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Exploring Factors Influencing e-Learning Dropout Rates in the Post-COVID-19 Era

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ABSTRACT

The COVID-19 period ushered in a paradigmatic shift towards exponential growth of ubiquitous e-learning. Despite the well-documented benefits of e-learning, which received unprecedented attention during the COVID-19 pandemic, little has been reported on factors influencing student dropout rates in courses delivered via e-learning. In this paper, the authors explore the factors contributing to student discontinuations in nonvolitional postpandemic conditions. Adopting a multimethod qualitative research design, the authors investigated the factors leading to increased student dropout rates from e-learning programs. The researchers used thematic analysis to interpret the data, resulting in the emergence of five themes. The findings reveal several factors contributing to failure to complete studies on programs delivered via e-learning. Although not exclusively conclusive, the study's findings indicate skills gap solutions and resource concerns which need to be addressed to convert market demand and enrolment into optimum completion rates, thereby increasing e-learning's success.

KEYWORDS

E-Learning, Students, Dropout, Attrition, Noncompletion, Namibia

INTRODUCTION

The global increase in Internet access has made online learning a popular mode of 21st century learning (Khan, 2021). However, there are parallel concerns about the student dropout rate and potential socioeconomic, infrastructural, and technological barriers that impede access to e-learning platforms (Belando-Montoro et al., 2022). Indeed, student participation and retention in graduate and postgraduate courses attracted scholarly concern before the education technology explosion prompted by the COVID-19 pandemic (Friðriksdóttir, 2018). Amid the last few years' exponential increase in e-learning use, universities have struggled to reduce high online student dropout rates. According to

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Greenland et al. (2022), e-learning students are "2.5 times more likely than on-campus students to withdraw without a qualification".

There are several reasons for addressing factors leading to high student dropouts in online learning. Firstly, as Yilmaz and Karataş (2022) aptly argued, student dropout has a deleterious effect on the image of the institution. Additionally, student dropout has a negative effect on the financial position of the institutions which heavily rely on fees, as well as students who may dropout without completing the course for which they enrolled (Yılmaz & Karataş, 2022). Student dropout leads to increased poverty and social exclusion, which impede the development of many societies as access to knowledge and training is critical to productivity and competitiveness in the knowledge society (Kiprianos & Mpourgos, 2022).

Universities' uptake of e-learning continues to fuel an expansion of the online technology industry. By 2021, the global e-learning market was worth an estimated USD 315 billion, and projected to grow at a compounded annual growth rate of 20% between 2022 and 2028 (Dubey et al., 2023). This has redoubled enthusiasm for e-learning by those who extol its enhancement of access to education, improvement of the quality of learning, and reduction of the cost of providing education (Panigrahi et al., 2018). Nevertheless, the advent and expansion of e-learning brings its share of obstacles (Hauala et al., 2022), one of which is the high student attrition rate (Panigrahi et al., 2018; Smith & Ferguson, 2005).

Estimates on student attrition rates vary. For example, some estimates (Eriksson et al., 2017) put the attrition rates in massive open online courses (MOOCs) at 90%. Others estimate that attrition rates range between 40% and 80% (Bawa, 2016), 25% and 40% (Lykourentzou et al., 2009), 10% to 20% (Christensen & Spackman, 2017), and even 100% (Jacobsen, 2019). While statistics vary, there seems to be unanimity that e-learning has brought about higher levels of student attrition. This is despite the fact that many stakeholders regard student retention as an objective measure of the quality of education that an institution offers, as well being used as its performance measure (Lykourentzou et al., 2009).

The high attrition rates negate the accessibility benefits that are associated with investing in e-learning platforms. Ferguson (2020) opined that, while the problem of student attrition rates has been debated at length, there is no clear understanding of the factors that contribute to the relatively high student dropout rates from courses taught via e-learning. As De Paepe et al. (2018) noted, it is important for stakeholders to establish why students drop out of e-learning, factors leading to their dropout, and what could be done to arrest the dropout problem. Against this background, this paper seeks to contribute to the body of knowledge by identifying factors leading to students' dropout in e-learning courses in a developing country context. To the best of our knowledge, there are no studies on e-learning student attrition rates within the Namibian context. In our attempt to contribute to this nascent body of knowledge, we formulated the following research question: What factors contribute to students dropping out of e-learning programmes or modules?

We also hope to contribute to a body of knowledge that is redirecting attention to postpandemic scenarios (Wang, 2022), after the accelerated digitalisation of education and social communication technologies within the pandemic period (Hauala et al., 2022; Kaisara & Bwalya, 2021), which have enjoyed considerable scholarly focus (Khan, 2021). The rest of this paper proceeds as follows: We present a literature review of the factors leading to student dropouts in e-learning, followed by a description of the research method, data analysis, a discussion of the results, conclusion, limitations of the study, and suggested research gaps for future studies.

LITERATURE REVIEW

Student dropout is defined as a student's "noncompletion of a course, or nonparticipation in the final assessment" (De Paepe et al., 2018, p. 305), whereas retention refers to students remaining in one institution and completing the programme of study for which they enrolled (Boath et al., 2016). Due to the need to understand e-learning student attrition rates (Burgess, 2017), a number of studies

on e-learning dropout rates have been conducted in various contexts. Some scholars (Ngubane-Mokiwa & Zongozzi, 2021; Packham et al., 2004) argue that student dropout rates are a measure of how students judge their experience with e-learning, as well as students' perceptions of the quality of knowledge and education an institution offers (Moody, 2004). Reasons for dropping out are varied and complex (Burgess, 2017; Packham et al., 2004), although studies have pinpointed problems in the broader learning environment beyond e-learning, including curriculum design and goals, materials, teaching, and assessment methods (Johnston & Posey, 2021).

Jacobsen (2019) examined factors contributing to student dropout in MOOCs in Norway. His study found that the majority of the respondents did not intend to finish the online course, but rather enrolled so as to gain access to desired knowledge. These findings mirror those of Kizilec and Halawa (2015), who found that 17% of students dropped out simply because they felt that they had learned all that they needed to. Furthermore, there seems to be a correlation between a student's prior qualifications and their commitment to an online course. Packham et al. (2004) established that students with previous higher education qualifications had lower e-learning completion rates than those without prior higher qualifications. The researchers also argued that students with previous higher qualifications were less driven to complete the course, and more motivated to attain immediate vocational skills. This assertion seems to corroborate the position of Jacobsen (2019), whose study participants comprised of university staff members.

Nevertheless, Jacobsen's (2019) informants also highlighted time pressures as inhibiting factors, which were compounded by their responsibilities as faculty. The informants also identified family and social obligations as factors that contributed to e-learning dropout. When students are forced to work part-time, their commitment and performance could be weakened (Belando-Montoro et al., 2022; Packham et al., 2004). Packham et al. (2004) found that older and self-employed students were more likely to withdraw from online programmes. In a study that resonates with Packham et al.' study, Van Schoor and Potgieter (2011) established that 43% of the students who dropped out were employed fulltime. This potentially implies that their withdrawal is a consequence of time constraints, which arise with the added responsibilities of family and vocational duties. In addition to lack of time due to work and family responsibilities, Kizilcec and Halawa (2015) identified lack of social support, lack of technical support, feelings of isolation, lack of interactivity, and lack of motivation as some of the reasons for e-learning student attrition.

Regarding the lack of technical support to help learners to navigate e-learning, Ngubane-Mokiwa and Zongozzi (2021) and Johnston and Posey (2021) concurred with Kizilcec and Halawa (2015) on the need to consider the broader capacity needs a student might have in the learning process. This includes appropriate digital skills, network connectivity, and access. While well-resourced students might have little difficulty in using their own devices and network access, universities seeking to function fully online in developing world contexts face various systemic inequalities that disadvantage poorer students (Ngubane-Mokiwa & Zongozzi, 2021). These students often cannot afford to arrange their own reliable software, hardware, and network access to keep abreast with the courses, especially when on-campus facilities fail to meet demand or cannot be accessed outside of school hours. Such dichotomies of student experiences are not uncommon (Czerniewicz et al., 2017; Khan, 2021), which has "always made full online teaching impossible" and prevented "an inclusive education system at all levels" (Ngubane-Mokiwa & Zongozzi, 2021, p. 137).

Five themes that impinged on student dignity emerged from these experiences of lack and alienation in e-learning driven environments, according to Ngubane-Mokiwa and Zingozzi's (2021) study. These were: Lack of computer literacy and online learning skills, loss of dignity due to teaching staff being insensitive to student needs, inflexibility of assessment deadlines which did not accommodate students' other work and social commitments as well as access constraints to reference materials, inadequate hardware and software provision, and inadequate information and communication technology (ICT) provisions for students with disabilities (Ngubane-Mokiwa & Zongozzi, 2021).

In a study conducted in Pakistan, Muslim et al. (2017) found that unpaid fees were the main reason why students dropped out of e-learning programmes. However, in another developing country (South Africa), the issue of financial concerns was not as significant, with only 5% of students dropping out due to financial constraints (Van Schoor & Potgieter, 2011).

Smith and Ferguson (2005) conducted a comparative study of dropout rates between online mathematics classes and other disciplines. They found that online mathematics had a much higher dropout rate than that of other disciplines. Furthermore, they observed "that these differences between math and non-math attrition rates do not show up in face to face courses suggests that the problems involve an interaction between mathematics and the online learning modality" (Smith & Ferguson, 2005, p. 330). Similarly, in a study that explored dropout rates amongst precalculus and calculus students, Ferguson (2020) found that online precalculus had a dropout rate of 28.24%, which was more than double the face to face precalculus dropout rate of 13.56%. Nevertheless, the dropout rate in online calculus class was 17.39%, which was slightly lower than 17.86% dropout rate of face-to-face calculus classes. Generally, there is increasing consensus that mathematics, and STEM in general, is much more difficult to deliver through online platforms (Smith et al., 2008; Smith & Ferguson, 2005). Van de Heyde and Siebrits (2019) opined that the abstract nature of the STEM field means that its demands on e-learning varies, and failure to deliver engaging content may lead to student boredom and, ultimately, abandonment of a course.

Gender has also been identified as a variable that influences dropout rates. In South Africa, Van Schoor and Potgieter (2011) found that 56% of online students who cancelled their courses were females, as opposed to 44% who were males. Changed jobs, personal problems, and financial challenges were the main reasons that led to student dropout. Furthermore, respondents in Van Schoor and Potgieter's (2011) study highlighted academic incompatibility as a factor that led to their dropping out. The main academic incompatibility factors highlighted include students being registered for too many courses, registered for the wrong course, poor study methods, and the course being perceived as more demanding than initially expected. In a study examining attrition rates in MOOCS, Kizilcec and Halawa (2015) found that women were 12% to 20% less likely to persist with online lessons and assessments than men. The high female attrition rate in e-learning is in contrast to the fact that many studies found that females exhibit higher academic performance than males (Van Schoor & Potgieter, 2011; Volchok, 2019). However, in contrast to the foregoing, Levy (2007) conducted a study amongst students enrolled for business administration courses in the United States and concluded that gender did not play a key role as a predictor of student dropout from e-learning.

According to Levy (2007), students who are less experienced in e-learning tend to drop out more than their more experienced counterparts. Levy established that first term students and those of a lower college status were more likely to drop out of e-learning courses. Similarly, De Paepe et al. (2018) posited that most students drop out in the first module, and early in the module. This is attributed to beginner students feeling less prepared. Conversely, higher level students may be motivated to persist and complete the course requirements due to the resources already expended on it.

MATERIALS AND METHODS

Research Approach and Design

In this study, we adopted a qualitative design to elucidate the factors that contribute to students dropping out of online programmes. The qualitative approach is motivated by the fact that little has been written on this topic in the postpandemic era, and there is no evidence of similar studies in the Namibian context translating into missing or limited information accounting for the huge e-learning drop-out rates. Therefore, a qualitative study allowed us to ask open-ended questions and probe for deeper insights where necessary. The inductive approach also allowed us to approach the research *tabula rasa*, that is, without any predetermined variables. Rather, we allowed the data to be exclusively shaped by participants' lived experiences.

Sampling and Sampling Procedures

We used purposive sampling to guide the selection of students who participated in this study, that is, students who had taken at least one course that was offered exclusively through online learning. We identified five cohorts from different programmes across faculties and departments of the Namibia University of Science and Technology. Three of the programmes were undergraduate, one a Bachelor Honours programme, and we also sourced feedback from a course on one Masters programme. In line with the sampling criteria, we selected from these programmes online classes in courses offered exclusively online or via a blended mode of learning according to the preferences and course designs of different lecturers. We drew the sampled students from five programmes from the Public Communication (PCC811S) course of the Bachelor of Communication Honours programme, the Legal and Ethical Issues in Communication (LEC 721S) course of the undergraduate Bachelor of Communication programme, the Bachelor of Journalism and Media Technology programme's Information Gathering and Writing (IGW 611S) course, and the Department of Marketing, Logistics and Sports Management's Masters and Honours programmes in Logistics and Supply Chain Management. We identified these as courses with high concentrations of online teaching and learning activities, and fitted a sampling approach that we adopted to ensure that eventual participants had relevant and sufficient experience with online learning. The reason was that purposive sampling seeks to select participants who are "fit for the purpose," being knowledgeable about the research question in one way or the other (Carmichael & Cunningham, 2017).

Data Collection Methods

To sufficiently answer the research question, we adopted a multimethod qualitative design, that is, focus group interviews and open-ended questionnaires. The use of a multimethod qualitative approach allowed us to take advantage of the strengths of the two approaches used. While focus group interviews allowed for in-depth conversations involving probing questions, questionnaires allowed respondents to answer questions at their own time and pace, thereby potentially enriching the data. We invited the respondents to opt for either focus group interviews or the self-administered qualitative questionnaire, guided by the students' convenience. We conducted four focus group interviews of a total of 20 participants face to face. We were conscious of the fact that a significant number of those sampled would have associated this research with faculty member inquiries, and so we created distance and anonymity by generating an online survey (Survey Monkey) for the open-ended questionnaire, and using carefully selected research assistants who were student interns and who were from academic programmes other than those sampled. In this way, we helped to create research tools and protocols for gathering and triangulating data in a way that "eliminates bias and increases the researcher's truthfulness of a proposition about some social phenomenon" (Golafshani, 2003, p. 604). This resulted in nine usable questionnaires, leading to total a 29 individuals participating in the study.

Data Analysis

According to Swain (2018), the function of qualitative data analysis is to augment the data and their coding into an interpretative narrative that elicits themes and usable findings to help researchers and students to make sense of the outcomes and implications of the research. Hence, Swain advised that researchers need to be "reflective and reflexive," meaning the knowledge from the research site should be interpreted and presented as having relevance for the researchers as practitioners (reflective), in addition to stirring up latent knowledge about the researchers' professional roles–in this case, as academic analysts and teachers who belong in the context that they are researching (reflexive). We used these twin hermeneutical functions as the feedback from the transcribed interviews, and the subsequent transcripts complemented by the other data extracted from completed questionnaires. Content derived through the use of both instruments needs to be preserved as the authentic feedback from the field, but the reporting thereof finds its relevance in how the researchers can identify and self-assess their own roles of engagement in the online teaching and learning process that is being

analysed. Researchers such as Schipper (1999) and Swain (2018) described this as the phenomenology of personal engagement by researchers with the context. The researchers are not expected to suspend the suppression of their own biases, but are encouraged to reflect on how the data informs their own background awareness. Since in this study we facilitated some of the online learning engagement that we assessed, it is relevant and inevitable for the analysis to reflect our own awareness of the dynamics being reported.

We then coded each transcript and identified meaningful phrases that addressed the aim of the study. Through an analysis of the codes and their relationships, we grouped similar codes together into themes, which we discussed in the *Results* and *Discussion* sections.

Validity and Reliability

Validity and reliability are key to the credibility of all forms of research (Davies & Dodd, 2002; Golafshani, 2003), and should be demonstrated in a qualitative study, albeit in ways distinct from quantitative research. As Golafshani (2003) argued, while extrinsic standards of statistical reliability and replicability are essential in quantitative paradigms, the criteria for quality in a qualitative research like this study diverge into a researcher-generated and interpreted audit of "credibility or trustworthiness, neutrality or confirmability, consistency or dependability, and applicability or transferability" (p. 602). This is reliant on researchers' development and adoption of considerations that they use to refine "both the process and the product of of the research" as a qualifying measure of rigorousness (Davies & Dodd, 2002, p. 284). Thus, in this study, we adopted concepts of validity related to what we consider to be the trustworthiness of their instruments, which are standard qualitative interview and open-ended questionnaires. In addition, the purposive selection of the respondents to reflect students who have experience in online learning, together with the research results and how they have been triangulated from interviews and questionnaires and interpreted for consistency, speak to the efforts of the current research to ensure validity, transferability, and reliability of content within a qualitative paradigm (Davies & Dodd, 2002).

RESULTS

The results revealed a number of reasons why students drop out from online learning. After an iterative thematic analysis process, we categorised the various reasons under five themes, which the following subsections illustrate.

Suitability of Some Modules for Online Learning

Most of the students who participated in the study primarily used mobile devices (smartphones) for their online learning purposes. As a result, some students stated that some courses are not suitable for online learning. One of the respondents reasoned that students drop out of online courses "because the modules are not supposed to [be] held online." This is particularly true for practical courses, as Interviewee 2 (Focus Group 2) exemplified: "You cannot use all the functions of Excel with the phone, some of the functions…you cannot just type and drag the thing, wrap text or everything using the phone. So some of the functions of Excel are limited."

Class Delivery Approach

Some students argued that academics' approach to offering online classes was not stimulating, which brought about boredom and considerations to drop out of online classes. One respondent stated that "sometimes lecturers are boring and it is discouraging to continue being in class" (Respondent 1). In a related statement, another student added that "classes are boring, and students get easily distracted especially since some attend the classes from their mobile phones" (Respondent 2). A third respondent argued that, "at times, the lecturer was not prepared for own classes and fed off the

discussions and reading feedback from class" (Respondent 3). Drawing inferences from the above, it seems some academics lack the necessary skills to keep online learners mentally engaged.

Students emphasised the importance of lecturers delivering more engaging lessons to maintain students' interest and reduce chances of dropout. As one respondent stated, academics "should make the classes more interesting by frequently engaging students in class" (Respondent 1). Yet, another student highlighted the need for "more interactive engagement. Lecturers must not just read from slides, but TEACH, like those Indian tutors on YouTube" (Respondent 5). We also took note of the student's capitalisation of the word TEACH, which, in writing etiquette, is used to show emphasis. A closer scrutiny of the context of the use of the word "engagement" seemed to suggest "interaction," which, if present, arguably leads to students being more engaged in class. Students also felt discouraged by some of the online learning material lecturers shared. One Focus Group interviewee stated that "some people, even if they record a video and they explain, you still do not understand." This possibly suggests that the poor class delivery was a result of poor lecturer skills. This was corroborated by another interviewee, who reasoned that, because of the poor rote presentation style of some lecturers, "you cannot ask questions, because it is the lecturer that is busy presenting his class."

Lack of Skills

The lack of digital skills necessary to utilize ICTs for learning, particularly mobile devices, emerged as one of the key issues that lead to a negative online experience and, ultimately, students dropping out of an online course. Interviewee 1 (Focus Group 2) stated:

For me I can say sometimes I believe it is lack of knowledge, like we were never really taught about cell phones. We do not know how to play around [with] the cell phone, so I think they really need to introduce like, maybe…teaching students how to use the phones [for online learning] so we can easily access information, and so forth.

Yet, another respondent added that there is a need to give "more training on how the online system works." The foregoing sentiments were shared by a number of students, who blamed "lack of knowledge" for students dropping out of online learning. As a result, students suggested that more training is needed, as reflected in the following excerpt from a focus group (Focus Group 2) discussion: "I think they should maybe add a module, maybe course on e-learning. Maybe training on mobile learning, to make it more effective."

Students indicated that, although training was provided, it was insufficient to equip students with the skills to effectively use online learning. An interviewee in Focus Group 3 said: "For the students there was a short video that would maybe teach the learners here and there, but not all learners saw it as useful, so I think also it was not authentic."

Lack of Support and Resources

Some students lamented that there was "no support from the people in charge" (Respondent 7). As a result, there were calls for "better management and leadership" to ensure that the requisite resources were provided to students. Students stated that they needed "support with devices to access online classes, especially those [students] ones from poor backgrounds" (Respondent 9). In addition to supporting students with devices, providing data for Internet access was regarded as crucial, as students often dropped out because they could not afford to fully engage with all online classes due to limited data. Not only were students not able to engage with online classes, but some failed to complete tests due to resource constraints, such as poor Internet connectivity. For example, when talking about poor Internet connection during an online assessment, a participant in Focus Group 3 said that

it is very, very painful and it hurts most of the students and most of the students are even failing due to that… those are the things that sometimes discourage people to study, because if I fail one test then really I do not know.

Students explained that, as poor Internet connectivity negatively affected their performance, they considered dropping out and rejoining the university later. This often happened if the student failed the assessments which were a requisite for their admission to end of semester examinations. Consequently, some students suggested that universities "provide unlimited data to be able to attend class" or provide portable Wi-Fi access to help to arrest online course drop out. Resources were not only needed by students, but the universities themselves. Students lamented the "Internet problem," that is, the poor performance of the learning management systems at their universities.

Environmental Factors

Environmental distractions, such as those found at home, may also encourage students to drop out of online courses. One participant stated that "students get easily distracted especially since some attend these classes from their mobile phones. [If] a call/notification comes in [while using the mobile phone for a class], I lose concentration."

Another respondent expressed similar sentiments, underling: "high distraction levels at home and in libraries" as an important contributor to thoughts of dropping out of online courses. While libraries are important resources for both online and face to face students, the implication is that distractions such as noise at home and in libraries may contribute to thoughts of quitting online lessons and courses.

DISCUSSION

In this study, we sought to identify the factors that influence students who are enrolled for online learning programmes to consider dropping out. The results presented in the foregoing section have important implications for scholars and practitioners alike, and are discussed in the following subsections.

Theoretical Implications

Given that the majority of Namibian students use smartphones for online learning, many of the students felt that some of the content they received was not suitable for their devices. This is consistent with the findings of various scholars (Beruin, 2022; Krasovskiy, 2018) who argue that some content, particularly STEM, is relatively more difficult to deliver through online learning.

The findings also indicate that many lecturers failed to deliver engaging lessons that could keep students interested in class. Students suggest the poor content delivery approach some lecturers used when teaching fell short of what Moodie (2016) called "good teaching-learning methods" which are "central to student success and thus retention". Moodie (2016) suggested that students needed "a clear understanding of what is expected of them, an early indication of their capacity to meet those expectations, and encouragement and support if they are not meeting learning goals".

Similar concerns have been raised by students in other studies. For example, in O'Shea et al.'s (2015) study, some students indicated that some of their lecturers did not "know how to be a tutor for an online environment, they are probably fine face-to-face" (p. 49). Such sentiments indicate that, in addition to the pedagogical skills, there is a need for technical skills for the effective appropriation of ICTs. We believe this highlights the importance of the Technological, Pedagogical, and Content Knowledge framework, which emphasises the need for various skills for effective online learning.

Similarly, the findings indicate a lack of digital skills among students needed to effectively appropriate ICTs for online learning. Similar findings were made by scholars such as Yılmaz and Karataş (2022), thus highlighting the importance of students' digital skills to the continued use of online learning. Nevertheless, regardless of this demonstrable importance of digital skills in online

learning, a number of studies in various contexts have brought to the fore the inadequacy of digital skills among both lecturers and students (Blayone et al., 2018).

Effective online learning needs adequate resources, and the results of this study indicate that their absence potentially leads to students dropping out of university. This confirms the findings of a number of other studies (Yılmaz & Karataş, 2022), which found that problems associated with the quantity or quality of the requisite online resources may prompt student drop out. The lack of adequate resources in developing countries is well documented (Kaisara & Bwalya, 2021; Kinyanjui, 2019; Maketo, 2018; Van de Heyde & Siebrits, 2019). Namibia is one of the most unequal countries in the world, and extreme poverty means that access to resources such as data and ICT devices is particularly difficult for some segments of the community.

Practical Implications

This study has a number of practical implications. Firstly, the results indicate there is need for academics to be capacitated with the requisite skills for effective online teaching. The results suggest that many academics currently do not possess the necessary skills to deliver engaging lessons. Specifically, academics should strive to ensure that their classes are not boring, but rather engaging and stimulating. Furthermore, academics should be cognisant of the unique characteristics of some digital devices and develop content that is suitable for such devices. Resources also need to be provided in order for students to continually use online learning.

CONCLUSION

The purpose of this study was to explore the factors that encourage student attrition in online learning environments. Whilst most studies celebrate the ability of online learning to extend the reaches of knowledge, particularly to those in the periphery of contemporary society, this study contributes to the body of knowledge by focusing on the factors that lead to student dropout in online environments. We found that there are a number of factors that lead to students dropping out of online courses. The factors vary from microlevel (personal level) to environmental factors that need the intervention of other actors. We believe our findings provide a basis for developing comprehensive online learning interventions that could reduce student dropout rates.

Nevertheless, this study has a number of limitations of which researchers and practitioners need to be cognisant when interpreting the findings.

Firstly, we collected data from two public institutions of higher learning in Namibia. This fact, in addition to the qualitative nature of the study, means that the results cannot be generalised to other contexts. Therefore, we recommend that similar studies be conducted in different contexts in order to compare similarities and differences of factors influencing student attrition in programs delivered by online learning. The available literature evidences that there are continuities in the experiences of e-learning users in different countries and contexts (Hauala et al., 2022; Khan, 2021), and so, while this study makes no claim to the universal applicability of its findings, it does provide the global community of scholars and users of e-learning with evidence of pedagogical and infrastructural limitations which may be investigated in other educational settings.

Secondly, the participants in this study were all continuing students on online courses. In future studies, scholars may consider using former students who had actually dropped out of online courses.

COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

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REFERENCES

Bawa, P. (2016). Retention in online courses: Exploring issues and solutions - A literature review. *SAGE Open*, *6*(1), 1–11. 10.1177/2158244015621777

Belando-Montoro, M. R., Naranjo-Crespo, M., & Carrasco-Temiño, M. A. (2022). Barriers and facilitators to the retention and participation of socially, economically, and culturally disadvantaged university students. An international systematic review. *International Journal of Educational Research*, *113*, 1–10. 10.1016/j.ijer.2022.101968

Beruin, L. C. (2022). STEM students' conceptions of online learning during COVID-19 pandemic: A phenomenographic study. *Journal of Pedagogical Research*, *6*(4), 143–167. 10.33902/JPR.202217716

Blayone, T. J. B., Mykhailenko, O., Hrebeshkova, O., Vostryakov, O., Blayone, T. J. B., & Mykhailenko, O. (2018). Surveying digital competencies of university students and professors in Ukraine for fully online collaborative learning. *Technology, Pedagogy and Education*, *27*(3), 1–18. 10.1080/1475939X.2017.1391871

Boath, E., Jinks, A., Thomas, N., Thompson, R., Evans, J., O'Connell, P., & Taylor, L. (2016). Don't go with the "FLO:" – a student mobile texting service to enhance nursing student retention. *Nurse Education Today*, *45*, 80–86. 10.1016/j.nedt.2016.06.01927429410

Burgess, E. O. (2017). *Attrition and dropouts in the e-learning environment: Improving student success and retention* [Unpublished doctoral dissertation]. Northcentral University., https://search.proquest.com/docview/1908972802?pq-origsite=gscholar&fromopenview=true

Carmichael, T., & Cunningham, N. (2017). Theoretical data collection and data analysis with gerunds in a constructivist grounded theory study. *Electronic Journal of Business Research Methods*, *15*(2), 59–73.

Christensen, S. S., & Spackman, J. S. (2017). Dropout rates, student momentum, and course walls: A new tool for distance education designers. *The Journal of Educators Online*, *14*(2). Advance online publication. 10.9743/jeo.2017.14.2.7

Czerniewicz, L., Goodier, S., & Morrell, R. (2017). Southern knowledge online? Climate change research discoverability and communication practices. *Information Communication and Society*, *20*(3), 386–405. 10.1080/1369118X.2016.1168473

Davies, D., & Dodd, J. (2002). Qualitative research and the question of rigor. *Qualitative Health Research*, *12*(2), 147–289. 10.1177/104973230201200211111837376

De Paepe, L., Zhu, C., & Depryck, K. (2018). Drop-out, retention, satisfaction, and attainment of online learners of Dutch in adult education. *International Journal on E-Learning: Corporate, Government, Healthcare, and Higher Education*, *17*(3), 303–323.

Dubey, P., Pradhan, R. L., & Sahu, K. K. (2023). Underlying factors of student engagement to e-learning. *Journal of Research in Innovative Teaching and Learning*, *16*(1), 17–36. 10.1108/JRIT-09-2022-0058

Eriksson, T., Adawi, T., & Stöhr, C. (2017). "Time is the bottleneck:" A qualitative study exploring why learners drop out of MOOCs. *Journal of Computing in Higher Education*, *29*(1), 133–146. 10.1007/s12528-016-9127-8

Ferguson, S. (2020). Attrition in online and face-to-face calculus and precalculus courses: A comparative analysis. *The Journal of Educators Online*, *17*(1).

Friðriksdóttir, K. (2018). The impact of different modalities on student retention and overall engagement patterns in open online courses. *Computer Assisted Language Learning*, *31*(1–2), 53–71. 10.1080/09588221.2017.1381129

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, *8*(4), 597–606. 10.46743/2160-3715/2003.1870

Greenland, S., Moore, C. D. T., Nguyen, N., & Misra, R. (2022, January 24). *How unis can save millions by tackling the biggest causes of online students' high dropout rates*. https://theconversation.com/how-unis-can-save-millions-by-tackling-the-biggest-causes-of-online-students-high-dropout-rates-173139

Hauala, M. N., Peel, C., & Kaisara, G. (2022). Adoption of teaching and learning technologies during COVID-19 pandemic. In Mare, A., Woyo, E., & Amadhila, E. M. (Eds.), *Teaching and learning with digital technologies in higher education institutions in Africa: Case studies from a pandemic context*. Taylor & Francis., 10.4324/9781003264026-12

Jacobsen, D. Y. (2019). Dropping out or dropping in? A connectivist approach to understanding participants' strategies in an e-learning MOOC pilot. *Technology, Knowledge, and Learning*, *24*(1), 1–21. 10.1007/s10758-017-9298-z

Johnston, S. C., & Posey, A. (2021). Stretching UDL beyond the classroom: Affordability, quality, and belonging in higher education. In Fovet, F. (Ed.), *Handbook of research on applying universal design for learning across disciplines: Concepts, case studies, and practical implementation* (pp. 451–471). IGI Global., 10.4018/978-1-7998-7106-4.ch023

Kaisara, G., & Bwalya, K. J. (2021). Investigating the e-learning challenges faced by students during COVID-19 in Namibia. *International Journal of Higher Education*, *10*(1), 308–318. 10.5430/ijhe.v10n1p308

Khan, B. H. (2021). A global framework for e-learning. In Khan, B. H., Affouneh, S., Salha, S. H., & Khlaif, Z. N. (Eds.), *Challenges and opportunities for the global implementation of e-learning frameworks* (pp. 1–15). IGI Global., 10.4018/978-1-7998-7607-6.ch001

Kinyanjui, D. N. (2019). Assessing the need for and constraints to information and communication technology (ICT) integration in the teaching and learning of tourism at higher education institutions in Kenya. *Journal of Education, Society, and Behavioural Science*, *31*(2), 1–11. 10.9734/jesbs/2019/v31i230143

Kiprianos, P., & Mpourgos, I. (2022). Back to school: From dropout to Second Chance Schools. *Journal of Adult and Continuing Education*, *28*(1), 27–48. 10.1177/1477971420979725

Krasovskiy, D. (2018, November 8). *How to achieve automated assessment content development in STEM*. https://elearningindustry.com/stem-education-elearning-used

Levy, Y. (2007). Comparing dropouts and persistence in e-learning courses. *Computers & Education*, *48*(2), 185–204. 10.1016/j.compedu.2004.12.004

Lykourentzou, I., Giannoukos, I., Nikolopoulos, V., Mpardis, G., & Loumos, V. (2009). Dropout prediction in e-learning courses through the combination of machine learning techniques. *Computers & Education*, *53*(3), 950–965. 10.1016/j.compedu.2009.05.010

Maketo, L. (2018). Mobile learning model for Zimbabwe higher education. In *Proceedings of ELmL 2018: The Tenth International Conference on Mobile, Hybrid, and On-Line Learning* (pp. 4–9).

Moodie, G. (2016). *Which students are most likely to drop out of university?*https://theconversation.com/which-students-are-most-likely-to-drop-out-of-university-56276

Moody, J. (2004). Distance education: Why are attrition rates so high? *Quarterly Review of Distance Education*, *5*(3), 205–210.

Muslim, D., Raza, S. M. M., & Touseef, S. A. (2017). Major dropouts reasons of students in e-learning institutions of Pakistan. *The Online Journal of Communication and Media*, *3*(4), 30–35.

Ngubane-Mokiwa, S. A., & Zongozzi, J. N. (2021). Exclusion reloaded: The chronicles of COVID-19 on students with disabilities in a South African open distance learning context. *Journal of Intellectual Disability - Diagnosis and Treatment, 9*(1), 137–147. https://doi.org/10.6000/2292-2598.2021.09.01.17

O'Shea, S., Stone, C., & Delahunty, J. (2015). "I 'feel' like I am at university even though I am online." Exploring how students narrate their engagement with higher education institutions in an online learning environment. *Distance Education*, *36*(1), 41–58. 10.1080/01587919.2015.1019970

Packham, G., Jones, P., Miller, C., & Thomas, B. (2004). E-learning and retention: Key factors influencing student withdrawal. *Education + Training*, *46*(6), 335–342. 10.1108/00400910410555240

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome - A review of literature. *International Journal of Information Management*, *43*, 1–14. 10.1016/j.ijinfomgt.2018.05.005

Schipper, F. (1999). Phenomenology and the reflective practitioner. *Management Learning*, *30*(4), 473–485. 10.1177/1350507699304005

Smith, G. G., & Ferguson, D. (2005). Student attrition in mathematics e-learning. *Australasian Journal of Educational Technology*, *21*(3), 323–334. 10.14742/ajet.1323

Smith, G. G., Heindel, A. J., & Torres-Ayala, A. T. (2008). E-learning commodity or community: Disciplinary differences between online courses. *The Internet and Higher Education*, *11*(3–4), 152–159. 10.1016/j.iheduc.2008.06.008

Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research: Using a practical example*. SAGE Publications., 10.4135/9781526435477

Van de Heyde, V., & Siebrits, A. (2019). The ecosystem of e-learning model for higher education. *South African Journal of Science*, *115*(5–6), 1–6. 10.17159/sajs.2019/5808

Van Schoor, W. A., & Potgieter, D. (2011). How can we retain them? An investigation into the early cancellation of courses in a distance learning institution. *South African Journal of Higher Education*, *25*(3), 598–611.

Volchok, E. (2019). Differences in the performance of male and female students in partially online courses at a community college. *Community College Journal of Research and Practice*, *43*(12), 904–920. 10.1080/10668926.2018.1556134

Wang, Y. (2022). Prospects for Chinese-Russian trade cooperation in the context of digitalisation. In Karnaukhova, O., & Shevchenko, D. (Eds.), *Regional economic integration and global competition in the post-COVID era: European Union, Eurasian Economic Union, and the Belt and Road Initiative* (pp. 202–216). IGI Global., 10.4018/978-1-7998-9254-0.ch009

Yılmaz, A. B., & Karataş, S. (2022). Why do open and distance education students drop out? Views from various stakeholders. *International Journal of Educational Technology in Higher Education*, *19*(28), 28. Advance online publication. 10.1186/s41239-022-00333-x35677599

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