closure by adapting its existing eLearning strategy into an emergency remote teaching strategy (ERTS). This article reports on the case of a PHEI on the approach followed to adjust to this disruptive change in terms of lecturer preparation. Two important factors stood out: firstly, the need to determine the preparedness of lecturers and eTutors to teach online and remotely only; and, secondly, reaching out to students and reassuring them that their education will continue. This paper reports on the first construct.

Keywords: Emergency Remote Learning, eTeaching, Crisis-driven Innovation

INTRODUCTION

In late 2019, the world was shaken by the outbreak of the novel Coronavirus. In March 2020, the World Health Organization (WHO) declared it a global pandemic. As a strategy to contain the spread of the virus, stringent preventive measures were implemented. Such measures include social distancing and the lockdown of higher education institutions (HEIs) (Rzyski & Nowicki 2020).

In South Africa, a national lockdown was declared which commenced on the 26th of March 2020. As a result, academic institutions were forced to suspend the existing teaching and learning activities and were compelled to innovate and adjust existing strategies that incorporate an emergency change in online learning. These measures had an immediate and profound impact on teaching and learning.

The disruption in mode of learning severely impacted students affected by digital exclusion (Hopman, Allegranzi & Mehtar 2020). The resulting uncertainty caused dropouts as most students felt neglected due to lack of support from teachers and peer to peer relationships (Ozili & Arun 2020). The self-isolation and interrupted learning also impact student' mental health and leads to anxiety (Crawford, Butler-Henderson, Rudolph, & Glowatz 2020). This issue has created the need for innovative measure that would alleviate the impact of Covid-19 pandemic on students.

This article reports on a case of a Private Higher Education Institution (PHEI) and the approach it followed to adjust to this disruptive change. Two important factors stood out. Firstly, the need to determine the preparedness of lecturers and eTutors to teach online and remotely only. The second was to reach out to students and to reassure them that their education will continue. This paper focusses specifically on a narrow set of the parts of teaching and learning during the COVID-19 crisis, namely the lecturers' constructions of online teaching and the tools used to facilitate this teaching and learning.

BACKGROUND

Innovation during times of crisis is not a new concept. Bassant, Rush and Trifilova (2012) posit that crisis-driven social innovation (CDI) often stems from an urgent and sudden change or scarcity in resources. Flavin and Quintero (2018) explain that disruptive innovation as a concept originated in a business model and that it was later applied to education with reference to the speed of 21st century technology innovation and the proliferation of technology assisted education.

The resulting need for emergency measures ignited by the Covid-19 pandemic illuminated the link between social innovation, CDI, disruptive innovation and crisis innovation. The COVID-19 pandemic has necessitated that both public and PHEIs devise possible measures by which the impact of the Covid-19 can be alleviated. These temporary measures are rapid responses to the pandemic and have not replaced face-to-face learning. The methods have also shown that there is a need for universities to incorporate online learning as part of their strategic planning.

At the time of writing this paper, PHEIs in South Africa have implemented alternative strategies for teaching and learning during the disruption (Crawford *et al.*, 2020). Many were already utilising online platforms and the virtual classroom, which offer asynchronous and synchronous instruction and teaching. The most popular online platforms reported to be used here are Blackboard, Zoom, Microsoft teams and Google Classroom (Ting, Carin, Dzau, & Wong 2020).

Connectivity off campus remains a problem for many students. The use of online platforms and resources require stable connectivity and sufficient data. In most cases, this infrastructure is offered free of charge to students on residential campuses but became a barrier to access during lockdown. While many students do not have stable internet connectivity, most have access to mobile phones. The LMS referred to in this case offers both offline and mobile access.

The need to implement an innovation strategy called for the PHEI to adjust its existing eLearning to an ERTS delivery mode.

One of the first responses in HEIs were to negotiate emergency networking and to forge partnerships to provide viable options and access to learning resources and materials. The PHEI in this study partnered with local mobile internet service providers to implement zero-rated access to its LMS.

REVIEW OF LITERATURE

The Covid-19 pandemic has caused education providers to engage pandemic pedagogy as philosophy underpinning their teaching and learning strategies.

Emergency Remote Teaching (ERT) is different from eLearning in that ERT denotes a temporary shift to an alternate education delivery mode due to crisis circumstances that may return to normal once the crisis ends. e-Learning refers to learning in which instruction, and engagement with lessons, activities and assessment occur predominantly online, and, as is the case in this study, usually through a single system.

An early realisation that there is a fundamental difference between eLearning and ERT guided the emergency planning and adjustment strategies towards teaching contingency and inclusivity. In the scope of this article, eLearning is premised as the formally organised teaching and learning activity in which lecturers and the students use ICT to facilitate their interaction and collaboration. In turn, ERT during this period of Covid-19 in this study requires changes to the eLearning dispensation in to be more segmented and immediate.

Micro-learning as a learning strategy was considered in this case. This is learning that focuses on a subsection of a topic. Sadeck (2016) distinguishes between eLearning, which is technology-assisted learning, and eTeaching, which is what the educator does in an online environment. He posits that eTeaching should be the preferred term as this directly involves the educator. The ERT strategy had to be cognisant of this difference.

Micro-learning and micro-teaching in ERT

Luminița (2017) mentions that there is still no agreement on a definition for micro-learning, but postulates that all micro-learning-based training shares one key characteristic: brevity. This could mean either small learning units or short-term learning activities. In other words, it delivers information in small, highly focused segments.

There are several learning strategies that could potentially be integrated to support micro-learning: self-directed learning, situated learning and community-based learning. Kerres (2007) advises that micro-learning materials should afford students the opportunity to engage and to actively co-produce, assemble and modify content towards learning meaningfully. It must be designed to allow for further exploration of the subject matter.

Kerres (2007) also mentions that the focus of micro-learning is not on hierarchical ordering and sequencing of lessons and courses, but on encouraging students to become actively engaged with content through participation in social practice.

Hug (2005) cites game-based mobile learning and video-supported learning as good examples of micro-learning taking place as situated learning.

- **Micro-learning tools and Micro-content**

Jomah, Masoud, Kishore and Aurelia (2016) maintain that micro-content is an integral part of micro-learning, where micro-content can be described as information published in short form, with its length dictated by the constraint of a single main topic and by the physical and technical limitations of the software and devices that we use to view digital content. Typically, micro-content could include text (phrases, short paragraphs), images (photos, illustrations) and games.

Interactive videos as a micro-learning tool could assist students to critically interact with learning content. Olivier (2019) considers video learning part of social constructivism, with the added value of motivating students to fostering self-directed learning and guide further exploration. Omer, Amamer, Xavier and Sagaya (2016) extrapolate that these tools include among other things social media such as Instagram. Leuf and Cunningham (2001) add two important tools for micro-learning: weblogs and wikis.

For the purpose of this study and in preparing lecturers to continue tuition under unusual circumstances, training and support to lecturers were of core importance.

Managing Digital Inequalities towards Inclusivity and Equity of Delivery

Many of the students in the PHEI under study depended on the enabling resources availed at campuses such as hyper connectivity and Wi-Fi, cyber and learning commons, libraries, tutors, and other support systems. Digital exclusion in times of crisis will be detrimental to lecturers and students alike. As a prerequisite to lecturer preparation, the PHEI had to evaluate aspects of connectivity, student metaliteracy and digital fluency as well as built-in mechanisms that could augment these campus-based support structures in a remote learning environment.

- **Connectivity, Access and Data Costs**

Connectivity off campus remains a barrier to many students. Williamson, Eynon and Potter (2020) postulate that the emergency remote learning may exacerbate the existing problem of digital exclusion. The higher education landscape is uneven and not all students are equally well connected and digitally literate and fluent. Lecturer concern emerged from the survey in this study. The transition from previous modes of delivery to emergency remote learning and new pedagogies could potentially excluded sectors of the student community entirely.

While many students do not have stable internet connectivity, most have access to mobile phones. This creates an opportunity for student-centred learning in small segments and in a short span of time.

- **Digital literacy and digital fluency**

The ubiquitous and pervasive nature of disruptive technologies has brought reformation to all facets of society. Considering the continuous evolution of technology and the emergence of the 4th industrial revolution (4IR), technological skills have become essential for participation in the current digital era. Academic institutions have also witnessed the transformation triggered by technological advancement. Therefore, a lack of digital literacy jeopardizes students' success (Matli & Ngoepe 2020).

Due to the proliferation of digital technologies and educational technologies, digital literacy and digital fluency is a required skill for both lecturers and students. Digital literacy entails individual awareness, attitude, cognitive thinking and the ability to appropriately utilize technological tools and infrastructures. It also entails locating, assessing, analyzing and integrating digital resources to generate new insight in a specific context.

As literacy exceeds mere ability to read and write but with meaning and understanding, likewise the digital skills goes beyond having technical skills but together with the cognition of what an individual perceived on the digital tools (Clarke 2020). Jacobson and Mackey (2013 2016) allude that a narrow definition of digital literacy would not suffice in online teaching and learning. Lecturers need to inculcate a more comprehensive approach to metaliteracy to advance critical thinking and reflection in online learning communities.

In addition, private firms and government organizations need graduates with adequate technological skills to carry out complex operations. Students who lack technological skills are at a severe disadvantage, especially in competing for such jobs. This socio-technical reality has compelled the need for digital literacy and digital fluency (Nelson, Courier and Joseph 2019).

THE THEORETICAL FRAMEWORK USED AS LENS FOR THIS STUDY

The model of teaching and learning adopted at the PHEI in this study is Vygotsky's Social Constructivist Framework. It was also used to frame this study. It is a uniquely South African model (see, for example, Thatcher and Mooney 2008; Thatcher, Rosenstein, Grootenhuis and Haiden 2010). It is not located in the traditions of the Western or Soviet neo-Vygotskians. Western models ignored Vygotsky's method of dialectical historical materialism and the central role of conflict in learning, while the Soviet interpretation largely focused on activity as core to the theory (Mooney 2009). In terms of epistemological considerations, the use of dialectical historical materialism as a heuristic is central. In summary, this method focuses on the "real" (material) conditions of teaching and learning during the COVID-19 pandemic, specifically the need to action remote rather

than contact modes of learning. The change to remote learning necessitated by the pandemic is a turning point in the evolution of teaching and learning in the PHEI.

The PHEI had been using an LMS incrementally and progressively since 2014. This progressive use of the LMS moved beyond a “paper behind glass” approach to the strategic use of a questioning approach to teaching and learning, links to applications of theoretical concepts to the world of work, and multiple forms of lecturer-student interaction (including discussion forums, journals and collaborative online sessions).

Lecturers’ constructions have several parts, including:

- Constructions of teaching and learning,
- The students, and
- The online tools.

The terms ‘online tools’ refers to a multiplicity which ranges from more informal tools to specialised educational technologies.

ERT and the use of Vygotsky’s epistemological framework results in our position that the role of adult guidance (lecturer) and the use of tools (the LMS, micro-teaching, video learning) are inter-linked. Consequently, Figure 1. illustrates how the ERTS proposed in this study approached lecturer preparedness for ERT.

In Figure 1 below the changes in how lecturers constructed teaching, tools and students are graphically depicted. Before lecturers are able create an online presence and offer student-centred teaching within the ERT model, they must internalise the emergency instructional and pedagogic changes assisted by the necessary training, support and development. In this case it is the lecturers who need to reach the zone of proximal development as explained by Vygotsky.

The red dashed line depicts how lecturer cognitive perceptions remain static in the absence of institutional structure, guidance and training that will enable internalisation, acceptance and meaningful application of the new tools. This represents higher-order thinking. When lecturers are equipped to adjust to the ERT change student-centered teaching and learning can follow.

In the online and eLearning environment, the social constructivist model underpins a student-centered learning process. The instructor, tutor and lecturer play pivotal and active roles in the changed learning experience. The teacher’s ability to create and foster an environment suitable for open, engaging and meaningful interaction, coupled with their capacity to quickly assess and establish a unifying epistemological foundation and curriculum design authentic to “real-world” application, is paramount to student success (Secore 2017). The importance of these roles is amplified in the ERT environment.

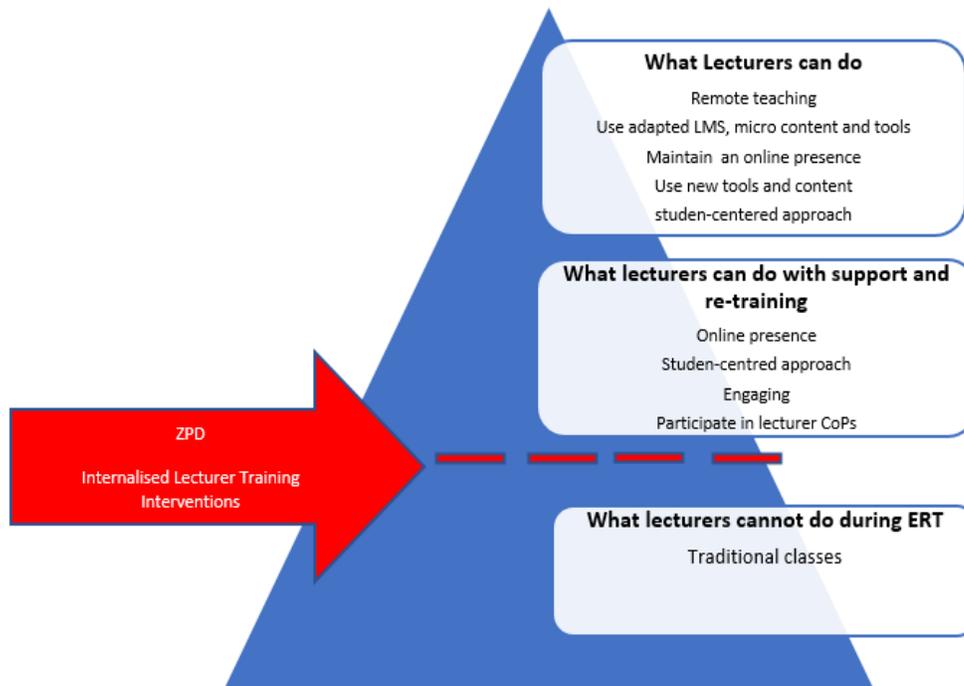


Figure 1. A Social-constructivist model of Lecturer

Zone Proximal Development towards Internalised Change (Adapted from Mooney, 2009)

RESEARCH DESIGN

The study followed a heuristic paradigm. An empirical online survey sent to 400 lecturers collected qualitative and quantitative data on lecturer preparedness for making the shift to full remote learning on the LMS and utilising mobile and microlearning elements. A total of 390 responses were received, indicating a response rate of 97.5%. These lecturers represented all the PHEI's registered sites across the whole of South Africa. The target population for this study involved all lecturing staff. The online questionnaire was sent to all lecturers, which makes this a census.

The data collection instrument was an online questionnaire. An online survey was designed to ascertain whether lecturers are prepared to make the shift to full online learning. The questionnaire comprised scaled questions, targeting the following elements:

- The level and type of qualification taught by the lecturers;

- Whether the lecturer taught in the contact or distance modes of offering and their experience with using an online learning platform;
- The resources typically available on the campus;
- Training received and use of an LMS;
- Expectations concerning teaching online;
- Resource accessibility and use; and
- Teaching and general concerns.

The questionnaire contained open ended question, allowing the respondents to elaborate and explain their answers to the questionnaire.

DISCUSSION OF FINDINGS

It was important to establish what the perceptions of the lecturers concerning access to resources as they moved from working on a campus to working remotely is. The vast majority (85%) of the lecturers taught at the undergraduate level. 10% of the sample taught at both the undergraduate and postgraduate level, and 5% of the lecturers taught only at the postgraduate level.

Most of the lecturers did have experience using an online learning platform. At the time of writing this article 20% of the programmes were offered in distance/online mode. Based on the 90:10 target to have 90% of all modules supported by learn frameworks on the LMS, the transition was not altogether new. At the time of writing this article, 71% of all modules had instructional material on the LMS.

Only 9% of the lecturer teach both the contact and distance modes of offering. The concern was the 20% of the sample who only had experience in teaching in a traditional teaching and learning setting, and, thus, had no experience using an LMS for teaching purposes in the online space.

Very few lecturers (4%) had experience in larger class teaching (i.e. over 100 students). Most of the lecturers (47%) taught classes of between 25 and 50 students while 25% of the lecturers taught classes of fewer than 25 students and another 25% taught classes of between 50 and 100 students.

Table 1. Lecturer responses on access

Resource	Access remains relatively easy	Very little change that has impacted on my work	Access has become difficult
Student workshops on general skills such as referencing	41%	41%	18%
Computers for you to work on	71%	21%	9%
Internet/Wi-Fi	62%	18%	20%
Textbooks	55%	32%	14%
Additional reading material	59%	32%	10%
Administrative support	57%	35%	10%
Teaching and learning expert support	59%	35%	6%

Discipline or programme specific support	58%	37%	6%
Technical support	50%	37%	13%
Training	62%	30%	8%

In terms of training on using the LMS, 64% of the lecturers had recently received training. In addition to the recent training on the LMS that occurred during the lockdown period, approximately one third of the lecturers had been previously trained on the LMS on their campuses or had received training certified by the LMS provider.

Seventy three percent (73%) of lecturers were positive and felt sufficiently prepared for the challenges of moving into online teaching. In terms of skill and ability concerning the LMS, most of the lecturers (73%) believed that they were well prepared, 25% were not sure if they were sufficiently prepared, and 2% believed that they were not adequately prepared. The majority (82%) of the lecturers believed that online teaching involved them spending significantly more time preparing than they normally would have, with 14% stating that they had spent a little more time on preparation and only 3% stating that the amount of time taken for preparation had remained the same.

The lecturers also believed that the content on the LMS was not sufficient for full online teaching, with 57% adding to the provided content, and 46% adding to the activities already provided.

Only 20% of the lecturers believed that the content was sufficient in its current form, i.e. designed to manage face-to-face teaching. Regarding the lecturers' perceptions of the LMS in general, 48% were confident that they would get help with the LMS when they needed it and that they could navigate any issue on the LMS. However, 27% of the lecturers had concerns about the stability of the LMS.

Core to this study was lecturer concerns about students' ability to adjust to the change in instruction. Only 19% of the lecturers believed that the students would be able to adjust well without any additional.

Qualifying and explaining this statement further, 41% of the lecturers reported that most of the students would be able to make the adjustment with the proper support from their lecturers. Only 13% believed that the students would not be able to cope well, with 27% expecting a very mixed reaction from their students, indicating the need for individual support and at-risk monitoring. The lecturers reported concerns about the students' readiness and emotional wellbeing. This is in line with the concerns Crawford *et al.* (2020) alluded to where the sudden isolation from the campus and learning community may lead to anxiety.



Figure 2. Anticipated Student Adjustment to ERT

The central concerns of students were as follows:

Table 2. Lecturer Central Student Concerns

Student issue	The percentage of lecturers who were concerned about the student issue
Data costs or internet access	79%
The ability to work online	63%
Emotional well-being	63%
Completion of assessments	54%
Having a place to work	43%
The ability to complete the curriculum online	40%
The success rate of students	35%
The health of students	26%

The survey results informed the CDI innovation strategy to prepare for the challenges faced. It was important to ensure that existing infrastructure and resources are in place to support the sudden change. This paper offers recommendations and solutions to these challenges by offering a phased approach to resume teaching and learning in three waves.

THE EMERGENCY REMOTE STRATEGY FOR LECTURER SUPPORT

In the absence of any face-to-face tuition, and to mitigate the challenges of the Covid-19 lockdown, the PHEI continued operations remotely from their lockdown stations. All programme modules were transitioned to alternative delivery models. The Central Academic Team coordinated the implementation of the strategy. For some students and lecturers, this was their first experience with remote and online learning.

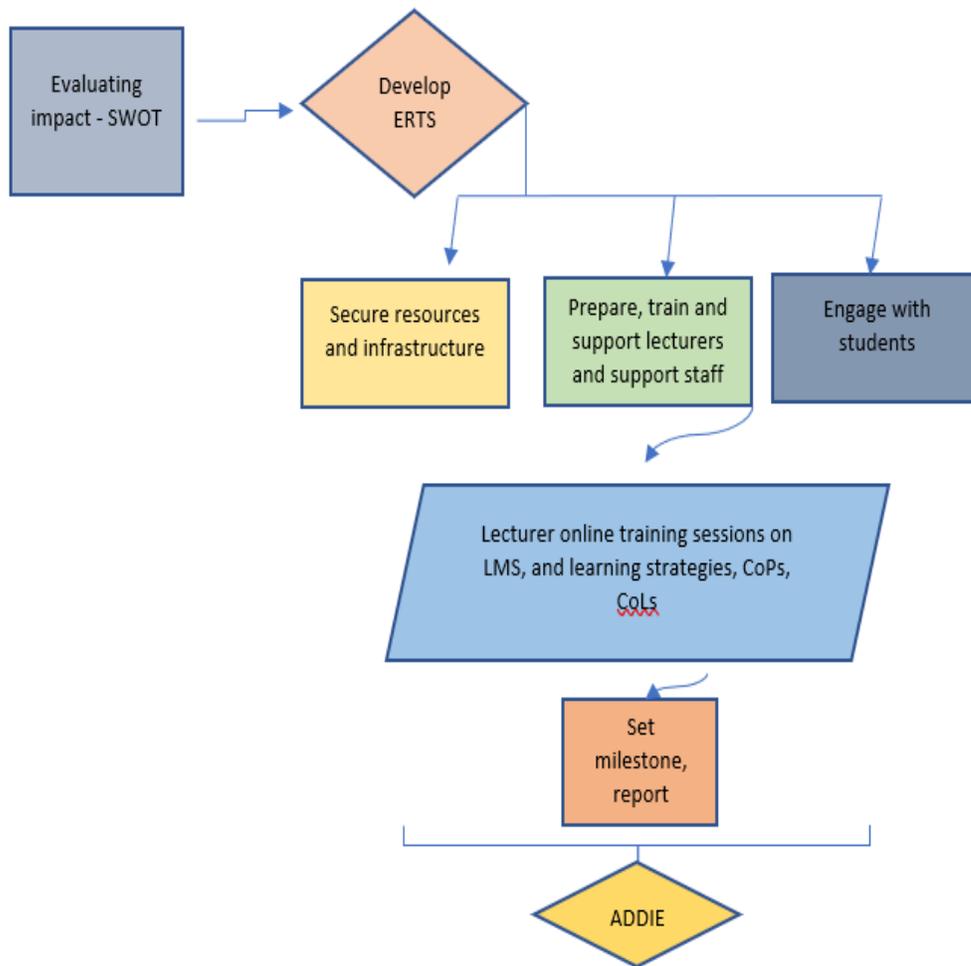


Figure 3. ERTS

Preparing lecturers for ERT

All lecturers were trained on online learning and the use of the LMS. This training took several forms, including a short learning programme on the LMS about creating a “teacher presence” in online learning. Continued support to lecturers is provided in Communities of Practice. Each day, brief training notes known as “Tips for Lecturers during Covid-19” (or TLCs) are sent to all lecturers. Topics covered included any additions to policies, micro-teaching, leveraging the constructivist approach in online teaching. In addition, the PHEI’s system of peer review continued, with a focus on meeting the minimum standards of online teaching. This training focused on diverse aspects of online teaching, including requiring lecturers to present a “mock” session before teaching started. The topics of this “mock” session were the various tools and functions of the LMS, marking online, and the concept of “data light”, to name but a few. In addition, information was provided by the Central Academic Team.

The ADDIE model is used to Analysis, Design, Development, Implementation, and Evaluation the first part of the ERT strategy.

CONCLUSION

This article shared how a PHEI in South Africa reacted to the COVID-19 disruption. A CDI strategy was followed which resulted in an ERTS. This paper focused on one aspect of the ERTS and that is to prepare lecturers for the adjusted teaching and learning required during ERT. The PHEI was cognisant of the danger of digital exclusion and adopted strategies of “data-light” micro-learning alternatives. This created the necessity to re-trained lecturers to a stage where the immediate change that is required is internalised and acted upon accordingly.

The value of the study was critically important to the future success of our students during and after the COVID-19 pandemic, but also prepared the PHEI for any future crises that may occur.

More research is needed on the affordances of mobile learning as a tool during CDI and ERT. A further area that must be explored in more detail is student motivation and the ability to be self-determined in learning during crises and periods of disruption. Pandemic pedagogy needs to be expanded.

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