

STUDENT TEACHERS' EXPERIENCES IN USING OPEN EDUCATION RESOURCE IN THE OPEN DISTANCE LEARNING CONTEXT

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ABSTRACT

Open education resource (OER) has become an increasingly important topic for consideration in the open distance learning (ODL) context. ODL students' education should be learner-centered based on intrinsic motivation and OER usage. The purpose of this study was to explore the student teachers' experiences in using open education resource in ODL. Even though many studies have been conducted on OER in ODL, there are insufficient empirical studies that have explored environmental education (EE) student teachers' experiences in using OER in the ODL environment. In exploring this topic, the qualitative research methodology, interpretive paradigm, and rhizomatic approach were used. Participants and documents were purposefully sampled. Data was ethically collected through documentation and semi-structured telephonic interviews. The data were thematically analysed and processed to find patterns, keywords were identified, coded, and clustered into categories, and themes emerged. Qualitative findings showed that EE student-teachers knew about OER informally and some students wanted to use OER. Hindrances to OER usage by student-teachers included little engagement with OER by lecturers and costs to access OER.

Keywords: Heutagogy, self-directed learning, cost, access, intrinsic, study material.

INTRODUCTION

Because open distance learning (ODL) students are faced with the challenge of high costs of study material, Open Education Resource (OER) is critical in ODL to overcome the traditional barriers that cause disparity in education such as economic and geographical marginalisation (Johnstone, 2005). In Popkin's (2015) opinion, the cost of ODL has increased more than three times the rate of inflation since 1977 and widened the geographical marginalisation of students. Luo et al. (2020) found that, because of the costs, some students did not acquire study materials which hampered their academic progress. However, Grimaldi et al. (2019) declared that OER aimed to address the high costs of study material with prices determining whether a student would buy a textbook or not. OER is a way of ensuring that all students access all the required resources at minimal or no cost. Wiley (2014) stated that the aim of developing OER was to reduce costs of study material and to expand access. The cost of study material seems to be one of the impeding factors to student-teachers' access to study material.

This study was conducted in an ODL setting which is viewed by Gerber (2013) as an environment that provides learning for everyone; in other words, it breaks geographical and economic barriers. Greyling et al. (2020) highlighted that the fundamental purpose of ODL is to offer equal opportunities for tertiary-quality education for all, offering options to higher education for students who face socio-economic and demographic difficulties. As highlighted by Ossiannilsson (2012), the increasing use of OER is driven by factors such as internationalisation, the need for quality in education, widening participation, and digital development in society and is facilitated by technology enabling interaction, collaboration, and pedagogic practices. Thus, OER can support ODL students as cited by Gerber (2013). It can be mentioned that OER also cater for ODL student-teachers as they are part of the community. Because there is insufficient research in this area, this study aimed to explore EE student-teachers' experiences of using OER in the Mediation of Environmental Education (HBEDMEF) module in an ODL environment in an African university.

THEORETICAL FRAMEWORK

The approach through which the phenomenon of OER was examined was rhizomatic learning. Rhizomatic learning is viewed by Deleuze (1994) as a heutagogical method in which 'learners are highly autonomous and self-determined, and emphasis is placed on development of learner capacity and capability with the goal of producing learners who are well-prepared for the complexities of today's workplace' (Blaschke, 2012, p. 56). Rhizomatic learning recognises that learning is a complex process of sense-making to which each learner brings their own context and has their own needs (Cormier, 2020). Bozkurt (2019) highlighted that information and communication technologies play a role in the rhizomatic learning process. The students use digital networks to access OER because they learn from a distance, meaning that their learning is an intrinsic process and experience (Bozkurt et al., 2016).

This study explored the EE student-teachers' experiences in using OER in an ODL context in which rhizomatic learning is dominant. The EE student-teachers use networks that need data bundles and the internet to access this so-called free resource. However, OER is not free in the true sense of the word because data and the internet are needed to access i.e, both of which come at a cost.

In Chan et al.'s (2019) opinion, heutagogy encourages self-determined and nonlinear learning, suggesting that the heutagogical approach has overtaken the pedagogical approach, which is linear. Contrary to the pedagogical approach, heutagogy promotes inner motivation, self-encouragement and a willingness by the student-teachers to learn independently. The use of OER encourages independent learning, which could be improved by using social networks and collaborative learning (Silveira, 2016). This means that EE student-teachers should have self-motivation or an inner drive, self-direct their learning and use technology to access OER in an ODL context and learn independently.

The options provided by OER are learner-centred and lend themselves to cooperative studying. The heutagogical approach and pedagogical implications of using OER put the learner at the centre, in contrast to the traditional linear approach, which is teacher-centred as mentioned earlier. The use of OER in an ODL context aligns with the heutagogical approach (Deleuze, 1994) as it puts the student at the centre. Therefore, rhizomatic learning is assumed to be resilient (Cormier, 2015). OER is perceived as being free and so it should be freely accessed to help ODL EE student-teachers to be resilient and succeed with their studies, using a heutagogical approach.

LITERATURE REVIEW

Both OER and ODL endeavour to address barriers to higher education by providing equitable access to superior quality education for everyone. Greyling et al. (2020) highlighted that ODL primarily aims to give equal access to tertiary education for everyone, including students who have economic and geographic problems while Wiley (2014) mentions that OER aim to address hindrances to education, such as access and cost. Ossiannilsson and Creelman (2012) view OER as 'digital materials assumed to be offered freely and openly for use and re-use in teaching, learning and research usually under explicit terms of reuse, such as Creative Commons licences' (p. 1) agreeing with scholars such as Abramovich and McBride (2018) and Wiley (2014) who posited that OER is freely available. Abramovich et al. (2018) concurred that OER has few financial implications for students, agreeing with the William and Flora Hewlett Foundation (2015). This suggests that OER has the potential to assist EE student-teachers in an ODL context, who are facing access, geographical and financial challenges, because they are perceived as freely available to anyone, everywhere and at any time using the internet.

Significance of OER on Cost Saving

OER has the potential to save high costs in higher education. Grimaldi et al. (2019) stated that as per the leading OER producer, OpenStax, the adoption of OER textbooks has saved students an estimated \$500 million dollars since 2012. Hilton et al. (2013) opined that OER users were pleased with the cost-savings benefits of OER. Hilton et al. (2013) were of the view that instructors should develop courses that use OER instead of traditional study materials, which are expensive, and avoid causing students to use cost as

a determining factor for choosing courses. Another advantage of OER, ostensibly, is the advancement of a learner-centred and decentralised approach to learning (Kanwar et al. 2010). This is in line with rhizomatic learning that Deleuze (1994) viewed as a heutagogical technique in which studying is basically an intrinsic process and experience and therefore key to ODL student-teachers' success since their learning is intrinsic. The author of this article defines intrinsic learning as self-directed learning.

Kanwar et al. (2010) posited that one of the potential benefits of OER for the global South or developing countries was that it assisted in saving money for study materials. Ossiannilsson and Creelman (2012) mentioned that OER is a digital material offered freely that should mitigate the cost associated with study materials in ODL. However, Luo et al. (2020) declared that 'despite vocal support among educators given the importance of reducing financial burdens on students, OER have yet to make the anticipated impact in higher education' (p. 141). Despite Kanwar et al. (2010) mentioning the potential benefit of OER as saving money, the author also acknowledges that, irrespective of its enormous potential, the OER promise has not been translated into concrete and tangible outcomes to date. It is safe to mention that OER has not fully attained its intended effect of ameliorating economic and geographical distance. Access to OER is key for ODL EE student-teachers because learning is student-centred which OER has the potential to provide. It should be mentioned that the outbreak of the coronavirus pandemic (Covid-19) made OER a pressing need in ODL because the African university had to rapidly abandon the blended mode of delivery and change to the fully online approach. Teaching and learning in ODL may, therefore, not be successful without the creation and use of OER.

Pedagogical Significance of OER

Scholars like Wolfenden et al. (2017) point to OER as a tool that has the potential to transform or enable changes in pedagogy, shifting from a lecturer-centred to a learner-centred pedagogic approach. Wiley (2017, p. 24) used the term "OER-enabled pedagogy" (p. 24) because the resource is assumed to remove copyright restrictions on the use of the materials and allow students to engage in the 5R activities, namely, "make and own a copy; re-use in a wide range of ways; revise-adapt, modify, and improve, combine two or more, redistribute-share with others" (p. 11). The author further highlights that OER is not a standing pedagogy as the 5R activities should be used as the convertors with real pedagogies to enable the use of a constructionist pedagogy that facilitates learning by doing and actively engages learners. This agrees with Deleuze (1994) who pointed out that the heutagogical method is student-centred which is important in ODL. Wiley (2017) concurred with Bozkurt (2019) on the use of information and communication technologies that play a role in the intrinsic learning process. This is in line with OER because it is accessed through technologies. Therefore, the pedagogical aspect of OER allows for intrinsic learning in ODL.

Challenges with OER Usage

Abramovich et al. (2018) stated that, despite economic benefits to OER usage, there are hindrances that prevent its extensive use while several scholars concur that access to OER requires expensive modern technological equipment, bandwidth, and connectivity (Asunka, 2008; Cox & Trotter, 2016; Letseka et al., 2018; Ossiannilsson & Creelman, 2012; Telukdarie & Munsamy, 2019; Wolfenden et al., 2017). This implies that there are indirect costs associated with the use of OER which depends on access to electricity or power, the internet and the availability of data and expensive new technologies. These factors create extra barriers which add to the traditional barriers of distance learning such as geographical distance.

The findings of a study conducted by Jhangiani et al. in (2016) in British Columbia revealed that faculties in teaching institutions were somewhat less likely to create and adopt OER compared to their peers in research-led institutions, a hesitancy that could limit pedagogic change. Wolfenden et al. (2017) highlighted that 'an absence of fast, consistent internet connectivity; and limited access to laptops and desktop computers were all reported to limit teacher educators' exploration of and familiarity with OER, most acutely [at a rural higher education institution] in Uganda'(p. 269). Cox and Trotter (2017) attested that the availability, stability, speed, cost and limitations of internet connectivity determined the level to which lecturers engaged digitally in terms of downloading and uploading OER in Sub-

Saharan Africa. Similarly, Asunka (2008) agreed that in Sub-Saharan Africa, learning through technology is problematic as it is reliant on communication technology infrastructure. Problems include unreliable internet connectivity and irregular power supply. Telukdarie and Munsamy (2019) concurred that higher education is faced with challenges of digitization technology which requires finances. The key issue is that these challenges impede access to OER and their widespread use and, therefore, fail to facilitate student-teachers' intrinsic learning in the ODL space.

Some Unisa lecturers maintain traditional teaching practices of using published textbooks and study material simply because adequate internet access is available only to lecturers while students from some provinces such as Limpopo and Eastern Cape, which are typically poor rural, have difficulties in accessing the internet, do not have reliable access to computers or the internet, resulting in a situation where all teaching materials have to be made available in hard-copy and delivered by post so that every student has equal learning opportunities. Thus, there is a need to make the use of OER optional or at least exclude it from assessments to maintain justice (Cox & Trotter, 2017). Furthermore, some lecturers cited a pedagogical challenge as one reason for not using OER, particularly because it is difficult to incorporate OER into a highly interactive teaching style.

Hoxby and Turner (2015) stated that for financial reasons, students registered for courses based on the cost of course materials, which could cause them to leave out some courses that could benefit their study objectives. In addition, Abramovich et al. (2018) highlighted that, even though the reason for the adoption of OER was that they were free, and therefore offset traditional barriers to course material, OER cannot be defined as completely free. Furthermore, based on their experience, Windle et al. (2010) attested, that even if there was no direct cost associated with OER, they were often linked to various associated services like workshops, development and consultancy that had financial implications.

Following the above discussion, this study argues that OER usage is associated with indirect costs such as access to internet, acquisition of new expensive technologies, data and the internet. It should not be assumed that all communities can easily access OER, which is referred to as free, because, as Letseka et al. (2018) and Asunka (2008) pointed out, marginalised communities such as those on the African continent still experience restricted internet access. The William and Flora Hewlett Foundation (2015) concurred by indicating that, in developing countries, the market for OER may be limited.

Thakrar et al.'s (2009) research findings on harnessing OER to the problems of instructor education in a sub-Saharan Africa consortium and the University of Fort Hare, South Africa, showed that a lack of access to new technology tools was a restriction to users of OER. Greyling et al. (2020) highlighted challenges with accessing the internet in South Africa, where some students who had old cell phones stated that new phones and data were very expensive. This means that the marginalised communities in Sub-Saharan Africa may not benefit from OER which aim to address the high cost of study materials, leaving student-teachers frustrated. It should be noted that Thakrar et al. (2009) and Greyling et al. (2020) conducted their studies almost ten years apart but little seems to have changed. In addition, the Greyling study was conducted in 2020, the year in which the education system was severely impacted by Covid-19. This is because most universities used face-to-face pedagogy, while ODL institutions used a blended approach. Action needs to be taken to address these challenges. However, insufficient exploratory work has been published on teacher agency in terms of pedagogic transformation in settings where OER usage has been initiated (Wolfenden et al., 2017). The paucity of discourse on OER as a tool to enable pedagogic transformation is another challenge. This study was, thus, conducted during the time when the need for pedagogic transformation driven by Covid-19 was critical. In addition, the Greyling study was conducted in 2020, the year in which the education system was severely impacted by Covid-19. This is because most universities used face-to-face pedagogy, while ODL institutions used a blended approach. Action needs to be taken to address these challenges. However, insufficient exploratory work has been published on teacher agency in terms of pedagogic transformation in settings where OER usage has been initiated (Wolfenden et al., 2017). The paucity of discourse on OER as a tool to enable pedagogic transformation is another challenge. This study was, thus, conducted during the time when the need for pedagogic transformation driven by Covid-19 was critical.

Students' Effort to Address Cost of Study Material

Financial constraints have been identified as one factor that has hindered people, and student-teachers, in particular, from accessing education, because the cost of course material seems to be unavoidable. One of the reasons for availing OER in education was to save costs as highlighted earlier. The use of OER is intended to mitigate the negative impact that financial constraints have on access to studies (Johnstone, 2005). However, OER usage has indirect costs as highlighted by Asunka (2008), Telukdarie and Munsamy (2019), Thakrar et al. (2009) and Windle et al. (2010) that pose a challenge to OER users.

To reduce the cost associated with acquiring course material, students often resort to purchasing used textbooks, "other versions" or "books by other authors on the same topic", rent books, share with classmates, use library reserve copies, photocopies and they would even use the internet while at the library or at regional offices to illegally download materials that could be of help to their studies (Jhangiani et al., 2016). The students' efforts are a clear indication that there are associated financial implications with OER usage, which could impede their widespread implementation. This study sought to answer the research questions below:

RQ1: What is your experience of using OER in ODL context?

RQ2: How did you reduce the indirect cost associated with accessing OER?

METHOD

Research Approach, Paradigm and Design

This study explored student-teachers' experiences of using OER in an ODL context. A qualitative research approach and interpretivist paradigm were used, since interpretivism is at the centre of qualitative research. The rhizomatic learning approach was the approach through which the phenomenon was studied. Student teachers shared their lived experiences in using OER by means of telephonic interviews (Marshall & Rossman, 2011).

Participants

This study targeted honours students who registered for HBEDMEF module offered in an African ODL. The ODL HBEDMEF students were targeted because they studied remotely using technologies that were also used to access OER thus enabling rhizomatic learning. Participants were purposefully selected to provide rich information based on their experience of using OER in ODL to answer the research questions and to enhance the credibility of the findings regarding the student-teachers' experiences in using OER (Palys, 2008).

Data Collection Instruments and Procedures

Data Collection Instruments

Two primary data collection instruments were used for this study namely, documentation and telephonic interviews. This study used documents because they are a valuable source of information (Marshall & Rossman, 2011) and to support interview data.

Interviews were used because interviewing participants is a fundamental strategy in the qualitative data collection process while it was also a safe strategy during Covid-19 to observe social distancing, particularly in 2020. Also, telephonic interviews were used because the sample was geographically dispersed. Furthermore, telephonic interviews were used as they reduced the time needed for gathering the data (Dakwa, 2015), therefore becoming instrumental in the context of this study which was conducted in an ODL environment.

Data Collection Procedures

Purposive sampling was employed to select EE documents dated 2018 to 2020. Selected documents included Tutorial Letter 101 and student support material that was downloaded from the Learning Management System (LMS) hosted by Sakai, particularly the additional resources tools.

Appointments were made telephonically with each participant prior to the interviews. The researcher developed and used a semi-structured interview form. Interviews lasted for about 45 minutes. Open-ended questions were asked to allow for deeper probing into the participants' responses (Babbie, 2010), and the researcher took notes. Interviews were conducted with each participant after 4 p.m. which was according to the participants' preferences as they were committed elsewhere from 8 a.m. until 4 p.m.

Ethics

The study was ethically conducted using a clearance certificate obtained from the College of Education at the university in which the study was conducted. Consent was sought from the participants prior to data collection, as suggested by Marshall and Rossman (2011) while the principles of confidentiality, privacy, anonymity and informed consent were considered (Marshall & Rossman, 2011). Pseudonyms were used for the student-teachers, namely, ST1 to ST8 to protect the participants' identity.

Data Analysis

Data were thematically analysed on a continuous basis. The informal analysis and processing of data began during the data collection process. Data from documents was analysed first followed by the analysis of the interview data.

Document analysis began during the selection of relevant documents. The documents were recurrently, meticulously and deeply read, and interpreted to gain an in-depth knowledge of how the student-teachers experienced OER usage. The data was processed and similar words were identified. Data was grouped according to words, phrases, and sentences with the same meaning and coded. Redundant data was omitted. The codes were clustered to form categories.

Preliminary analysis process was conducted after each interview session based on the notes that were taken. Data were transcribed, transcripts were coded and analysed using content analysis (McMillan & Shumacher, 2014). Codes were divided into sub-categories following identified similarities and differences. The interpretive paradigm enhanced the interpretation of the meaning of the data. Finally, concepts were identified leading to the emergence of themes (Rubin & Babbie, 2013) based on the research questions. The first theme was student-teachers' experience of using OER in ODL context, second was the intervention strategies adopted by students to reduce challenges associated with OER usage.

Documents were scrutinised to increase trustworthiness of the results. Also, triangulation strategy was used through data collected using literature review, interviews, and documents. Member checking was done with the participants to verify that their responses had been correctly captured and understood by the researcher. The use of purposive sampling enhanced credibility of the research's results in terms of student teachers' experiences of using OER in an ODL context. In this study, dependability was ensured by asking a colleague to co-code the data as an attempt to reduce personal bias and subjective interpretations. Confirmability was ensured through documenting procedures, checking and re-checking collected data obtained from the various instruments. The findings obtained from the interviews were provided through direct quotations to ensure the authenticity of the research. However, transferability might be restricted because the research was limited to one module of a qualification offered in an African ODL environment.

FINDINGS

This section presents the findings based on the document analysis and the interviews in terms of EE student-teachers' experiences of using OER in an ODL context. Second, it presents the interview findings relating to intervention strategies adopted by student-teachers to reduce challenges associated with the costs of OER usage.

Theme 1: Student-Teachers' Experiences of Using OER in an ODL Context

The findings from documents revealed that information about the module's study material was outlined in Tutorial Letter (TLs) 101 which had been distributed to student-teachers between 2018 to 2020. In all three

years, the lecturers did not refer the student-teachers to OER but based the course on a recommended book. The heading under which the study material information was provided clearly indicated ‘recommended books’ while they were also informed that they could use any source such as school textbooks that were relevant to the content of the module. OER were not mentioned in the Tls. Students received support material that was compiled by the lecturers in the form of notes and those that were based on feedback from assignments which were uploaded on the LMS, particularly the additional resources tool. OER was not part of the uploaded support material.

Findings from the interviews showed that student-teachers were not referred to OER and that they did not regard OER as important study material. When asked if they were informed about OER by their lecturers, ST1 has this to say:

Our lecturers did not inform us about OER because it is not indicated in Tls 101. We were referred to a recommended book. The title, author, place of publication and the publisher were indicated in case we wanted to buy the book. We were also referred to school textbooks but not OER.

ST2 was asked about which study material was more important – the recommended book or the OER –and responded this way:

The recommended book is important than OER because it is mentioned in TL 101. OER was supposed to be mentioned in TL 101 if it was important. Some students talk about OER on the LMS chat tools like blog, discussions, and on group WhatsApp. I go with the information given by my lecturers.

Asked about the type of support material uploaded on the additional resources tool on the LMS, ST3 said:

We receive study material uploaded on additional resources, but we never received OER material. The study material is notes compiled by the lecturers.

When asked if the notes uploaded on the additional resources tool on the LMS was helpful in terms of preparing them for the examination, ST4 had this to say:

The notes were helpful. The examination questions were within the scope of the notes and the recommended book. I used this information when preparing for my examination and I pass

The findings revealed that the module content focused on the theory that addressed environmental aspects. It did not include the theoretical or practical information on the use of educational technologies to train student-teachers on the use of technologies that are used to access OER. When ST5 was asked if the recommended book introduced them to theory or practical aspects of using educational technologies, the answer was:

No, we learn more about the aspect of EE content as it is integrated in our curriculum which are sustainability, indigenous knowledge system and sustainability, and assessment.

Theme 2: Intervention Strategies Adopted by Students to Reduce Challenges Associated with OER Usage

It was revealed through interview data that there were student-teachers who knew about OER even though the lecturers did not introduce this resource to them. They attempted to download the resources but could not because their devices were slow therefore consuming too much bandwidth or they had problems with downloading the app. ST6 was asked about the challenges experienced when downloading OER, the answer was:

My computer took long to download. It was taking a lot of my data.

ST7 was asked on what strategies they used to reduce challenges associated with downloading OER and answered this way:

I shared my challenge with other student teachers, and they told me that they buy used books from old students. Again, there are people who buy old books from old students and re-sell them with less prices, sometimes I buy from them. I am a teacher, so I also ask information from my colleagues, they give me the sources they use, and I use them if they are relevant. Sometimes books written by other authors have relevant information I use them. I borrowed books and made photocopies of reserved materials in the library to help me push my studies.

Findings showed that student-teachers used WhatsApp group calls to discuss and share information related to the module. They also used their private emails to share study material that assisted them when writing assignments. When asked what strategies they used to address OER challenges, ST8 said:

The WhatsApp calls are useful because we can discuss and share ideas about the module. At the end, we share material through our private emails.

DISCUSSIONS

This study explored the EE student-teachers' experiences of using OER in ODL context, by investigating HBEDMEF module. Two qualitative themes were determined based on the research questions: first, EE student-teachers' experiences of using OER in an ODL context; second, the intervention strategies adopted by EE student-teachers to reduce the indirect costs associated with accessing OER. Discussion of findings from documents and interviews was done in an integrated way under the first theme followed by the discussions of findings from the interviews under Theme 2.

The results from interviews and document analysis revealed that generally the students knew about OER informally. The lecturers did not introduce OER to the student-teachers. From document analysis the results showed that OER were not mentioned in Tutorial Letters 101 from 2018 to 2020, which are the documents that inform the student-teachers about the module's study material each year. In addition, the lecturers' notes did not include OER as they were based on assignment feedback, and the previous question papers as well as the recommended book, meaning the students did not benefit from OER. This contradicts the opinion of Kanwar et al. (2010) that one of the potential benefits of OER for the global South or developing countries is to reduce costs of course study materials. The lecturers' approach made the student-teachers regard OER as unimportant, and therefore, negatively affected their OER usage. This concurs with scholars such as Jhangiani et al. (2016) who mentioned a lack of engagement by lecturers in terms of the creation and adoption of OER in British Columbia and Cox and Trotter (2017) who pointed to technological challenges as one of the key factors in determining the degree to which lecturers downloaded and uploaded OER in Sub-Saharan Africa. This is in line with the stance taken by other lecturers at the University of South Africa citing technological and pedagogical challenges as the reasons for not engaging with OER (Cox & Trotter, 2017), further agreeing with Wolfenden et al. (2017) who highlighted the lack of exploratory research about pedagogical change in contexts where OER had been implemented. It is imperative that the lecturers' pedagogy changes because Covid-19 has pushed ODL institutions to fully online teaching and learning in which OER is key because students may not physically access libraries on the campuses of their universities. The lecturers' lack of engagement with the creation, adoption and provision of OER to student-teachers robs the ODL student-teachers of an opportunity to engage in rhizomatic learning (Deleuze, 1994; Bozkurt, 2019; Bozkurt et al., 2016).

Furthermore, results indicated that the module content did not include the theoretical or practical aspects of integrating educational technologies into the student-teachers' studies. This contradicted the findings of Ossiannilsson (2012) that OER were also used for different reasons such as digital development in society. In this study, student-teachers are a group that needs digital development as their work environment is becoming digital. Again, this shows the approach of lecturers towards OER creation, adoption and provision to student-teachers, confirming Wolfenden et al.'s (2017) opinion that there is no major exploratory work published in terms of pedagogic transformation in spaces where OER should be used. The lecturers' lack of engagement with OER hampers the resource's potential to transform pedagogy in shifting from a lecturer-centred to a learner-centred pedagogical approach. It does not, therefore, provide an opportunity to student-teachers for rhizomatic learning that is assumed to enhance their resilience as students (Cormier, 2015).

The lecturers' approach towards OER use calls for attention because the ODL student-teachers' learning experience should be self-directed, intrinsic and student-centred. The lecturers' pedagogy should be transformed to accommodate OER use to create a student-centred learning experience. It is important to mention that the onset of Covid-19 in 2020 was a wake-up call to ODL institutions to enhance the use of online study material such as OER. The document results revealed that the EE student-teachers' experiences of using OER in ODL was influenced by the lecturers' approach towards OER creation and usage as they mentioned that they used the information provided by the lecturers. Little engagement by lecturers defeats

the purpose of the heutagogical method which is to provide student-centred learning experiences (Deleuze, 1994; Kanwar et al. 2010). Student-centred learning is central in the ODL environment to address the geographical distance gap and expand access to higher education. Therefore, the lecturers should facilitate student-centredness by exposing student-teachers to the concept of OER by creating, adopting and providing OER information. The lecturers' disengagement with OER contradicts Grimaldi et al. (2019) and Hilton et al. (2013) who highlighted the positive results of students' engagement with OER and Wiley (2014) who mentioned that the distinctive planned aims of OER are to address hindrances to education that include access and costs.

Even though the lecturers did not refer students to OER, results from the interviews showed that some students talked about it on chats such as the university's online discussion platform and a WhatsApp group and tried to download it. This means generally, EE student-teachers knew about OER informally and were interested in using it. However, some student-teachers' technological devices were not compatible with the download apps while other devices were very slow. One student teacher used high bandwidth to download OER because his device was slow, and this discouraged him. The results therefore differed with what was stated by scholars who said that OER is freely available (Abramovich et al., 2018; Hilton III et al., 2013). This finding is key in the ODL environment as it informs the lecturers and the managers that it cannot be a general assumption that all student-teachers have gadgets that enable them to access higher education online. Generally, there is a perception that today every student teacher has a gadget that can perform all the functions, but the results of this study revealed that reality is not in line with perceptions. Access to technological tools that enable student-teachers to access OER and quality higher education is essential in the ODL context while it is not so crucial in the face-to-face setting. It is important for EE student-teachers to have a means of communication that enables them to engage in international environmental discourse on issues such as sustainability, climate change, and loss of biodiversity. The need for suitable gadgets to access OER was exacerbated by the outbreak of Covid-19 as the restrictions barred students from crowding the libraries, regional offices, and interacting face-to-face in international conferences. In addition, Covid-19 fast-tracked transformation of ODL to open distance e-learning (ODEL) requiring students to engage with OER.

The challenge with slow computers that require high bandwidth restricted student-teachers from using OER and learning intrinsically. Bozkurt's (2019) posited that information and communication technologies play a role in the intrinsic learning process especially in the ODL environment where the study was conducted. However, the indirect costs associated with accessing OER are a hindrance to OER-enabled pedagogy and rob students of opportunities to learn constructively and engage actively using technology. OER is touted as free electronic resource. This supposition suggests that OER's aim to reduce the high cost associated with purchasing traditional textbooks seems not to have been realised. This is because OER access is overshadowed by the indirect cost barrier and some lecturers who did not engage with OER as they felt it would be unfair to students who were faced with digital challenges (Cox & Trotter, 2017).

The fact that OER was not referred to in the HBEDMEF TL 101 concurs with scholars who pointed out that some South African students are faced with digital challenges (Greyling et al., 2020; Letseka et al., 2018; William Flora Hewlett Foundation, 2015). The results further confirmed the views of Luo et al. (2020) that 'despite vocal support among educators given the importance of reducing financial burdens on students, OER have yet to make the anticipated impact in higher education' (p. 141). This opposes Wiley's (2014) opinion that the distinctive aims of OER are to reduce the cost of study material and to expand access. That being said, this study argues that OER need to be freely accessed despite the associated technological costs, and there is a need for lecturers to change their pedagogical approach as a matter of urgency to create and adopt OER because ODL institutions have had to turn to a fully online pedagogical approach that requires rhizomatic learning. This has been occasioned by the Covid-19 pandemic.

Intervention Strategies Adopted by Students to Reduce Indirect Costs Associated with OER Usage

Interview results revealed that some student-teachers who informally knew about the OER attempted to download them. This shows that the student-teachers had interest in using OER even though their lecturers did not formally include it in the study materials. A challenging factor was the devices that were either

slow to download OER or not compatible with the downloading applications (apps). This confirms the findings of other scholars who highlighted challenges with downloading material caused by digital problems (Asunka, 2008; Telukdarie & Munsamy, 2019; Thakrar et al., 2009).

The results showed that the student-teachers used alternatives to access relevant material that assisted them in completing assignments and preparing for the examinations. The alternatives included buying books with relevant information from senior students who had previously enrolled the module or from private book sellers who bought books from senior students for resale. In addition, those who were teachers sought assistance from their colleagues and used the sources that could assist them to write assignments. Furthermore, they borrowed books and made photocopies from the library and shared the information amongst themselves. This concurs with Jhangiani et al. (2016) that students used various strategies to reduce the cost of acquiring traditional study materials. On the other hand, it defeats the objectives of the provision of OER which are to reduce the cost of the study materials and to promote a learner-centred, nonlinear and decentralised approach to learning (Kanwar et al., 2010).

Furthermore, results revealed that student-teachers used WhatsApp group calls to discuss issues related to the assignments and the examination. This enhanced their collaboration in terms of sharing ideas that assisted them in writing assignments. Students also emailed material to one another. The results concur with Silveira (2016) who opined that fundamentally, OER should motivate independent learning that may be enhanced through social networks to permit collaborative learning.

CONCLUSION

This study set out to explore the EE student-teachers' experiences of using OER in the ODL context in an African university. To achieve this, the study answered two research questions. RQ1: What is your experience of using OER in ODL context? RQ2: How did you reduce the indirect cost associated with accessing OER? Generally, student-teachers knew about the OER informally through LMS chats and some tried to download it but did not succeed. Collaboration through WhatsApp group discussions and the discussions tools on the university's online LMS introduced some student-teachers to OER. TL 101 referred them to the recommended books and any other textbook with relevant information.

To answer the questions, the student-teachers did not use OER as the lecturers did not mention them in TLs 101. The lecturers did not create OER and this led to student-teachers having a negative opinion about OER usage. In addition, the support material that was uploaded on additional resources did not include OER, therefore, sending a message that did not encourage the use of OER. The pedagogical barrier from the side of the lecturers influenced student-teachers' choice of study material as some indicated that they followed only what the lecturers said. This did not benefit them in terms of heutagogical, intrinsic learning, student-centredness, and an OER-enabled pedagogy. Generally, institutions of higher learning like the one at which this study was conducted are moving towards fully online learning meaning a change in pedagogy is needed. Using OER is key to the transformation of the pedagogical approach.

The student-teachers who wanted to download OER faced challenges in terms of their devices that were slow to download or were not compatible with downloading the apps. Slow computers consumed too much bandwidth causing the student-teachers to come up with alternative means of accessing information rather than using OER. Therefore, it may not be assumed that OER reduce study costs because even though the material is perceived to be freely available, it is not easily accessed by all as this study indicated. The student-teachers shared information on a WhatsApp group that helped them to write assignments. On the other hand, they still used old methods to access study material such as buying used hard-copy textbooks and sharing books.

This study contributed to practice in terms of the discourses around the use of OER in the HBEDMEF module as it led to recommendations that, if implemented, could address the challenges associated with the creation and use of OER by the EE module lecturers and, in turn, the students.

Based on the results from the literature, documentation and the interviews, the recommendations are as follows:

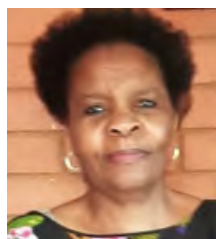
- Module lecturers should create OER and mention it in TLs 101. This would introduce the student-teachers to OER and make them understand the importance of their use.

- Uploaded material should include OER to show their significance and to encourage student-teachers to use them.
- The module content should comprise educational technological information, theory and application to enhance student-teachers' technological knowledge and skills that would enable them to create and adopt OER in their workplaces.

While the study has achieved its aim, limitations were observed. One student-teacher's phone cut off during the interview and efforts to reconnect the student were in vain. This might have robbed the study of some information that would have added value to it if the student had had a different experience. However, the aim of the study was achieved through the answers from those who answered all the questions. While this study was able to answer the research questions in terms of exploring the experiences of EE student-teachers with OER in the ODL environment, there are still some issues that need to be investigated. This study did not establish whether the lecturers were trained on how to create and use OER; therefore, the lecturers' views should be investigated. In addition, it did not cover how OER could be easily accessed by the student-teachers. Further research should be conducted to explore less expensive communication channels that could be used to provide OER to student-teachers.

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