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# Pre-Service Teachers' Perceptions on the Use of Proctoring Tools and its Impact on their Well-Being during Online Examinations at an ODeL Institution

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**ABSTRACT**
Academic integrity has been a serious concern in online assessments, resulting in most higher education institutions (HEIs) using proctoring. This paper explored pre-service teachers' perceptions regarding proctoring tools during online examinations at an ODeL institution and investigated its potential impact on their well-being. This qualitative study used document analysis on the twenty e-mails purposively selected to provide narratives exposing pre-service teachers' underlying emotions and anxieties when taking proctored online examinations. The theory of planned behaviour and the PERMA model assisted the researcher in conducting document analysis using ATLAS.ti 23 software to generate codes. Similar codes were later merged to formulate themes for a deeper exploration of experiences, emotions and concerns that students raised about using the proctoring tool. The results revealed that pre-service teachers experienced challenges like slow network or load-shedding and technical challenges that hindered them from accessing exam papers and uploading their answer scripts. This triggered negative emotions like frustration and sadness, affecting their well-being. By understanding students' experiences, educational institutions, policymakers and technology developers can collaborate to make informed decisions regarding implementing proctoring tools. The study recommends that higher education institutions consider students' well-being during online assessments, by providing workshops on coping strategies and proctoring processes before online examinations are taken, to prepare students and alleviate fear and anxiety. Institutions should also ensure that their software service providers regularly update their proctoring tools to reduce the challenges that these tools might pose during online examinations.

**KEYWORDS**
Proctoring; cheating; online examinations; Invigilator app; higher education institutions.

## INTRODUCTION AND BACKGROUND

South Africa is a diverse nation with students in higher education institutions from different social and economic backgrounds. Some students enroll in higher education institutions with limited technological knowledge and skills because of their socio-economic backgrounds. Others struggle to get access to computers and depend on their educational institutions to provide them or government funding institutions to make funds available for them. However, many public educational institutions in South Africa are characterised by a lack of resources. This implies that some students' access to technology could be a challenge during online examinations. Nevertheless, South African HEIs find themselves competing for rankings with countries that are more technologically advanced, including having to use proctoring during online examinations.

Some distance education institutions adopted blended learning (Park et al., 2016; Tshabalala et al., 2014), which gave rise to the use of online assessments, including online examinations. Educational institutions that offer online teaching classes often require students to write online assessments, moving away from traditional print-based examinations that have existed for many years (Butler-Henderson & Crawford, 2020), including examinations that are proctored to prevent students from engaging in academic dishonesty and protect the integrity of the examinations and qualifications (Amrane-Cooper et al., 2021; Khalil et al., 2022), ensuring their fairness and objectivity. Different software systems are available for use in examination proctoring; however, these systems sometimes malfunction, resulting in institutions being compelled to have contingency measures in place in case of software malfunctioning.

Many higher education institutions (HEIs) in South Africa relied on face-to-face teaching (Jili et al., 2021) until the outbreak of Covid-19 in 2019. This resulted in educational institutions, including schools, being compelled to transition to online platforms. The transition was a challenge to both students and their teachers because of the demands that new strategies placed on them, such as being technologically literate and having knowledge of online teaching strategies (Mhlanga, 2021). Consequently, online examinations have become a prevalent method of assessing students' knowledge and skills. With the sudden shift to remote student exams, the use of proctoring tools has gained popularity to minimise academic dishonesty.

Teachers in higher education institutions adopted online teaching strategies as a new normal even in the post-Covid-19 era, because of the user-friendliness of these strategies and many other benefits that these strategies demonstrated (Adtani et al., 2023). In addition, as part of embracing the fourth industrial revolution in education, commonly called the 4IR, the use of technology in teaching can no longer be evaded. Apart from the demands that online pedagogical strategies place on teachers, the implementation of these strategies is still not an easy task (Rudhumbu et al., 2021), especially in the context of a country like South Africa, which is experiencing a huge crisis of energy supply. The country experiences continued load-shedding, which poses a threat to online teaching and learning. This compels students and teachers to

work within stipulated load-shedding schedules, which sometimes causes a backlog in production.

Although many countries offering online examinations use proctoring to ensure the fairness and objectivity of the results (Butler-Henderson & Crawford, 2020; Raman et al., 2021), it is still not clear if proctoring software can overcome and expose the cheating of students during examinations. Fawns and Schaepkens (2022) point out that online examinations take place in conventional settings with students as actual physical beings and in these settings, straightforward online versions of traditional educational practices cannot be guaranteed.

## LITERATURE REVIEW

Students' protests and demonstrations were seen as the most disruptive actions in higher education institutions; however, the outbreak of COVID-19 demonstrated a turnabout in the notion of disruption causes in education (Ngqondi et al., 2021). Higher education institutions were required to urgently establish how they would conduct teaching to students while they were at home. Using online teaching strategies was the only option at the time, and online learning management systems (LMS) were adopted for this purpose (Zwane & Mudau, 2023). This resulted in tertiary institutions' utilization of online examinations in summative assessments. However, online examinations have challenges (Gamage et al., 2020).

Bates (2008) describes online learning as a form of distance education in which the primary delivery of teaching and learning content is via the Internet. Bates (2008) further stated that in developing countries, a very small percentage of students have access to the Internet, which poses the biggest problem for students. Adedoyin and Soykan (2023) agree with Bates (2008) that mega-distance teaching universities encounter more difficulties than smaller campus universities because many students cannot access computers. As a result, ongoing support for students is essential. It is worth noting that while the researcher acknowledges the problems faced by students in developing countries regarding access to the Internet, the researcher also acknowledges that using technology in education is the way to go for the country's economic development (Badaru & Adu, 2022; Sibuyi et al., 2024).

Some literature about students' perceptions and attitudes towards online examinations (Afacan et al., 2020; Atwa et al., 2022; Bahar & Asil, 2018; Raman et al., 2021) indicated that students show a positive attitude towards online examinations and generally find them favourable. The findings of the study conducted by Aishath et al., (2023) about the benefits of online assessments in higher education institutions revealed that lecturers gained technological pedagogical knowledge, including utilising technology in marking online assessments. Although online examinations have many benefits, there are contrasting views.

Contrasting views about online examinations point out that for some students, online examinations cause worries, especially concerning the use of technology, and they feel lost (Myyry, 2015). Some students encounter unexpected technological challenges of either a slow system, poor connectivity (Butler-Henderson & Crawford, 2020) or a lack of electricity when

using their devices. Several authors (Apostolidis et al., 2021; Butler-Henderson & Crawford, 2020; Dillon et al., 2014) note the level of anxiety that online examinations can cause for students. Butler-Henderson and Crawford (2020) acknowledge the challenges students face in online examinations and suggest that continuous monitoring should not only be meant for monitoring fraudulent activities, but also to offer student support and the necessary guidance to minimise anxiety. The biggest challenge that higher education institutions face with online examinations is cheating. Most studies conducted on online examinations (Bilen & Matros, 2021; D'Souza & Siegfeldt, 2017; King et al., 2009; Tarigan et al., 2021) indicated that cheating was more prevalent in online examinations as compared to traditional examinations, which were written under physical invigilation conditions.

Online examinations proved to be more characterised by academic fraud (Janke et al., 2021; King et al., 2009) as compared to traditional examinations that were conducted under the physical supervision of staff. Some acts of dishonesty done by students included sending very similar responses for examination questions (Lee & Fanguy, 2021). As a result, this prompted HEIs to find means to control academic dishonesty and fraud to protect the integrity of their qualifications. Different countries used different tools for proctoring online examinations (Gudiño et al., 2021), for example, Online Proctoring for Remote Examination (OP4RE) and Trust-based e-Assessment System for Learning (TeSLA). However, most online examination solutions are still at a conceptual level (Ngqondi et al., 2021) and are yet to be perfected.

Most proctoring tools used for online examinations are created and used in European countries, and involve the authentication of face recognition and video to track students' location details (Ngqondi et al., 2021). These countries are more technologically advanced than African countries, including South Africa. Due to the historical inequity of socio-economic status in South Africa, existing online examination systems may not be suitable for use in the South African context (Maphoto & Suliman, 2024; Ngqondi et al., 2021). Although online examinations use proctoring, many scholars are concerned about cheating in these examinations. In studies conducted that include cheating in online examinations (Bilen & Matros, 2021; D'Souza & Siegfeldt, 2017; King et al., 2009; Tarigan et al., 2021), students indicated that it is easier to cheat during online examinations than in traditional examination settings. However, according to Henderson et al. (2023), the use of proctoring in assessments reduces students' chances of cheating. This implies that there are still chances that cheating can occur and if this is the case, there is a need to consider the efficacy of online proctoring tools in combating cheating during online examinations. Butler-Henderson and Crawford (2020) point out that there is a need for revised approaches to assessment and student learning. The contention is that if cheating continues to occur, even when proctoring tools are used, does this not imply that online assessments may still be offering opportunities for cheating, which has implications for the validity and reliability of this type of assessment?

Students regard universities as a new community where they can thrive and flourish socially and academically (Burns et al., 2020), and develop their language skills as polyglots or

bilinguals (Yermekova et al., 2024). However, to be able to achieve these, they should have sound emotional well-being (Modna et al., 2023). According to Sehoole and Jenny (2020), the university environment plays a prominent role in shaping students and is a platform where cultural, social and economic factors come into play, rendering it a perfect setting to promote the health and wellness of students. The concept of "wellness" is a complex aspect, having both components emanating from within an individual and influenced by environmental factors, both contributing to an individual's well-being (Burns et al., 2020). In this paper, positive emotions are regarded as having a greater impact on predicting individuals well-being.

Carmona-Halty et al. (2021) regard indicators of positive emotion as joy (cheerfulness), awe, efficacy, resilience, hope and optimism. Diener et al. (2020) argue that no emotion is universally good or bad; however, the value depends on the context in which the emotion is elicited. For example, anger can be justified when an individual is constantly provoked. This results in the individual reacting by being angry because of the provocation, rendering them vulnerable and affecting their emotional well-being. Diener et al. (2020) further state that positive emotions are linked to positive outcomes such as coping, customer satisfaction, engagement and health, which eventually lead to performance. This implies that although individuals may be faced with stressors that affect their emotional well-being, there are ways that can be used to cope. One of the positive constructs Diener et al. (2020) suggest as a coping mechanism is optimism. Being optimistic in a difficult situation helps one to have a positive outlook and cope with the stressful situation.

**Purpose**

Some researchers (Ngqondi et al., 2021; Stowell & Bennet, 2010) contend that online examinations can cause considerable anxiety in students, especially those in the first year. Although many studies are conducted on online teaching and assessments, there seems to be a dearth of research discussions about using proctoring for online assessments in developing countries, like South Africa. This paper aims to explore pre-service teachers' perceptions regarding the use of proctoring tools during online examinations at an ODeL institution and investigate their potential impact on pre-service teachers' well-being. To achieve this purpose, the study seeks to answer the following research questions:

1. What challenges does proctoring pose for students when writing online examinations?
2. What are the perceived effects of online examination proctoring on students' well-being?

## THEORETICAL AND CONCEPTUAL FRAMEWORK

The theoretical framework of this study is drawn from the Theory of Planned Behaviour (TPB) and Seligman's (2011) PERMA model of well-being. The outbreak of Covid-19 resulted in many countries experiencing continued hard lockdowns and South Africa was no exception. The minister of higher education in South Africa recommended that HEIs come up with mitigation

plans that include utilising technology to support alternative teaching methodologies (Media Statement, 16 March 2020). This compelled most HEIs to use blended learning or opt for a fully online offering. For HEIs that were conducting distance education, including online teaching, it was not a difficult transition. Some HEIs that were already offering online classes incorporated online examinations. However, several studies have cited that online assessments are characterised by academic dishonesty and cheating (Gamage et al., 2020; Garg & Goel, 2022; Newton & Essex, 2023). This resulted in many countries using proctoring in online assessments to curb cheating and protect the integrity of their qualifications. The manifestation of cheating and strategies to mitigate cheating during online examinations are both regarded as planned behaviour. Some students might plan to act dishonestly by devising ways that they can use to cheat, while institutions plan to use proctoring processes to reduce academic dishonesty in online assessments.

***The Theory of Planned Behaviour***

The theory of planned behaviour (TPB) describes the behaviour of an individual as the intention before the manifestation of such behaviour (Obschonka & Silbereisen, 2015). This implies that an individual develops an attitude towards a situation, which then causes them to plan an action to help deal with the unfavourable situation. Once people see themselves as capable of performing the target behaviour (Obschonka & Silbereisen, 2015), the plan to execute is then carried out. I regard cheating during online examinations as a planned action that is executed to deal with, for example, examination unpreparedness, repeating modules and so on. As Masic (2022) and Salazar (no date) put it, because people are rational beings, they consider their actions before they decide on performing or not performing a particular behaviour. Therefore, people will perform a behaviour if they are determined to perform it without really placing more consideration on the repercussions.

***The PERMA model***

Seligman's (2011) PERMA model consists of five components, namely: positive emotion, engagement, relationships, meaning and accomplishment.

The two components of the PERMA model, E (engagement) and R (relationships) seem to intertwine well with the TPB, in a sense that pre-service teachers find themselves being engaged in the proctoring process so that any planned behaviour related to academic dishonesty can be controlled. On the other hand, the university created opportunities for pre-service teachers to have a relationship with the proctoring team. This was done by allowing pre-service teachers to engage with the Invigilator app (IA) in a conversation, if they experience challenges during online examinations. If pre-service teachers can have a good start by relating with the IA when engaged in proctoring, then a positive emotion will be displayed and a feeling of accomplishment will be attained.

Table 1.

*Seligman's PERMA model*

| Component | Description |
|---|---|
| Positive Emotion (P) | Having and maintaining a positive attitude as well as paying constructive attention to life's occurrences. This implies that even when facing difficult circumstances, individuals should be able to display resilience, be optimistic and take control; having a positive outlook, despite the nature of the situation. |
| Engagement (E) | The provision of opportunities for real engagement with activities on a professional and personal level, including assuming a condition of flow and immersion. Universities require students to adhere to examination rules, including proctoring processes. Students must use the prescribed proctoring tools in the examinations and follow all the processes involved, for example, scanning the QR code, taking pictures of their faces and uploading them together with their examination scripts. |
| Relationships (R) | Lowering the risk of loneliness by having and fostering a variety of meaningful relationships with others. During proctored online examinations, students are provided with contact numbers of the service providers to contact when they experience challenges regarding the proctoring process. For other challenges not related to proctoring, they are referred to their lecturers or institutions. This is for the provision of support and reducing the feeling of being isolated. |
| Meaning (M) | The experience of striving for something greater than oneself. Students can derive meaning from their studies when they progress, that is, by passing examinations and being employable. |
| Accomplishment (A) | Reaching a goal, whether academic or personal, will give rise to a sense of accomplishment and, subsequently, to a condition of flourishing. Students can have a feeling of accomplishment when they have a seamless experience of online examinations and getting positive results. |

## METHODOLOGY

This study followed a qualitative research approach and is based on the interpretive paradigm, which seeks to get an understanding of participants' actions by interpreting their words, usually referred to as "voice in the text" as evidence of what participants said in the data collected (Muzari et al., 2022). A case study design was employed, focusing on pre-service teachers enrolled in teaching intermediate and senior mathematics at one of the South African online distance e-learning (ODeL) institutions. A qualitative research approach was used because the study was about human beings and qualitative methods help understand the context. Pre-

service teachers' natural settings assisted the researcher to collect contextual data directly related to the study, since they provided queries based on their real-life situations as they occurred in their online examination settings (Muzari et al., 2022).

Purposive sampling was used as a sampling technique to collect data in the form of e-mails from pre-service teachers enrolled in intermediate and senior mathematics at one of the universities in South Africa. This type of sampling was deliberately chosen to assist the researcher to include only pre-service teachers who took proctored online examinations in the sample. Twenty e-mails that were sent as queries pertaining only to online examinations that pre-service teachers in intermediate and senior mathematics wrote in the first and second semesters of 2022, and the first semester of 2023 at a South African ODeL institution were collected for analysis. The e-mails that students sent to their primary lecturers regarding accessing or downloading of the examination question paper, and submission or uploading of their answer scripts during the first semester of 2022 were selected and stored separately. The same process was repeated in the second semester of 2022 and the first semester of 2023. All the e-mails together with the evidence of attachments were saved to use for analysis in this study. Data collected was contextual and rich enough to answer the research questions in this study (Gill, 2020). Pre-service teachers sent e-mails to their lecturers during and after the examinations to explain their circumstances and seek intervention regarding the challenges they faced emanating from the use of proctoring.

From the vast techniques that are available in qualitative data analysis, narrative analysis was seen as relevant to use in this study because the data can be reduced into a summary, enabling the researcher to summarise the main plot of the narratives or use the coding procedure (Leech & Onwuegbuzie, 2008). ATLAS.ti 23 software was used to generate codes. Similar codes were merged and used to formulate themes based on the aspects they were addressing. Participants were named Pre-service teachers abbreviated to $PT_1$, $PT_2$ and so on.

The quality criteria such as validity and reliability are not suitable to judge the quality of qualitative research because they are constructs of quantitative research, instead, qualitative researchers speak of trustworthiness to determine if their findings can be trusted (Korstjens & Moser, 2018). In maintaining credibility and dependability of the study, the researcher made a rigorous analysis of data using a computer software, namely, ATLAS.ti 23 to generate codes. These codes were then merged to construct themes. Moreover, to avoid unbiased reporting, the researcher included raw data of screenshots provided by students as evidence of their queries. Furthermore, data was collected over a period of two years, that is, two semesters in 2022 and the first semester of 2023. This gave the researcher ample time to have a prolonged engagement, which Korstjens and Moser (2018) regard as a lasting presence with data. Thus, the researcher had a prolonged engagement with data by investing more time in understanding the online examination environment.

## RESULTS

In answering the research questions, data collected was read and coded using the ATLAS.ti 23 software, and eleven codes were generated – see Figures 1, 2 and 3.

Similar codes were merged and themes that emerged were willingness to comply with regulations, monitoring the examination process, emotional effects and online examination challenges. The themes were generated based on the category of codes, for instance, codes addressing the same aspect as anxiety, frustration and sadness were grouped because they were about emotional aspects.

### *Willingness to comply with regulations*

The codes, seeking guidance, and rules and regulations were merged to form the theme of willingness to comply with regulations. The code, seeking guidance in Figure 1, and compliance in Figure 2, appeared three times when coding data.

**Figure 1.**

*Seeking guidance code*

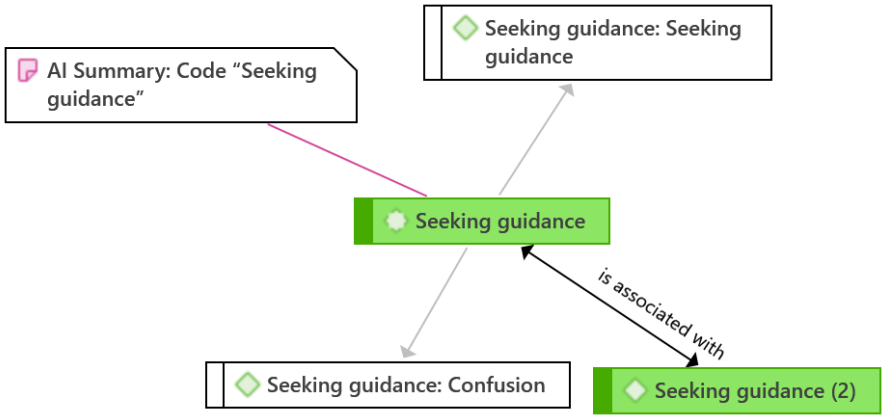
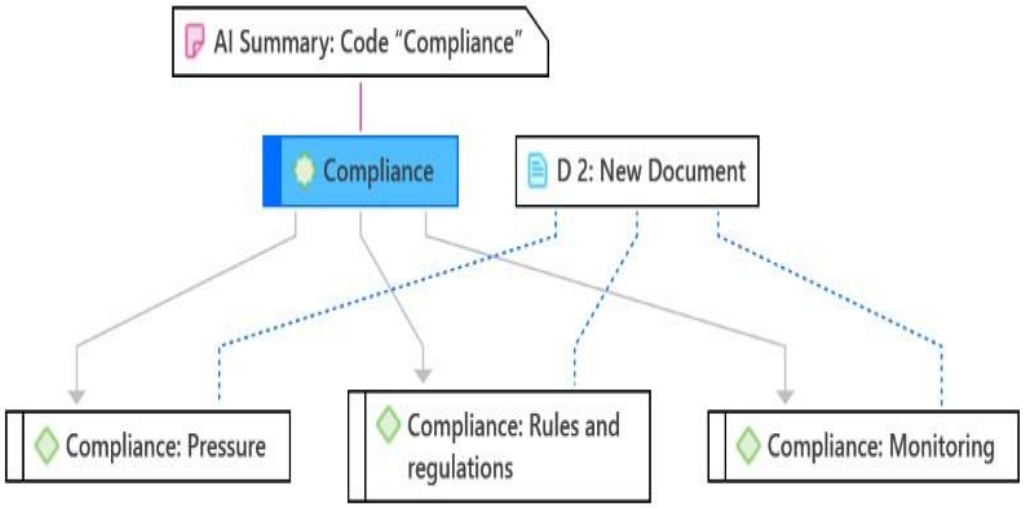



**Figure 2.**

*Compliance code*




The frequency of the codes is a demonstration that participants were willing to comply with proctoring rules from the beginning of the examination; however, they experienced some challenges that caused them to seek help from the Invigilator app (IA). One participant indicated

that they used the IA "demo" before taking the online examination, which is another sign of willingness to know how the IA operates.

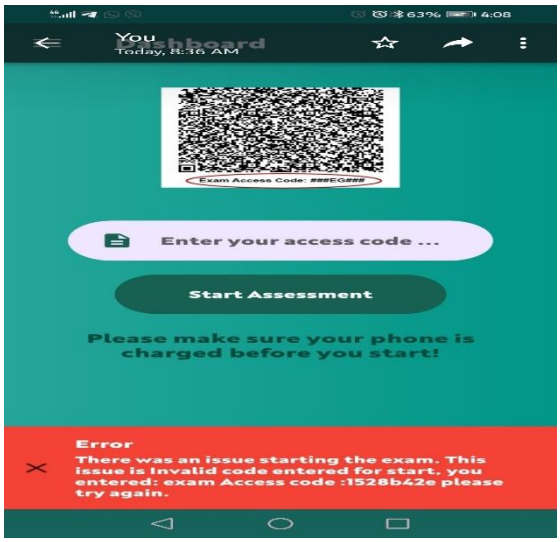
***Monitoring the examination process***

The compliance code is divided into three sections, namely: pressure, rules and regulations, and monitoring. The monitoring of the examination process using proctoring tools causes pressure on the students to comply with the examination rules and regulations. Examinations are proctored using the IA that requires students to scan the QR code. This is how the institution keeps an eye on the exam process, by allowing students to be proctored to lower academic dishonesty. The QR code is available within a limited period before the official examination starting time and if not used within the specific time, it expires. Participants who did not scan the QR code within the first fifteen minutes were unable to use the Invigilator app (IA) and the app kept on saying "please try again" or "an invalid code was entered for start".

$PT_1$ said: *"Please assist, when I try to scan the question paper, I keep on getting this"* and included a screenshot (Picture 1 below).

**Picture 1.**

*Error message*




***Emotional effects***

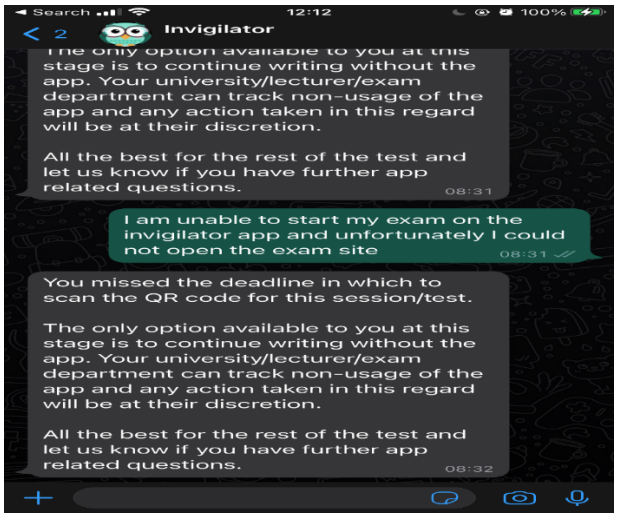
Students who did not scan the QR code within the specified times kept receiving an error message from the app, as indicated in Picture 1. As a result of this, they kept on requesting assistance and the app kept on saying "please enter the correct code". The recurring pattern of the response from the app resulted in $PT_3$ replying by saying: *"I am losing my mind now"* with a crying emoji, demonstrating their frustration. The frustration that the students experienced due to the IA's repeated request of scanning the QR code was in line with Diener et al. (2020) when they said individuals become vulnerable when there is high positive emotion variability to negative events.

In 2023, students who missed the deadline for scanning the QR code were allowed to continue writing outside the IA. However, the IA stated that *"your university/lecturer/exam*

*department will track non-usage of the app and any action taken in this regard will be at their discretion"* giving them some hope. See the IA response in Picture 2.

**Picture 2.**

*QR code deadline missed*

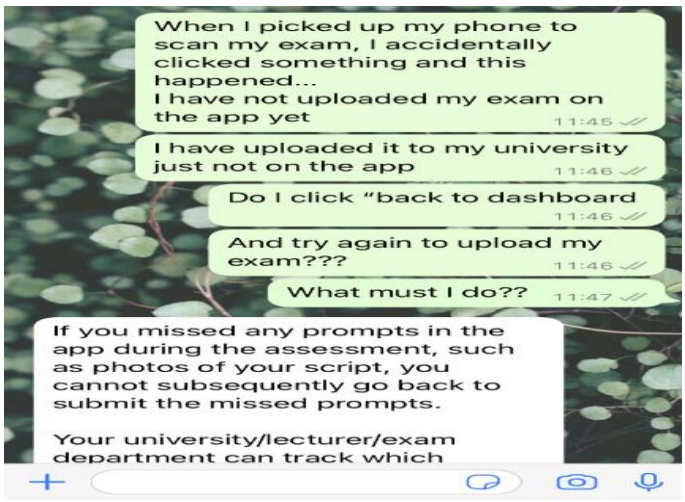



***Students' challenges during online examinations***

At the time of writing the online examination, some participants indicated that they were experiencing load-shedding in their areas and pictures of the load-shedding schedule were attached as proof. $PT_4$ wrote an e-mail saying: *"Good morning ma'am could you please help me with the question paper because it seems difficult to find it due to network issues."* This indicates students' willingness to comply with regulations and follow the rules; however, in the process of doing so, they encounter problems that are mostly beyond their control. One of the unavoidable problems encountered during the writing of online examinations is technical issues (Hosseini, Egodawatte & Ruzgar, 2021) due to inefficient tools. $PT_5$ sent a screenshot showing their conversation with the IA saying: *"When I picked up my phone to scan my exam, I accidentally clicked on the wrong button … what must I do?"* See Picture 3. Some participants indicated that the app malfunctioned when trying to take a picture, while others complained about the app taking time to upload documents.

**Picture 3.**

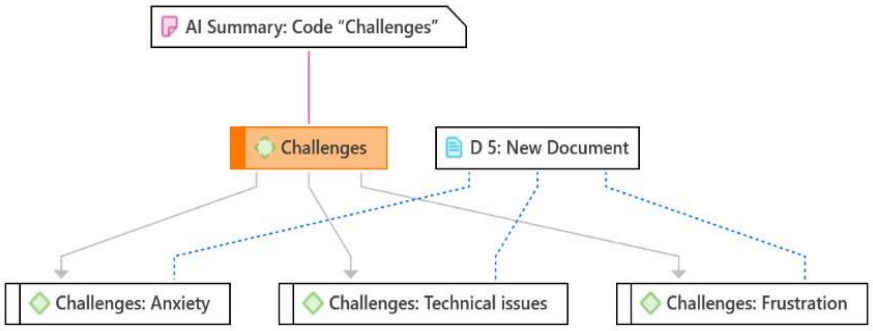
*Technical problem*




Data coding revealed challenges based on technical issues and emotions. Two emotions that emerged were anxiety and frustration (see Figure 3).

**Figure 3.**

*Challenges code*



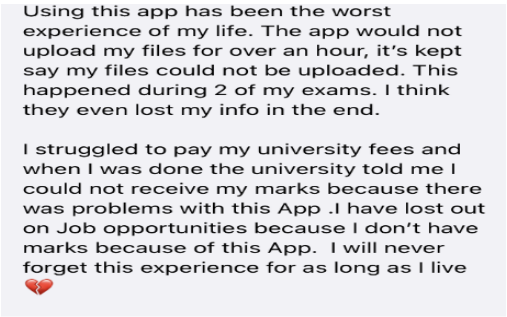

***Submission of the examination script***

On finishing the examination, participants were required to scan their scripts before submission on the examination platform. When trying to take photos of the examination scripts, the app did not allow it as it was not used during the entire writing process. Those who did not use the IA were unable to scan their scripts and as a result, they had to submit their examination scripts without photos. Although the submission was a sign of hope that eventually the examination would be submitted, there was an element of uncertainty about their examination.

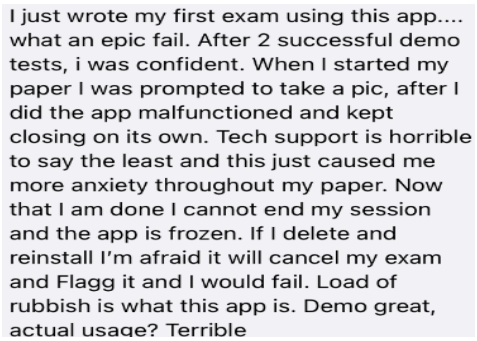
***Pre-service teachers' reflections about the examination proctoring process***

When students were asked about their overall views regarding the examination process, the emotional effect came into play again due to the technical issues they experienced during the examinations, echoing their frustrations and sadness that the process caused, which may have lasting effects on their lives, as presented in Pictures 5 and 6.

Picture 5



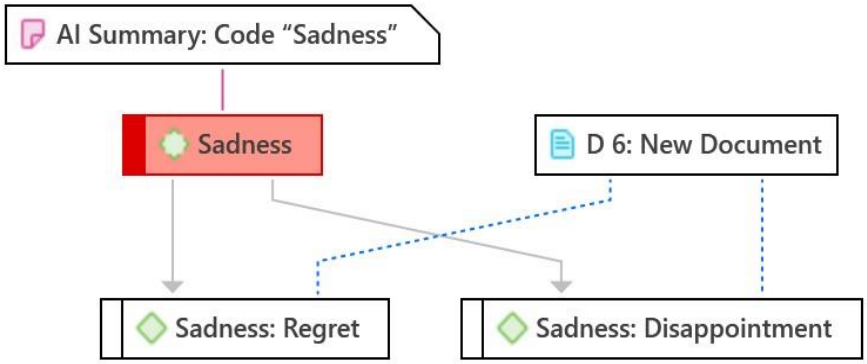

Picture 6




Students indicated their disappointment in dealing with proctoring tools because of the challenges they faced during online examinations. Two emotions of sadness, namely, regret and disappointment, emerged from the coded data (see Figure 4). Their disappointment indicates that they might not have a sense of accomplishment and achievement of their goals as students (Seligman, 2011).

**Figure 4.**

*Sadness code*




## DISCUSSION

The energy crisis in South Africa has become an evident disruptor of online examinations for some students because of load-shedding (Thango & Bokoro, 2022), as revealed by data from other participants. This was revealed when some students shared their load-shedding schedules to prove that there was a possibility that they might be unable to write, finish or upload their examinations due to load-shedding. Dube (2020) also cited poor network reception as one of the challenges faced by students in online examinations in South Africa. Continued load-shedding causes pressure on some students to relocate to other places where there would be no load-shedding at the time when the examination would be written, thereby creating financial and adjustment problems while trying to overcome load-shedding problems. Students who cannot relocate could develop uncertainty about whether they will get a second opportunity to write the examination due to load-shedding disruptions. Although load-shedding schedules are

given in advance in South Africa, they are not guaranteed as the energy grid may experience pressure, resulting in abrupt and unpredicted schedule changes, thus causing disruptions for online examinations.

When students take an online examination using proctoring, they are required to scan the QR code within a specified period to allow them access to the examination paper. The results of this study revealed that students who were unable to scan the QR code within the specified period struggled to get access to the examination paper and whenever they did, they were allowed to write without using the IA. The weakness picked up from the communication between the IA and the students is that the IA failed to explain to the students that the scanning time for the QR code had lapsed. Instead, the IA kept asking students to insert the correct code and this caused more frustration for the students, who thought that they still had the opportunity to scan the examination paper. Moreover, students' positive emotions dropped drastically because of their reaction to the stressful situation of being unable to access the examination paper.

Furthermore, students expressed several negative emotions, namely, frustration, anxiety, regret and disappointment, and all of them were triggered by the examination context. Although students tried to engage professionally by using the IA, the findings contrast with Seligman's (2011) notion of positive emotions. The negative emotions arose as a result of the IA repeatedly asking them to scan the QR code. The study's results agree with Eaton and Turner's (2020) argument that students experience frustrations caused by levels of anxiety associated with not knowing what to do or fear of doing the wrong thing during online examinations. The frustration experienced by students in failing to scan the QR code or upload their examination scripts on time is one of the many causes of high stress levels, which can affect students' emotional and psychological well-being.

Eventually, when some students got access to the examination paper, they could not scan their faces because they were out of the IA. The message received was that they should continue writing without the IA and their lecturers would decide afterwards about their situations. This gave them some hope that if they had written, their examination scripts would be considered. Some students experienced technical issues with "clicking the wrong button" when trying to upload their scripts, their "machines malfunctioning" and for some reasons not known, others could not upload their examination scripts. It is worth noting that although human error can happen under normal circumstances, the fear of "doing wrong" can also result in students clicking the "wrong button", consequently messing up the whole submission process. This has the potential to cause confusion and frustration, leading to more stress for a student who thought they had completed their examination and hoped for a pass.

Proctoring processes subject students to the usage of technological tools with cameras and recordings to curb academic dishonesty; however, the mere use of these tools contributes to high stress levels during online examinations, as indicated by one student who said, "I am about to lose my mind now." Positive emotions are linked to positive outcomes (Diener et al.,

2020), therefore, when students get frustrated at the beginning of the examination, their performance may be affected. The results of this study revealed that students can make mistakes when using technological tools, and these can cause confusion and anxiety because they do not know what to do next. This finding agrees with Novick et al.'s (2022) findings when they reported that students found all technological tools to be causing them stress during online examinations. The study by Novick et al. (2020) also found that although proctoring was used for online examinations, students continued cheating in different ways, including using notes and looking for answers. Sixty percent (60%) of students reported that they knew a lot of students who cheated during online examinations. This indicates that cheating is a planned behaviour (Obschonka & Silbereisen, 2015) that may not necessarily be stopped by technological tools, since students who plan to cheat know that what they are doing is not allowed (Krienert et al., 2022) and might devise new strategies for practising academic dishonesty.

## CONCLUSION AND RECOMMENDATIONS

The findings, as a result of analysing pre-service teachers' e-mails and screenshot attachments in this paper, exposed some of the many challenges that most students might be experiencing during proctored online examinations. These challenges include the inability to access examination papers due to load-shedding, slow network when uploading answer scripts and technical issues. The results further highlighted the kind of emotions (frustration, sadness, and ultimately, hopelessness) triggered when students' engagement with the IA does not bring positive outcomes, consequently affecting their emotional well-being. Proctoring as a means of reducing academic dishonesty and discouraging cheating behaviour can exacerbate problems that come with learning and assessment in online environments, especially in developing countries like South Africa where such proctoring processes are still being tested. This is evident when students experience negative emotions associated with high stress levels (Holden et al., 2021).

The study recommends that proctoring software tools be updated continuously to give clear instructions, either to allow or deny students access to continue using proctoring during online assessments. Secondly, students should be exposed to proctoring procedures during formative assessments to familiarise themselves with how they function. Thirdly, support regarding coping strategies should be provided to students, in the form of workshops, before sitting for online examinations, to alleviate fear and anxiety.

### Limitations

This qualitative research study used documents as the main source of data collection instruments and as a result, the results cannot be generalised to a greater population; however, the findings can be used to inform activities that higher education institutions can plan for student support.

**Ethical Considerations**

Study approval was granted by the university where the research was conducted and the ethical clearance certificate reference is Ref #: 2018_RPSC_017_ext. Confidentiality and anonymity were maintained throughout the writing of this paper.

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