



Online Assessments: Their Importance in Higher Education

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ABSTRACT

The main purpose of this review article is to deliberate on online assessments, the advantages and disadvantages of e-assessments, and their importance in the higher education sector, in the post-COVID era. Online assessments are the collection of tasks that are made by educational instructors in order to evaluate student performance, using Information and Communication Technologies. There are different types of techniques to conduct e-assessments, which result in different rewards and shortcomings. However, this article delivers the strategies that can be used to eliminate the downsides of online assessment.

Key words: Online Assessments, Advantages and Disadvantages of E-Assessments, Strategies to Improve the E-Assessments System

INTRODUCTION

Across the globe the educational systems have plummeted due to the COVID-19 pandemic (Wijewardene, 2021) and resulted in educational institutions being closed down to prevent the spread of the virus, and, as a result, academic activities have been disrupted (UNESCO, 2020). Education providers that cater to all levels of students are transitioning to remote learning and online assessment despite the many challenges (Gamage, De Silva & Gunawardhana, 2020). Remote learning and online teaching have affected all branches of education. Students are overly dependent on teachers, and are faced with the challenge of completing their curricula and preparing for benchmark examinations or final examinations in a short period of time (Gamage *et al.*, 2020). However, there looms uncertainty about conducting online examinations, particularly in the secondary and higher education sectors, since they require strict invigilation (Gamage *et al.*, 2020). In this backdrop, among the challenges faced by educators is academic integrity and student assessment when students are not physically in the classroom. Periodical assessment and evaluation are possible through take-home assignments, although they possess a threat to academic integrity in certain cases. Much of the writing assignments in the higher education sector that happen without proctoring can still continue to operate during the COVID-19 pandemic (Gamage *et al.*, 2020). Examinations in all education sectors have been postponed due to the pandemic [Cambridge Assessment International Education (2020); The West African Examinations Council (2021); IELTS (2020)].

Universities, in general, use formative assessment and summative assessment for different purposes (University of Greenwich, 2021). Formative assessment monitors student learning and provides them with continuous feedback. This assists students in identifying their

strengths and weaknesses and thereby improving their skills. Lecturers are able to provide weak students with support.

Formative assessments are low-stake assessments and do not contribute to the final grade/mark that students receive for the course. Some examples of formative assessments are peer evaluation, in-class worksheets, quizzes, presentations, journals, and diagnostic tests (Gamage *et al.*, 2020). However, summative assessments evaluate student learning or meeting learning outcomes at the end of an instructional unit by comparing it against some standard or benchmark (Gamage *et al.*, 2020). Summative assessments often have high stakes as they contribute to the final grade of a student. These summative tests provide feedback to the course constructors by helping them improve the course once it has concluded (Gamage *et al.*, 2020).

Assessments can be defined as an ongoing process for collecting, analyzing and explaining evidence, reflecting on findings and making informed to upsurge the student learning (Department of Education and Training Victoria, Australia, 2021). Hence assessments have been widely acknowledged as techniques in the education system to evaluate the student process, find the curriculum of knowledge gaps of the students and increase the skills of the students (Joshi, Virk, Saiyad, Mahajan & Singh, 2020). However, Skinner (1958) and Alruwais, Wills & Wald (2018) mention that after 1920 most of the countries used technology to conduct e-assessments through Sidney L. Pressey's automatic testing method, and later they assessed the student's performance with the development of ICT (Information and Communication Technology).

For example, after 1920, schools started to follow standardized assessments such as Multiple-Choice Questions (MCQ) and used automatic scoring technology to evaluate the student's knowledge (Audette, 2005). As a result of this, education institutes conducted cost-effective exams, and later they developed their unique E-assessment systems (Audette, 2005). Nevertheless, those education institutes did not fully incorporate ICT into the education system and they used the mix methods to conduct the exams. Education institutes used ICT to conduct mid-semester exams via MCQs or quizzes, and they conducted the final exams through paper-based exams. However, after 2019 with the COVID-19 global pandemic descending on the world, all educational institutes, schools and universities converted their paper-based exams into a fully digital platform and now they are conducting lectures and exams online.

ROLE OF ONLINE ASSESSMENTS

Assessments are an assortment of different tasks that teachers make use of, to measure the performance of the students (Gronlund, 2006). There are two main goals of student assessments, namely, for students' self-learning purposes and the certification purposes respectively (Carless, 2015; Rawlasyk, 2018). Further, Jacoby, Heugh, Bax, & Branford-White (2014) stated that assessments should support students to study the subject matters and be familiar with the information that they are learning. Moreover, Jacoby *et al.*, (2014) explained that the success of the assessments depend on the active participation of the student and teacher towards the completion of the assessments.

As mentioned earlier, there are two main types of assessments, namely, formative assessments and summative assessments.

- Formative assessments arise continuously throughout the course (Rawlussyk, 2018). Through this type of assessment, lecturers can discover the level of knowledge that students possess with regard to the subject. Moreover, formative assessments directly observe the student behavior and provide oral feedback (Wood, 2007). Therefore, the main purpose of the formative assessment is to provide feedback and correctives of the learning process via the assignments (Baleni, 2015) and monitor the students.
- Summative assessments, on the other hand, are used for arbitrating student achievement by using unit tests, mid or end exams, presentations, and projects (Baleni, 2015) and this method is followed and implemented at the end of a course (Gronlund, 2006).

However, the online assessment platform can be easily adopted to conduct formative assessments because formative assessment methods are straightforward and they facilitate students to do their self-assessments (Dennick, Wilkinson & Purcell, 2010). For example, students can do online past papers before the real exam and adjust their answers according to the feedback given by the system.

Meanwhile, the purpose and idea of online assessments are not different from the traditional assessments, because online assessments are also used for evaluating the student's performance, and through the online assessments, students can engage in self-study. Finally, lecturers can give feedback to students by evaluating the students' online assessments. However, compared to the traditional assessments, e-assessments have been developed with the e-Learning system, and according to the Joshi *et al.*, (2020) e-assessments have been established by altering paper-based versions of assessments such as multiple-choice, true-false, multiple responses, and extended matching questions into the digital platform. As a result, the current assessment-making process became a more relevant, valid, and meaningful process.

TYPES OF ONLINE ASSESSMENTS

In 1999, Morgan and O'Reilly stated that universities and higher education institutes can use online essays, reports, text-based scenarios, multiple-choice, true/false matching, short answer tests, and online conferencing debates to evaluate the students' critical thinking ability, problem-solving skills, communication skills and teamwork skills. Then, in 2002, Robles and Braathen explained that through the online tests and quizzes, lecturers can develop the assessment plan. Further, Robles and Braathen (2002) revealed that universities can use emails, drop boxes, external links, discussion groups and self-texts to assess online assessments.

Nevertheless, as a result of the COVID 19 pandemic, online assessment methods became more creative and innovative with the use of the following ICT tools:

1. **Computer-Assisted e-Assessments:** Now universities are using multiple choice multiple answers (MCMA), multiple-choice single answers (MCSA), true-false questions as online assessment methods by using advanced database systems. Examination departments are developing a common database with more than 1000 questions which are relating to a particular subject, and throughout those 1000 questions, one student can answer 20 to 50 questions (Taylor, 1953).

2. **Hotspot Questions:** In these questions, students can mark on an image or map by dragging labels directly over an image. Most of the time, hotspots questions are used for filling the blank activities. Students can fill the blank by dragging the correct word (Sim, Holifield and Brown, 2004).
3. **Virtual Examination:** Especially for medical, science, information technology, and sports students, examiners can create a virtual environment to conduct the exam. For example, medical students can do surgery as an exam with a virtual patient (Calinici and Muntean, 2010).
4. **Moodle:** This is a learning management system, and students can upload the computerized essay, reports via Moodle (Gamage, Ayres, Behrend, Smith, 2019).
5. **Digital 'Open Book' Examination:** This is very similar to the traditional sit-down exam, and examiners prepare the exam paper for a certain subject and provide a deadline to the students (Joshi *et al.*, 2020). For example, examiners upload the exam paper into Moodle and give the students eight to ten hours to upload the answer sheet to Moodle. This is named a take-home exam in some countries.
6. **Video Evaluation:** Due to distance learning and the time zone difference, students cannot do presentations in front of the lecturer at the same time; as a result, the students can record the presentation and upload it to Moodle (Joshi *et al.*, 2020). The lecturer can then assess the video presentation.
7. **Digital Portfolios Assessment:** Some universities have e-portfolio platforms (Joshi *et al.*, 2020) named Mahara, WordPress, etc. This is similar to blog writing, and students can write and publish an essay that is related to subject matter in this e-portfolio platform. Then, other reviewers can comment on that and examiners can provide grades based on those comments.
8. **Online Projects:** Rather than the traditional written assessments, now universities are evaluating students on role-plays, case studies, or online debates. For example, examiners are providing the problem-solving exercises and students should provide the answers for that case study via role-plays (Joshi *et al.*, 2020).

FACTORS THAT ARE AFFECTING ONLINE ASSESSMENTS

In this modern era of teaching and learning, self-driven online learning systems and online assessments encourage the student to learn through new experiments and discoveries (Osman, Wahid and Zakaria, 2018). However, the success of those discoveries and students' performance depend on several factors. For example, according to Ozkan and Koseler (2009), in the e-learning system framework, the success of the e-learning system including the online assessments is based on six factors such as system quality, internet quality, service quality, content quality, learners' perspectives and instructor attitudes. Within these six factors, Ozkan and Koseler (2009) categorized system quality, service quality and content quality into the technical entity, and learner's perspective, instructor attitudes, and supportive issues into a social entity.

Under technical entity or issues, Ozkan and Koseler (2009) explained the following:

- **System quality** means the quality of the hardware and software which are used for e-learning and online assessments. For example, secure, reliable and user-friendly e-learning systems and portals and the good working condition of electronic devices.
- **Internet quality** means the quality of the internet services with the high-speed bandwidth, transparent pricing, supportive internet providers, reliability service etc.

- **Service quality** presents the administrative affairs such as, tracking student performance and work, managing and authorizing different courses with the course coordinators, purchasing necessary resources, and system maintenance.
- **Content quality** represents the well-organized, effectively presented, interactive, clearly written and flexible, e-learning system.
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Next, under the social entity, Ozkan and Koseler (2009) clarified the following:

- **Learner's perspective:** E-learning system developers need to identify the target student group and students' characteristics such as level of motivation, beliefs, level of confidence, computer anxiety, resistance towards the technology etc.
- **Instructor Attitudes:** Within this factor, instructors should have enough time, and instructors need to interact with students, while lecturers must have good technology skills and knowledge.

In addition to these six factors, Mayerova and Rosicka (2015) mentioned that the computer literacy of the students and teachers, the teaching method of the lecturers with the new technologies such as videos, virtual environment, zoom etc., are the other critical factors required for the success of the e-learning systems. Moreover, Osman *et al.*, 2018 added that collaboration between the library, faculties, and departments also plays a major role when it comes to sharing the IT resources, developing subject content, and identifying the information literacy gap among students.

ADVANTAGES AND DISADVANTAGES OF ONLINE ASSESSMENTS

Advantages of e-assessment

In the lecturer's perspective

E-assessments save time for lecturers because automatic e-assessment systems are marking the students' exam questions and provide quality feedback (Way, 2012). On the other hand, the e-assessment system can record the students' performance and make analyses through those performances (Ellaway and Masters, 2008). As a result, lecturers can track the students very easily, and lecturers can improve the student's skills based on the feedback given by the system. Further, e-assessments will reduce the teachers' burden and level of stress when it comes to assessing large numbers of assessments (Nicol, 2007).

In the student's perspective

- Online assessments are a very user-friendly and support interface for the students because when it comes to online quizzes, students only need to select the answers for the given questions and submit them. Then the student will get quick results with the feedback (Cazan and Indreica, 2014). On the other hand, for the report writing assessments, the student can type the assessment and submit it into the submission portal. Then after a certain period of time students will get a result with specific feedback from the lecturers (Ridgway, McCusker and Peard, 2004).
- The given results from this e-assessment system are highly accurate and very fair compared to the traditional paper-based assessments because when assessing, the assessment system is only considering the students' answers rather than the students' attitudes. Further, most of the e-assessment systems are focusing on assessing the subject and educational goals. For instance, one of the reputed English language tests in developed countries is checking the student's speaking, writing, listening, and reading

ability through the different questions (Gilbert, Whitelock and Gale, 2011). As a result, students can improve themselves by knowing the lacking part (Marriott, 2009).

- Furthermore, throughout the online assessment system students can compete for their studies at any time without any problem of the location. This encourages distance learning, and without facing traditional exams, students can complete their studies with high flexibility (Ridgway *et al.*, 2004).
- In addition, students have a chance to repeat some exams such as quizzes and submit the highest marks (Cazan and Indreica, 2014).
- Online assessments encourage independent learning and self-evaluation among students and it develops effective time management strategies for students (Cazan and Indreica, 2014).

In the perspective of the higher education institute

Institutes have a chance to increase the number of students without increasing the number of staff because through the online lecturing session one lecturer can conduct the lecture for a large number of students, and through online exams such as online quiz portals institutes can measure the performance (Ridgway *et al.*, 2004). Additionally, universities have an online record of the students' results and universities can use them as proof (Way, 2012). Additionally, higher education institutes can save the overhead costs incurred by paper-based exams and save time (Ridgway *et al.*, 2004).

Further, institutes have the advantage of the security of the e-assessment, because students do not have a chance to copy the answers from someone else. After all, universities can check the plagiarism of the reports, as universities have access to verify the student username and password (Alruwais *et al.*, 2018).

Disadvantages of e-assessment

Way (2016) mentioned that the lack of computer literacy of the students and lecturers acts as a barrier to the e-assessments system, and poor technical infrastructure development, inadequate computer devices and internet problems are discouraging students to participate in online sessions, e-portfolios and examinations. Apart from that, Ridgway *et al.*, (2004) explained that sometimes there are difficulties in e-assessment systems during the process of scoring and correcting questions, especially in the open-ended questions, because online systems do not have the ability to think in different ways like humans. Yet, group projects of students cannot be properly evaluated by the online assessment method (Alruwais *et al.*, 2018).

Additionally, Bardhan, Dey and Mohanty (2020) explained that, students can use several malpractices for examinations and assignments and lecturers cannot trace most of those malpractices because of the lack of advanced technological knowledge and human involvement. For example, students can use notes, the internet, and their peers to complete the online quizzes and exams. On the other hand, Boitshwarelo, Reedy and Billany (2017) revealed that the depth of online questions is still problematic when compared with the unit content, and Russell and Shepherd (2010) declared that the development process of the online assignments takes more time.

Strategies to overcome the disadvantages of online assessments

To maintain academic integrity and increase the effectiveness of online assessments without cheating, identity verification, and plagiarism, Singh and Pan (2004) proposed that lecturers should be familiar with the students' writing styles and thinking patterns, which can be ascertained through several discussion sessions. If the lecturer is not comfortable with the written pattern of the student, Heberling (2002) recommended checking the student's wording and phrases on the internet or by using plagiarism software. For the identity verification of the student, institutes can use both photo ID and student signature, and later examiners can cross-check the student signatures with the main system (Gaytan, 2004).

On the other hand, lecturers should give immediate and detail-oriented feedback to the students to complete their studies. Further, designed online assessments should be aligned with learning outcomes of the subject (Singh and Pan, 2004), and lectures should give small assignments on a weekly basis to the students. For example, on a weekly basis, lecturers can give different topics to the students for writing a summary including their ideas as well. This will support the development of a good relationship between lecturer and student. If not, lecturers can use the peer-review method to assess the student assessment as well.

On the other hand, e-assessment system developers need to develop a technologically advanced system by using artificial intelligence and machine learning. Then, e-assessment systems can think like a human, and e-assessment systems can provide realistic judgments like a human.

Examiners need to use alternative assessment methods to measure the students' performance. For example, Bardhan (2020) explained that the examiners can use Google form-based quizzes, Kahoot!, quizizz, Socrative, Near Pod, and Educanon as the alternative methods to access the performance of the students. Meanwhile, the government should take the responsibility of providing the required equipment to set up an effective e-assessment system, and telecommunication companies need to provide a fast internet connection to the students at a reasonable price.

CONCLUSION

As a result of the COVID 19 global pandemic, online assessments have become the most reputed educational strategy in higher education in order to measure the performance of the students with the purpose of self-learning and certification process under the formative and summative assessments. Furthermore, with the use of ICT tools, universities today, are following computer-assisted e-assessments, hotspot questions, virtual examination, Moodle, digital open book examinations, video evaluation, digital portfolios assessment, and online projects to conduct the e-assessments. Moreover, online assessment methods have various types of benefits and drawbacks, but the success of online assessments depends on the system quality, internet quality, service quality, content quality, learner's perspectives, and instructor attitude. However, instructors need to use innovative assessment methods, be aware of the writing style of students and provide detailed feedback in terms of overcoming the disadvantages of online assessments.

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