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Investigating Online Examination Opportunities and Challenges among Higher Education Institutions (HEIs) in Namibia

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Abstract:*This study aimed to report on the opportunities and challenges of online examinations among Higher Education Institutions (HEIs) in Namibia. Online examinations have grown in popularity due to their scalability and flexibility. The study explored the opportunities and challenges of online examinations and their effectiveness. A qualitative approach was adopted; the population comprised lecturers and administrators at the International University of Management (IUM), the University of Namibia (UNAM), and the Namibia University of Science and Technology (NUST). Purposeful sampling was used to select a sample of 12 lecturers and administrators. Data from respondents were collected through individual interviews through a structured interview guide. The findings highlighted vital benefits, including increased flexibility and cost savings for Namibia lecturers, students, and HEIs. On the other hand, challenges related to the accessibility of the platform and the lack of digital skills by students and educators were noted. The study significantly contributes to the body of knowledge on the effectiveness of online examinations, providing valuable insights for lecturers, administrators, and policymakers in Namibia's field of higher education.*

Keywords:*opportunities, challenges, benefits, online examinations, implementation, assessment, Namibia, Higher Education Institutions (HEIs)*

I. INTRODUCTION

Incorporating technology in education, including blended and online learning, has reshaped teaching, learning, and administrative developments (Jurāne-Brēmane, 2021; Visvidzi& Daniela, 2020). However, the unanticipated shift to isolated teaching during the COVID-19 pandemic has presented significant challenges (Jurāne-Brēmane, 2021; Kebritchi et al., 2017; Phillip & Cain, 2015). The study by Jurāne-Brēmane (2021) looked at the challenges and opportunities that Higher Education Institutions (HEIs) face in preparing and implementing online examinations. As stated by Iwuchukwu (2014), online examinations allow for computerised testing and grading through the web or internet platforms, decreasing the workload of educators and speeding up result release (Ayo et al., cited in Adewale et al., 2010). Among the advantages of online examinations are reduced errors in marking and fast scoring. On the other hand, unethical practices that students participate in, like academic dishonesty and cheating, are some of the troubles experienced during online examinations. Nevertheless, despite institutions' continuing expansion in online examination tools, a comprehensive assessment of opportunities and obstacles has yet to emerge in Namibia. Online examinations

provide immediate feedback, increase assessment validity, and simplify information management (Butler-Henderson & Crawford, 2020). Owing to security concerns, ODL institutions in Namibia are hesitant to implement complete online examinations. In addition, effective proctored invigilation can be challenging due to the high cost (Nagappan, 2015). Online examinations may not be universally adequate, particularly in practical subjects such as art and those numerically oriented (Dahadhah& Al-Hamoori, 2020). Therefore, this study acknowledges the challenges faced in the shift to online examinations, aiming to shed light on this previously unexplored terrain and provide a comprehensive understanding of the opportunities and obstacles associated with online examinations in higher education institutions (HEIs) in Namibia.Higher Education Institutions are doubtfulabout adopting online examinations owing to security and cost worries, which can raise academic integrity issues (Nagappan, 2015).

II. RESEARCH QUESTIONS

The study aimed to examine opportunities and challenges associated with implementing online examinations in HEIs in Namibia from the perspective of administrators and lecturers. The following questions guided the research study:

- What are the opportunities for conducting online examinations?
- What are the challenges of conducting online examinations?
- How effective is conducting online examinations across all modules?

III. LITERATURE REVIEW

3.1. Online Examination

Online or electronic examinations are becoming common in traditional and distance learning (Shraim, 2019). The internet and the web are usually used to conduct these online examinations. Students are allowed to choose the location where to write their online examinations and have the advantage of receiving immediate feedback (Iigaz&Adanir, 2019; Fluck et al., 2017). However, students experience challenges focusing and internet connection issues, problems with typing speed, and unfamiliarity with the online examination writing format (Wibowo et al., 2016). Ensuring technology compatibility, standardisation, and adaptability of online examinations are some concerns that need to be addressed by Higher Education Institutions (Fluck& Hillier, 2017).

3.2. Online Examination Opportunities and Challenges

An assessment of opportunities and challenges in the academic field through online examinations is brought forward. Several advantages accompany online examinations, including saving resources that would be wasted, such as paper, money, and time, while giving students immediate feedback for self-assessment (Hassan, 2021). However, concerns over cheating necessitate secure examination designs (Hassan, 2021). In universities worldwide, professors use online examinations because they are practical, valid, and reliable (Farzin, 2016; James, 2016). Grading examinations electronically has many benefits for students, including ease and openness (Shraim, 2019; Baleni, 2015; Iannone& Simpson, 2013). However, the automatic assessment of answers may fail to be successful, especially regarding subjective and not one-answer questions (Farzin, 2016; Semlambo et al., 2022). However,generating objective online questions is an immense challenge (Kuikka et al., 2014; Jamil et al., 2012). Some lecturers have expressed reluctance to switch from traditional to online assessments (Alruwais, 2018), emphasising the importance of management support for academic and technological readiness. Rasheed et al. (2020)indicate that challenges in online examinations include technological limitations and training issues. According to Al-Khazi (2016), reducing institutions' printing costs helps in unbiased assessment while enhancing efficient reporting and feedback, which makes learning better. Even though it requires much memory storage, Matter andQrenawi (2021) consider online examinations essential. Online examinations provide numerous advantages, including efficiency and transparency, but require careful planning and management support. Challenges such as question generation and technological readiness must be addressed, with special consideration given to question types that cannot be easily automated.

IV. Methods

In this study, the authors investigated the opportunities and challenges of online examinations among Namibian HEIs. It employed a qualitative approach with a case study design for the transferability of findings across HEIs (Takahashi&Araujo, 2020). Hence, the study aims to provide insights and an understanding of the opportunities and challenges of online examinations within the context of Namibian higher education institutions. The study population comprised UNAM, NUST, and IUM lecturers and administrators. A sample of 12 lecturers and administrators was selectedusing purposive sampling (Emmel, 2013). Participants were chosen purposefully considering the criteria of years of experience, expertise, and role in online assessment methods.

The researchers first ensured consent from the relevant bodies byobtaining formal permission from UNAM, IUM, and NUST to collect participant data. Contact with potential participants was established through email and WhatsApp. A guide to structured interviews with open-ended questions facilitated the data collection process.A thematic analysis tool was used to analyse data from the qualitative responses, systematically identifying patterns and meanings in the data(Creswell, 2014). This involved reading and rereading responses and constructing codes for themes.

V. Findings and Discussion

In this qualitative study that included lecturers and administrators from Namibian Higher Education Institutions (UNAM, NUST, and IUM), findings indicate that respondents have different ages: 10% were aged less than thirty (30) years old, 20% were aged between thirty and fifty (30-50) years old while 50% fell within the age bracket of thirty to forty years. This shows various generations' opinions regarding online assessments.The participants possess varied qualifications, including master's, doctoral, and bachelor's degrees, with most holding advanced degrees, signifying a highly educated group. Their employment durations range from 2 to 15 years, with 30% employed for 1-3 years and 70% having more than six years of service, reflecting varying professional expertise that may influence their views on online examinations. Additionally, participants assume academic or administrative roles, with a heterogeneous distribution: 10% have dual roles, 20% are exclusively administrative, and 70% serve as academic staff, reflecting their professional diversity.

5.1 Online examinations benefitstudents, lecturers, administrators, and HEIs

Various stakeholders, such as students, lecturers, administrators and institutions of higher education, positively regard online examinations due to their advantages. Some include reduced cost, convenience, effectiveness and novel secure methods. Researchers also argue that it has been very accurate that professional academic online testing will save and even enhance students' results after incorporating real-time feedback ready for students (Shraim, 2019). In addition, online examinations help students cut costs related to travelling as they can take computer-based examinations either in the computer spaces on the campus or at home (Naveed et al., 2017). However, this is not the case for everybody. Students residing in rural regions or who do not have personal computers and stable internet connections can face significant costs and problems; for instance, they would seek the pleasure of using internet cafes, which can be expensive (Dube, 2020).

From the perspective of lecturers and administrators, online examinations also ease the load on the markers by helping to speed up the marking process, and computerised technologies are used to improve the effectiveness and credibility of the methods (Shraim, 2018). Gamage (2019) extends the argument beyond human resources cost savings to include savings on printing, courier services, invigilator fees, accommodation and operation expenses. In defence of using online examinations, it is worth noting that such a cost strategy may be beneficial. However, it can obscure some initial estimates, such as those for technology infrastructure and ongoing maintenance and the recurrent training required for lecturers and administrators on these systems. Without adequate attention being directed to such, the use of online examination systems, especially adoption at a faster pace than is necessary to fill in gaps, can leave significant inefficiencies, for example, over-reliance on multiple-choice questions (MCQ) or its derivatives with little cognitive depth assessment being done (Shah, 2017).

From an institutional perspective, the likelihood of examination paper leakages during online examinations is minimised when reinforced security features exist. Detailed user logs, together with educational data mining, enhance the possibilities of tracing harmful action in the event of any breach (Figueira, 2017), in addition to the well-developed monitoring and information security tools available through such platforms as Moodle (Milošević, 2022). However, due to this transition to a digital platform, new challenges to information security arose, likeinformation leakage and organisational cybersecurity weaknesses. For institutions, there are benefits in attracting international students and increasing their scope and the level of their diversity; however, such growth also creates the problem of effectively assessing learning by conducting online examinations in areas with different cultural and educational perspectives.

To summarise, the online examination system has so much to offer: cost-effectiveness, easy information access, speed, less workload, and even more security, but those must all be considered with the problems predicted. This includes issues like the ever-present threat of exclusion due to insufficient access, the need to learn and relearn every so often due to the technology's purpose, and even how safe cyberspace is. These are strategic issues that institutions need to tackle to optimise the online examination system and avoid compromising on the fairness and standards of education concerning lowering the barriers to education.

5.2. Online examination challenges for students, lecturers, administrators, and HEIs

Examinations online bring about a wide range of concerns to students, lecturers, administrators, and HEIs, usually revealing the structural issues in access and infrastructure. The persistent problem of access to online education is rooted in the availability of technological gadgets and the reliability of Internet services. It mostly depends on these socio-economic variables and location (Ferri et al., 2020). These barriers raise essential questions about equity as students from disadvantaged communities experience a heightened level of difficulties when it comes to education that might aggravate the existing gaps in educational attainment. Insufficient internet bandwidth limits the participants' attendance and fosters a shattered way of attending to learning and tasks, thus affecting students' academic performance and participation level (Magogwe et al., 2022). Similarly, students may also be unaccustomed to online platforms and, therefore, possess the necessary skills for appropriate interaction with students in virtual environments, making it even more difficult for them to do well in such an environment. This conveys the significance of embedding digital competence development in training not as an add-on factor but as a central feature of the education system.

In addition, lecturers and administrators have been presented with many complex, interrelated challenges. Issues such as gaps in skill levels, state of connectivity, and verification of student identity during online examinations make the process more complicated than was required in the traditional examination framework.Developing examination questions which induce critical thinking and measure higher-order thinking skills is quite daunting, especially in an online environment where closed questions are frequently used to assess students (Shraim, 2018). Simplified question formats tend to be the preferable choice that helps tackle content learning and thus may adversely affect assessment scores and overall education quality. Further issues, such as connection problems, mainly when the number of users accessing the system is at its peak, can cause delays or system breakdowns, making the experience unpleasant and quite unpredictable for students and lecturers (Tshiningayamwe et al., 2020). As examined, such assessments are often linked with technical difficulties that tend to undermine the accuracy and fairness of the students.

Several learning management systems do not embed any form of proctoring, which worsens the issue of assessing the originality of student submissions, thereby creating an avenue for plagiarism (Hartmann et al., 2021; Gamage et al., 2020; Harris et al., 2019). This particular problem poses a threat not only to the verified security of the examination process but also to critical ethical issues regarding the organisations since the feeling is that online qualifications are likely to decrease unless there are effective identification procedures.

The limitations presented to HEIs are not confined to operational or logistical constraints. Lack of infrastructure, especially in developing countries, hinders internet connectivity and data availability, further widening the divide between institutions in different areas (Kamba, 2009). Addressing these issues of infrastructure gaps requires enormous capital investment, which may not be possible for several institutions, especially in resource-constrained environments.

Furthermore, meeting the different training needs of academic and non-academic staff is tedious, costly, and worsened by high staff turnover (Alruwais, 2018). It is necessary to point out that there will always be a demand for professional development in Learning Management Systems (LMS). This has also made it complicated when performance management systems switch from conventional to digitalised. Also, manyonline assessment systems needcomprehensive proctoring solutions, which can constrain the fairness and integrity of assessments (Jia& He, 2021). This gap mayheighten the scrutiny regarding the credibility of online qualifications, makingstrenuous efforts towards making online learning a valid alternative to traditional education even more difficult.

Finally, while online examinations have the advantages of flexibility and cost savings, significant challenges such asbarriers to access, skill gaps, connectivity issues, and obstacles to identity verification remain substantial barriers to their actual use.
Addressing these issues entirely and thoroughly ensures that the online assessments designed are as reliable, just, and educationally sound as the conventional assessment methods. If these matters are not addressed, the credibility of the online assessments may not only suffer, but they will also deepen the already prevailing inequities in higher education.

5.3 Challenges in designing and writing modules online

To deepen the inquiry's impact further, it is necessary to examine the consequences of these challenges on a broader scale. These may not be limited to just the learning experience, the validity of assessments, and equal opportunities in education.

Data analysis revealed that different modules posed different challenges during the design and administration of the online examinations, which affected both the lecturers and the students. This was most critical in the theoretical, practical, mathematical or numerical modules. In the case of theoretical modules, this was particularly troublesome for the lecturers, who were required to develop questions that not only stimulated reasoning but also limited students seeking information outside the examination room (Shraim, 2018), even during examinations. Requirements for developing such questions involved transitioning from simple recall tests to high-order test items, which required analysis, synthesis, and evaluation of the students. Unfortunately, this was very tedious and challenging because the unrevised format needed to provide room for everyday conversational techniques that oriented students at the higher levels of cognition. From the students' perspective, typing lengthy essay-type responses was cumbersome, especially for slow typists or students who accessed the internet through unreliable connections that threatened to drop them off mid-way through response submission.This technical instabilityadded stress and created doubts regarding the fairness of the evaluation, given that technical issues could negatively impact fairly students from low socio-economic status, especially those who do not possess technology.

These practical modules posed an entirely different set of challenges. Practical modules are generally composed of activities that require physical presence and face-to-face interactions, which online activities cannot effectively replicate. Since there is little or no involvement of students in activities like lab work, art or music, which require physical participation, the evaluation of students in practical subjects tends to be shallow. This is acceptable; in some institutions, Panopto and similar platforms have been adopted to encourage students to

record or video their work (Hartmann et al., 2021). However, this is only the case in some situations, particularly in those where feedback or work collaboration in real-time is required. The shortfall of online assessments in practical modules raises concerns about the credibility of such evaluations as worth over-evaluating, adopting the argument that it does not assess the student's actual level of learning and ability and possible levels incorporated in their practical experience.

Difficulties were presentedthrough modules on numerical or mathematical content. In particular, creating online examination questions for these subjects was improved when a learning management system (LMS) needed toprovide the means necessary to use advanced solutions such as complicated calculations, symbols, or formulas in the assessment tools. When students encountered such limitations, it limited the lecturer's efforts to evaluate students' ability to solve problems as they would in the everyday world, thereby lowering the quality of the assessment. For the learners, using conventional computer keyboards or inferior online interfaces to insert advanced equations was more often than not defeating the purpose of studying and, in some cases, even the rationale for learning. Such limits will, to an extent, cause the evaluation criteria to shift towards measuring knowledge that is conventional at the expense of theoretical knowledge, thus limiting the depth of the assessment.

The preparation and the implementation of online examinations for the theoretical, practical and mathematical modules were complex for lecturers and students. Challenges such as composing higher-order thinking items, conducting performance examinations, and evaluating mathematics highlight urgent limitations in the currentonline education system. It would also require enhancement of the LMS, both in tools and features, to cater for various subjects andre-evaluatehow examination questions are set to ensure that online examinations do not become even less effective than traditional methods. Failure to address these issues transforms the potential of such testing into a likely avenue for duplication of existing disadvantages and falling short of the precision expected in tertiary education.

5.4. Reducing Challenges related to the design and writing of online examinations

Research provides several suggestions for overcoming difficulties related to the design and composition of online examinations, thereby improving the conduct of these assessment activities. Coordination between institutional IT staff and lecturers in putting together online examination questions is highlighted in the first recommendation so that such technology-related barriers can be anticipated and eliminated as early as the design stage (Zheng et al., 2019). The second recommendation calls for using only those online examination questions that have been adequately verified and moderated from a quality perspective before making them available to students.This helps ensure that the questions developed are accurate and appropriately organised to help avoid ambiguity in the assessment process (Coetzee, 2008). The third recommendation proposes giving computer facilities to lecturers, learners and administrators to fill the gap in technology and provide the same to all, thus minimising challenges that come up due to lack of technology (Nwagwu, 2020). The fourth recommendation addresses the adequate aspects regarding the need for building activities to refresh the knowledge and skills of the lecturers, students, and administrators on how to use eLearning's full potential, fix the digital literacy turndown and properly instigate the usage of online evaluations and dynamics (Pete &Soko, 2020). The fifth recommendation involves placing internet gadgets and Wi-Fi devices within reach of lecturers, students, and administrators, increasing availability (Pete &Sako, 2020; Teichroeb et al., 2019). For sustaining academic integrity, the study suggests including live online support to allow instant communication between students and HEIs to prevent and report problems encountered as students participate in online examinations (Mihai et al., 2023). These recommendations facilitate further improvement of online assessments in fairness and effectiveness.

5.5 Challenges and opportunities of conducting online examinations

Data from this theme highlights diverse opportunities and challenges in implementing online examinations within higher education institutions (HEIs). Online examinations, particularly on platforms like Moodle, offer significant administrative efficiencies, with centralised record-keeping streamlining tasks by consolidating student data and marks in a single system (Stevenson & Michaud, 2018). This digital shift eliminates the need for physical examination scripts, reducing time spent on manual processing and providing a clear audit trail. Additionally, the cost-effectiveness of online exams is evident in eradicating expenses associated with printing examination papers, transporting materials, and paying invigilators. By optimising resource allocation, HEIs can redirect funds towards other critical areas, such as student support services or technological upgrades, which may be particularly beneficial in resource-constrained environments.

The automation of grading, especially for objective question types such as multiple-choice and matching questions, enhances the efficiency of the assessment process. This automation, combined with structured online questions marked through predefined rubrics, ensures prompt feedback for students and a streamlined grading experience for lecturers. Cao and Porter (2019) noted that graders generally prefer online grading due to the reduced administrative workload. However, while these automated systems enhance efficiency, they may also encourage over-reliance on question formats that assess lower-order thinking skills, potentially compromising the depth and rigour of student evaluations. The challenge, therefore, lies in maintaining a balance between efficiency and educational quality, particularly when assessing higher-order cognitive skills such as critical thinking and problem-solving.

Flexibility is another crucial advantage of online examinations, allowing students to take assessments from locations of their choice. This flexibility is precious in fostering inclusion for distance learners and international students, potentially broadening the reach of HEIs. However, this benefit is counterbalanced by significant challenges, particularly in ensuring the integrity of the assessment process. Academic dishonesty, including cheating and consulting external sources during exams, remains a considerable concern. The absence of robust proctoring systems makes verifying students' identities difficult or preventing dishonest practices, which can undermine the credibility of online assessments (Stadler et al., 2021). While online proctoring has been suggested as a solution, its implementation is fraught with logistical and privacy challenges, and it often requires significant investment in technology that some institutions may not be able to afford.

The unequal internet access is further complicating the landscape of online examinations. While online exams provide flexibility, they highlight existing inequalities in digital infrastructure. Students in rural or under-resourced areas often need better internet connectivity, severely limiting their ability to participate in online assessments (Perrin, 2019). Some regions need more reliable internet access, creating insurmountable barriers for students in these areas to engage with eLearning platforms. Technical difficulties during exams, such as unstable internet connections, disrupt the examination flow and increase student stress, which can negatively affect performance. The stress induced by such technical challenges can undermine the fairness of the assessment, disproportionately impacting students from lower socioeconomic backgrounds who may need more reliable access to technology (Hennessy et al., 2016; Thompson, 2020). These issues raise serious concerns about the equity of online assessments, as they may exacerbate existing disparities between students from different socioeconomic and geographic backgrounds.

In conclusion, while online examinations present HEIs with numerous opportunities for improving efficiency, reducing costs, and increasing accessibility, these benefits are accompanied by substantial challenges. The risk of academic dishonesty, technical issues related to internet access, and the potential over-reliance on question types that do not assess higher-order thinking all threaten the quality and fairness of online assessments. Addressing these challenges requires a holistic approach involving investment in technological infrastructure, development of more sophisticated assessment tools, and careful attention to student equity. HEIs must not only

leverage the opportunities provided by online examinations but also take proactive steps to mitigate their potential drawbacks, ensuring a fair and effective assessment process for all students.

VI. Conclusion

The study highlights the numerous benefits of online examinations for stakeholders in Higher Education Institutions (HEIs), including students, lecturers, administrators, and institutions. These advantages range from cost savings, enhanced accessibility, and increased efficiency to improved security measures. Additionally, online examinations offer consistent student results and immediate feedback, making the assessment process more efficient and transparent.

However, despite these advantages, significant challenges persist in implementing online examinations. Students, particularly those from socioeconomically disadvantaged backgrounds or rural areas, continue to need help accessing reliable electronic devices and internet connectivity. These challenges exacerbate educational inequities, underscoring the digital divide that remains a critical issue in the shift to online assessments. Similarly, lecturers and administrators need help ensuring fair and secure online assessments, particularly regarding student identity verification and academic integrity. These challenges are compounded by the need for robust proctoring systems and other mechanisms to safeguard online examinations' credibility.

Moreover, infrastructure limitations, training demands, and the constraints of online examination platforms present ongoing obstacles for HEIs. Practical issues, such as ensuring adequate IT support and adapting platforms to meet the needs of different disciplines, hinder the smooth conduct of online assessments. The study highlights the challenges in designing and conducting examinations for theoretical, practical, and mathematical modules. For theoretical modules, crafting questions that accurately assess higher-order cognitive skills remains time-consuming and complex. Practical modules face inherent difficulties in replicating hands-on learning experiences online. In contrast, mathematical modules struggle with the limitations of current Learning Management Systems (LMS), which are often ill-equipped to handle complex calculations and formulas.

The study recommends a multifaceted approach to address these challenges. Close collaboration between IT personnel and lecturers is crucial for developing secure and effective examination processes. Additionally, rigorous verification of examination questions, adequate access to computer resources, and comprehensive training initiatives are necessary to ensure students and staff can navigate online platforms effectively. Providing internet devices and ensuring robust network coverage are critical to addressing the digital divide. Offering live online support during examinations can help resolve real-time technical difficulties, enhancing the overall exam experience.

In conclusion, while online examinations offer significant opportunities for HEIs, including centralised record-keeping, cost efficiency, automated grading, and flexibility,they also present various challenges that must be addressed. If addressed, the persistence of issues such as improper question design, academic dishonesty, unequal internet access, and technical difficulties could undermine the potential benefits of online assessments. Therefore, HEIS must proactively resolve these challenges while capitalising on the opportunities, ensuring that online examinations improve assessment processes and student experience meaningfully.

VII. Recommendations

Higher Education Institutions should:
Implement Diverse Assessment Methods: Adopt online and traditional assessments to ensure inclusivity and flexibility for students with varying access to technology and learning preferences.

Develop Critical Thinking and Problem-Solving Assessments: Encourage lecturers to design examination questions that assess critical thinking, analytical skills, and problem-solving rather than rote memorisation, particularly in theoretical courses. This shift in focus will better assess students' higher-order cognitive skills.

Provide Professional Development for Lecturers: Offer ongoing professional development opportunities that equip lecturers with the skills to design practical online assessments. This training should help lecturers tailor assessments to their courses' specific needs and learning objectives, ensuring meaningful evaluation.

Ensure Platforms Support Diverse Assessment Needs: Ensure the institution's online platform can accommodate various assessment types. Particular attention should be paid to numerically oriented courses, ensuring that platforms can handle complex equations, symbols, and formulas accurately.

Strengthen Academic Integrity Measures: Implement plagiarism detection tools and online proctoring software to maintain academic honesty during online examinations. These tools help verify student identity and prevent dishonest practices.

Provide Technological Support for Disadvantaged Students: Ensure that students from disadvantaged backgrounds are supported by providing access to essential resources such as tablets, laptops, smartphones, and internet devices. This provision will help address connectivity issues and promote equitable participation in online assessments.

By implementing these strategies, HEIs can foster inclusivity, maintain academic integrity, and support students and lecturers in navigating the complexities of online examinations.

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