Student Reactions to E-Assessments, for Controlled Tests in a Face-to-face Environment, in a Human Resource Management Module

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Abstract

In the context of the changing nature of work and education globally, it is vital that assessment methods at higher education institutions (HEIs) implement the use of technology. Over the past years, management study-based modules, such as Human Resource Management (HRM) modules at the University of KwaZulu-Natal, depend on manual pen and paper assessment methods. This study focuses on the transformation process of assessments into e-assessments. The theoretical frameworks utilised to underpin this study were the TAM and UTAUT frameworks, which assisted in understanding the perceptions associated with the acceptance and use of technology. Data were collected from undergraduate students that had completed one paper-based assessment and then one online assessment (e-assessment) of a HRM module. A paper-based questionnaire was then administered to these students to gain insight into their reactions and acceptance of the transformation from paper-based to e-assessment methods. Data were then analysed statistically to obtain aspects that had a significant impact on this transformation. Discussions and conclusions will thereafter be provided on both the positive and negative facts that were obtained through the study. This study will assist HEIs, and specifically academics in the disciplines of Management Studies, in understanding students' perceptions of the implementation of e-assessments as a form of assessment methods in curricula. Continued research in this field would be proposed, as there is a lack of understanding and implementation of e-assessments as part of Management Studies modules at the University of KwaZulu-Natal.

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Introduction

This study focused on second-year HRM students who had previously only been assessed by means of pen-based assessments. The e-assessment was a new concept that was introduced to students via revision online quizzes and then a final e-assessment. E-assessment can be defined as 'assessment methods and practices that emphasize the role of information technology relative to measuring students' learning' Gipps (2003:26) states, 'If teaching and its associated resources become electronic, then assessment too will need to take that route, to ensure alignment between the modes of teaching and assessment'. This study aimed at creating awareness that e-assessments should not be restricted to students taking technologically based modules, but can also be utilized effectively in theory-based modules such as HRM.

Background

Technology has been used through many platforms at tertiary education level, such as the use of Learning Management Systems (LMS). Typical LMSs adopted internationally include Blackboard, e-College, and Moodle adopted throughout the educational sector. Moodle supports the effective implementtation of modern distance education technologies through integrated advanced services for interactive dialogue and communication between a student and a teacher, controlling knowledge at different stages of the distance process and achieving complete localization through language packs (Koneru 2017). Schools with access to technology prior to the assessment is evident in South Africa, as evidence suggests that many students in South Africa do have access to computers at school level. The Provincial Department of Education created 25-seat computer labs with internet and e- mail capabilities at all public schools in the province. Additionally, there are also nine mobile bus labs with satellite dishes mounted on the roof and capable of providing internet access (Sobikwa & Ditsa 2017). This is not sufficient for all students, as it is basic computer literacy and students from rural schools in South Africa who did not have access to these facilities have to be taken account of. However, this was the

first online assessment that students completed in this qualification. Some platforms even incorporate such technology to measure teaching effectiveness and student performance. Furthermore, social websites, like Facebook.com, have become so popular that 85% to 99% of college students use it in one form or another (Jeljeli, Alnaji & Khazam 2018). It can therefore be stated that the concept of online education is not new to these students. New developments and inventions created with technology are now utilized by almost all sectors, including education. Online learning popularity is steadily increasing and parallels the continual development and implementation of information and communication technology, especially as it penetrates into every aspect of education (Santoso *et al.* 2018). This study aimed to achieve the following objecttives:

- To determine students' level of computer literacy (Section B);
- To determine students' prior exposure to online assessment (Section C – q7, 7a);
- To establish students' overall experience with online assessment (Section C – q7b, 7c); and
- To understand students' perceptions and attitudes regarding online assessment (Section E).

Literature Review

The theoretical framework utilised in this study is the Technology Acceptance Model (TAM), which focuses on understanding student perceptions of accepting technology in education. As Silva states, 'I believe that TAM has provided us with valuable insights, such as the relevance of designing user friendly interfaces and accountability emphasizing the value of systems in terms of their productivity and applicability' (Silva 2015). The Unified theory of acceptance and use of technology (UTAT) that is aimed at 'User acceptance in information technology' and Computer-based training methods (CBT) is also relevant to this study. This user acceptance is dependent on external factors such as adapta-bility to smartphones and mobile applications. This study was conducted using the Moodle software system that is familiar in the institution, Moodle is also smartphone-user friendly, as a recent Moodle mobile application has been launched. 'The mobile learning strategies arose as a consequence of transferring their use to the classrooms as an additional learning tool, promot-

ing ubiquitous learning, able to be conducted at any time and place' (Mojarro Aliaño *et al.* 2019). The development of education is influenced by the advancement of technology. Although most first-world countries and some institutions within South Africa have implemented technology-based assessments, it is yet to be introduced in many disciplines. The above-mentioned theories serve as a guideline to assist disciplines such as the one that forms part of this study, to adapt and accept technology within its methods of delivery and assessment.

These methods are seen as effective and have previously been used in studies similar to this study. Online assessments are not always viewed as a success. In contemporary education, universities invest heavily in the integration of Learning Management Systems (LMS) with traditional classrooms. Learning Management Systems (LMS) that can be utilised for teaching and learning processes in the context of Higher Education Institutions, for example Moodle, ATutor, Blackboard and SuccessFactors (Kasim & Khalid 2016). Conversely, such technologies face a high rate of failure and not all learners are satisfied with LMS services. In turn, this leads to the exploitation of interactive features and services, which are subsequently included in the process of teaching and learning (Al-Azawei 2019). However, this is not always the case. A recent study that was conducted to establish the effectiveness of Moodle at tertiary institutions found that students achieved significantly better results with homework based on web technologies than with paper-and-pencil homework (Al-Azawei 2019). Another study conducted by found that 'student perceptions were surveyed, and results indicated that students were satisfied with the system, felt they engaged the system more, and felt they learned the course materials better' (Johnson & Samora 2016). It is therefore vital that pilot test, revision quizzes and tasks are consistently made available on these systems, as it is found that several challenges are associated with e-learning systems, the most significant of which is the lack of student motivation in various course activities and for various course materials (Hussain *et al.* 2018). This can be achieved through pilot studies, such as those that were used in this study. These consisted of online revision quizzes on sections that would be tested in the formal e-assessment. This allowed students to become familiar with the concept of e-assessment, as well as understand the skill and process of this testing method. The method of e-assessment is not always seen as negative, as a study by Aliano found that students believe that online education 'makes it so that the process of learning becomes more fun,

provoking a greater interest in the students when facing the acquisition of new knowledge' (Mojarro Aliaño *et al.* 2019).

Although in most European countries, computer-aided training has been implemented successfully for many years, in Romania, there is still a trace of reluctance when discussing this mode of learning. We are definitely in the technological age, and students' access to information is much higher than 20 years ago (Florea & Purcaru 2016). The adaptation of these will be a smooth transition in developing countries such as South Africa, as it was stated in 2015 that over 60% of surveyed higher education institutions agreed with the statement 'online education is critical to the long-term strategy of my institution' (Robinson 2017). Furthermore, as the user adoption plays an important role for the successful and effective implementation of any project, thus, there is a need to assess user acceptance of the e-service technology (Taherdoost 2018). However, on web-based platforms there are no face-to-face meetings, and it is difficult to determine student engagement levels in online activities such as participating in discussion forums or watching videos (Hussain *et al.* 2018). This is due to the fact that many students still prefer interacting and communication on a face-to-face basis. In web-based learning systems, a student's degree of engagement in educational learning is lower than that in traditional education systems (Hussain *et al.* 2018) This study was practised for the first time with students that formed part of management studies; they had therefore relied on face-to-face engagement and paper-based testing methods prior to this study.

The Introduction and Phasing in of Technology into Education

Contemporary society requires a new type of culture and civilization. Teacher training must redefine itself according to the new standards of society and students' needs (Florea & Purcaru 2016). It is therefore vital for teaching teams at higher education institutions to develop strategies that will support students when they are introduced to online learning. Learning strategies reflect an individual's ability to use cognitive strategies effectively, consisting of students' perception of self-efficacy to set goals, maintain motivation and sustain a positive attitude towards learning (ChanLin 2012). This can also be achieved with the aid of learning management systems. 'Learning Manage-ment Systems are also platforms that include learning systems, course management sys-

tems, content management systems, portals, and instructional management systems' (Kasim & Khalid 2016).

Methodology

This study adopted a quantitative approach. A paper-based questionnaire was administered to students to gain insight into the implications and acceptance of the transformation from hand-written to online assessment methods. This questionnaire was completed by students immediately after their online assessment had been completed, in an effort to maximize participation. UKZN required that ethical procedures be followed, which included participant consent to participate in this study, anonymity of participants, and gatekeepers' consent to administer the questionnaire. A purposive sampling method was adopted. The sample size was 94, while the total population was 112. A pilot of the online assessment was conducted with students as revision quizzes prior to the actual assessment. In order not to disadvantage the students, the module consisted of two assessments, which was one paper-based assessment and one online assessment. Data were analysed using SPSS software. Tests used in the analysis include descriptive statistics through means and standard deviations, where applicable. Frequencies are represented in tables or graphs; Chi-square goodness-of-fit-test – a univariate test, used on a categorical variable to test whether any of the response options are selected significantly more/less often than the others; ANOVA – a test for several independent samples that compares two or more groups of cases in one variable; Binomial test – tests whether a significant proportion of respondents select one of a possible two responses; One sample t-test – tests whether a mean score is significantly different from a scalar value; Independent samples t-test – a test that compares two independent groups of cases; and Friedman's test – to test for repeated measures.

Discussion of Findings

The sample consisted of 67% females. The majority were students between the age of 18 to 21 (82%), with 12% over the age of 21. Most of the students were in Year 2 of their study (81.9%), while 17% were in Year 3, and 1.1% in Year 4.

The results of binomial tests indicated that a significant,

- 82% own a computer at home, p<.0005;
- 98% are comfortable using a computer, p<.0005;
- 62% rated their computer literacy skills as average, p=.030 (see Figure 1 below); and
- 82% have experience with non-traditional self-assessments (like class revision quizzes).

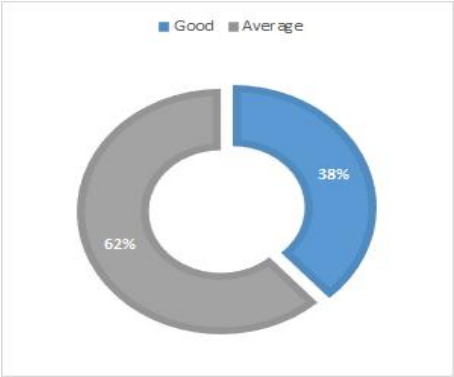

Figure 1: Self-rating of computer literacy skills

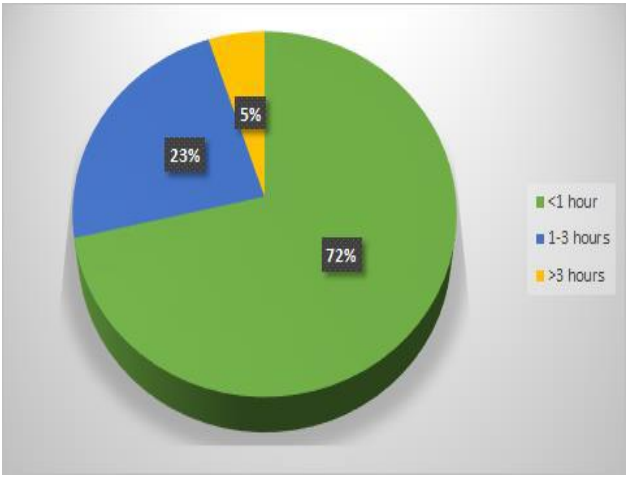

Figure 2: Time spent on online self-assessments

A chi-square goodness-of-fit test revealed that a significant 55 (71.4%) of those who have had prior experience have spent less than an hour on it, $p<.0005$ (See Figure 2 above).

Student perceptions were collected through a list of items (listed and coded as in Table 1) which students had to rate using a Likert scale with a rating scale adopted as 1 = strongly disagree and 5 = strongly agree, so that a higher score shows more agreement.

Table 1: Coding of items to determine student perceptions

Code	Criteria
Percep1	Using a computer for the assessment task adds to the stress of the actual assessment
Percep2	I expect computers to be used as part of assessment at university
Percep3	I would feel more comfortable if the assessment was on paper, not electronic
Percep4	I find it hard to concentrate on the questions when doing an electronic assessment
Percep5	I would rather take an assessment on a computer than write it on paper, because I am used to working online
Percep6	Electronic assessment is appropriate for this module subject area.
Percep7	This module content is too complex to be assessed with electronic assessment using multiple-choice questions.
Percep8	Electronic assessment does not solely test my knowledge in this subject, but also tests my IT skills
Percep9	Electronic assessment has an important role to play in higher education.
Percep10	Since you can guess the answer, electronic assessment using multiple-choice questions does not accurately reflect your level of knowledge.
Percep11	Electronic assessments use less paper, which is important to me
Percep12	Technical problems make electronic assessments impractical
Percep13	There are serious health and safety issues with adopting electronic assessment exams problems make electronic assessment impractical
Percep14	Electronic assessment is more accessible than paper-based exams
Percep15	Marking is more accurate when using electronic assessment, because computers do not make errors like human markers. Assessment is more accessible than paper-based exams
Percep16	The technology used in electronic assessments is unreliable
Percep17	Electronic assessments favour some students more than others

Percep18	Paper-based exams are more fair than electronic assessments
Percep19	Randomised questions from a bank means that some students get easier questions than others
Percep20	Electronic assessment is just as secure as paper-based assessment
Percep21	I am confident that my marks for electronic assessments are secure
Percep22	It is easier to cheat during an electronic assessment than with paper-based assessments
Percep23	The electronic assessment system is vulnerable to hackers
Percep24	Username and password login provide adequate security for electronic assessment
Percep25	The potential for immediate feedback with electronic assessment can help me learn from my own mistakes
Percep26	Electronic assessment provides greater variety than paper-based exams
Percep27	Electronic assessment does not really benefit my learning
Percep28	Electronic assessment goes hand-in-hand with e-learning (e.g. using Moodle)
Percep29	I found the electronic assessment tool easy to use
Percep30	Taking self-assessments on the same tool made me familiar with the interface prior to the summative assessment
Percep31	I needed guidance from assistants on how to take the electronic assessment
Percep32	I required more time to complete the electronic assessment
Percep33	More of the modules I take should adopt electronic assessment

The frequency distribution of student responses to the above items presented to them is summarised in Figure 3 on the facing page.

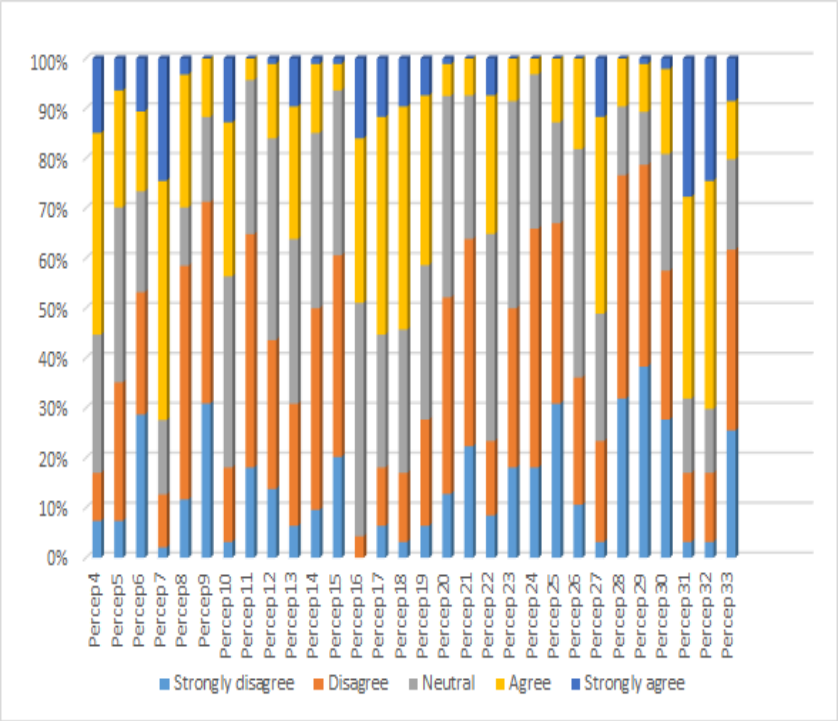

Figure 3: Frequency distribution

A one-sample t-test was applied to test for significant agreement or disagreement to each of the items.

Table 2: Results of one-sample t-test on student perceptions

Code	Mean	Std Dev	p-value
Percep1	3.51	1.233	<.005
Percep2	2.02	0.984	<.005
Percep3	3.04	1.087	.705
Percep4	3.46	1.094	<.005
Percep5	2.94	1.035	.551
Percep6	2.55	1.341	.002

Percep7	3.82	0.994	<.005
Percep8	2.63	1.097	.001
Percep9	2.1	0.974	<.005
Percep10	3.35	0.991	.001
Percep11	2.21	0.788	<.005
Percep12	2.6	0.943	<.005
Percep13	3.09	1.074	.444
Percep14	2.56	0.887	<.005
Percep15	2.27	0.882	<.005
Percep16	3.61	0.806	<.005
Percep17	3.43	1.052	<.005
Percep18	3.44	0.957	<.005
Percep19	3.15	1.047	.171
Percep20	2.44	0.837	<.005
Percep21	2.21	0.878	<.005
Percep22	3.11	1.031	.320
Percep23	2.4	0.884	<.005
Percep24	2.19	0.766	<.005
Percep25	2.15	1.005	<.005
Percep26	2.71	0.887	.002
Percep27	3.36	1.035	.001
Percep28	2.01	0.922	<.005
Percep29	1.95	0.988	<.005
Percep30	2.36	1.125	<.005
Percep31	3.76	1.104	<.005
Percep32	3.74	1.077	<.005
Percep33	2.41	1.231	<.005

As summarised in Table 2, there is significant agreement that:

- using a computer for the assessment task adds to the stress of the actual assessment, mean=3.51, p<.0005.
- students find it hard to concentrate on the questions when doing an electronic assessment, mean=3.46, p<.0005.
- the module content is too complex to be assessed with electronic assessment using multiple-choice questions, mean=3.82, p<.0005.

- since you can guess the answer, electronic assessment using multiple-choice questions does not accurately reflect your level of knowledge, mean=3.35, p=.0001.
- the technology used in electronic assessments is unreliable, mean=3.61, p<.0005.
- electronic assessments favour some students more than others, mean=3.43, p<.0005.
- paper-based exams are fairer than electronic assessments, mean=3.44, p<.0005.
- electronic assessment does not really benefit students' learning, mean=3.36, p=.0001
- more guidance is required from the assistants on how to take the electronic assessment, mean=3.76, p<.0005
- more time is required to complete the electronic assessment, mean=3.74, p<.0005.

Likewise, Table 2 presents that there is significant disagreement that:

- students expect computers to be used as part of assessment at university, mean=2.41, p<.0005.
- electronic assessment is appropriate for this module subject area, mean=2.55, p=.0002.
- electronic assessment does not solely test knowledge in the subject, but also tests IT skills, mean=2.63, p=.0001.
- electronic assessment has an important role to play in higher education, mean=2.01, p<.0005.
- electronic assessments use less paper, which is important, mean=2.21, p<.0005.
- technical problems make electronic assessments impractical, mean=2.6, p<.0005.
- electronic assessment is more accessible than paper-based exams, mean=2.56, p<.0005.
- marking is more accurate when using electronic assessment, because computers do not make errors, like human markers assessment is more accessible than paper-based exams, mean=2.27, p<.0005.
- electronic assessment is just as secure as paper-based assessment, mean=2.44, p<.0005.

- students were confident that their marks for electronic assessments are secure, mean=2.21, p<.0005.
- the electronic assessment system is vulnerable to hackers, mean=2.4, p<.0005.
- username and password login provide adequate security for electronic assessment, mean=2.19, p<.0005.
- the potential for immediate feedback with electronic assessment can help me learn from my own mistakes, mean=2.15, p<.0005.
- electronic assessment provides greater variety than paper-based exams, mean=2.71, p=.0002.
- electronic assessment goes hand-in-hand with e-learning (e.g. using Moodle), mean=2.01, p<.0005.
- the electronic assessment tool was easy to use, mean=1.95, p<.0005.
- more of the modules should adopt electronic assessment, mean=2.41, p<.0005.

Factor analysis with Promax rotation was applied to the 33 items. During the process of extracting factors, several items were dropped from the solution either because they did not load strongly onto any factor or because they cross loaded onto more than one factor. The final solution shows 24 retained items across 3 factors.

A KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy of .705 indicates that the data were adequate for successful and reliable extraction. In addition, a significant Bartlett's test (p<.05) indicates that correlations between items are not too low for reliable results.

Three factors were extracted which account for 51.95% of the variance in the data. Table 3 below shows how these items are grouped across the three factors.

Table 3: The factor matrix

	Factor		
	Attitude (ATT)	Ease of Use, Usefulness and Security (EUS)	Fairness (FAIR)
I would NOT feel more comfortable if the assessment was on paper, not electronic	.904		

Using a computer for the assessment task DOES NOT ADD to the stress of the actual assessment	.811		
I DO NOT find it hard to concentrate on the questions when doing an electronic assessment	.781		
I expect computers to be used as part of assessment at university	.755		
More of the modules I take should adopt electronic assessment	.743		
I would rather take an assessment on a computer than write it on paper, because I am used to working online	.673		
Electronic assessment is appropriate for this module subject area.	.627		
Electronic assessment goes hand-in-hand with e-learning (e.g., using Moodle)	.584		
Electronic assessment provides greater variety than paper-based exams	.544		
Electronic assessment has an important role to play in higher education.	.527		
Technical problems DO NOT make electronic assessments impractical	.464		
Electronic assessments use less paper, which is important to me	.346		
Taking self-assessments on the same tool made me familiar with the interface prior to the summative assessment		.928	
Electronic assessment DOES benefit my learning		.719	
I DO NOT require more time to complete the electronic assessment		.718	
I found the electronic assessment tool easy to use		.699	
I am confident that my marks for electronic assessments are secure		.506	
Username and password login provide adequate security for electronic assessment		.405	
Electronic assessment does not solely test my knowledge in this subject, but also tests my IT skills		.386	
The potential for immediate feedback with electronic assessment can help me learn from my own mistakes		.358	
Electronic assessments DO NOT favour some students more than others			.763
Paper-based exams are NOT more fair than electronic assessments			.739
It is NOT easier to cheat during an electronic assessment than with paper-based assessments			.457

Randomised questions from a bank DOES NOT mean that some students get easier questions than others			.386

The results of the three factors were grouped as Attitude; Ease of use, Usefulness &, Security (EUS); and Fairness (FAIR). These factors were tested for reliability using Cronbach's alpha.

Table 4: Alpha values per factor

Factor	Alpha value
Attitude (ATT)	.902
Ease of use, usefulness, security (EUS)	.826
Fairness (FAIR)	.621

All three factors emerged with reliable alpha values as indicated in Table 4 above.

A further one-sample t-test was conducted to determine the significance levels of these factors, which are summarised in Table 5 below.

Table 5: T-test results per factor

Factor	Mean	Std Dev	p-value
ATT	2.52	.732	<.005
EUS	2.29	.673	<.005
FAIR	2.72	.699	<.005

The t-test results indicated significant disagreement (mean < 3, p<.0005) with all three factors. This can be interpreted as students do not,

- have a general positive attitude towards e-assessment;
- think e-assessment is useful, easy to use or secure;
- think e-assessment is fair.

Analysis of these 3 factors, using Friedman's test, shows that UES is significantly smaller than ATT and FAIR, p=.001. This means that students disagree the most that e-assessment is fair, compared to their attitude and

perception of usefulness, usability and security of e-assessments. There are no significant differences in these scores across gender, age or year of study; nor across computer ownership.

Students were asked to provide their general comments on the adoption of e-assessments for formative and summative purposes. Their responses were analysed using thematic analysis and the themes are summarised in the word clouds presented in Figures 4 and 5 below. It must be noted that providing additional comments was optional for the respondents.

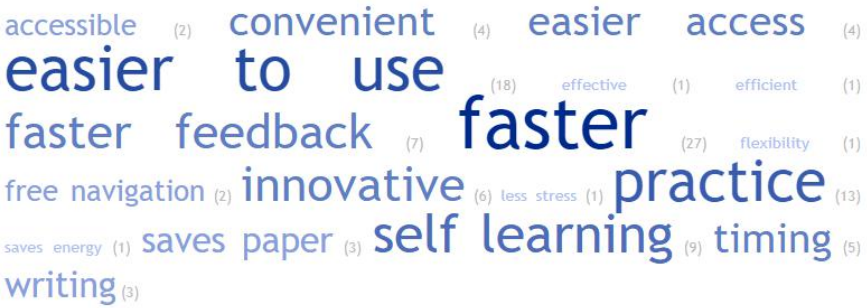

Figure 4: Student feedback on e-assessment for formative purposes

As presented in Figure 4, some students found e-assessments for self-assessment were easy to use, and easier to access, being convenient, as they were accessible from any location. They appreciated the speed at which the assessment could be completed online, allowing them the flexibility to be able to practise, with faster feedback, which encouraged and supported self-learning. While they acknowledged that e-assessments saved paper and energy, it also saved the tedious writing that they had to complete in paper-based tests.

As presented in Figure 5, below, some students found e-assessments for summative assessment were a good experience overall. While others indicated this format was easy to access, convenient, efficient and faster, other students expressed concern at technical issues, the added stress of the online environment and the amount of time allocated to complete the assessment. A number of students were more definitive, stating that they clearly 'prefer written' assessments, as they were 'not comfortable' with the 'new experience'.

Figure 5: Student feedback on e-assessment for formative purposes

Conclusion

This study highlights that students were comfortable with adopting e-assessment in a self-assessment environment, but expressed concern and dissatisfaction for adopting e-assessment in a summative environment. The quantitative findings highlight that students felt that e-assessment is unfair, not useful, not usable, and they were not confident of the security of e-assessments. This was reiterated in the qualitative comments provided by some students who indicated that they preferred written assessments.

Recommendations

From the researchers' experience with this project, the following is recommended:

1. Training for administrative staff with e-assessment is essential so that administrative staff understand the process of e-assessments and methods that they can use on the system to assist academics in the related tasks.

2. Revision quizzes to prepare student's is necessary, as it was seen as an effective tool during the pilot testing in this study. It allows students to become familiar with the concept and thus results in students becoming more familiar with the assessment method, hence ensuring that the assessment is effective when implemented.
3. Creating an awareness amongst academics for the benefit of e-assessments. It was found that many academics within certain disciplines were not aware of how beneficial using e-assessment is and the manner in which marks are able to be released timeously without much marking. Once awareness of this is achieved and academics are familiar with the concept, they will be more at ease to implement this type of online assessment.
4. Training for invigilators in e-assessment venues is essential for-the invigilators so that they are familiar with the procedures to be followed.
5. Follow-up studies on e-assessments across disciplines will enhance the effectiveness and understanding in the concept of online assessment, which will result in the acceptance and adoption of it throughout discipline in universities. This will also lead to the establishment of consistency of assessment methods for students across the university.

Future Research

This research was conducted prior to the COVID-19 pandemic, in an environment where e-assessment was optional, and essentially adopted by academics who had personal interest in exploring new assessment methods. However, the pandemic has forced academics worldwide to adopt online assessment methods. Hence, further studies on the experiences of the implementation of e-assessment on non-IT students, in typical face-to-face institutions would add to the body of literature on e-assessments.

References

Al-Azawei, A. 2019. What Drives Successful Social Media in Education and E-learning? A Comparative Study on Facebook and Moodle. *Journal of Information Technology Education* 18: 253 – 274. https://doi.org/10.28945/4360

ChanLin, L.-J. 2012. Learning Strategies in Web-supported Collaborative Project. *Innovations in Education & Teaching International* 49,3: 319 – 331. http://doi.org/10.1080/14703297.2012.703016

Gipps, C., G. Stobart 2003. Alternative Assessment. In Kellaghan, T. & D.L. Stufflebeam (eds.): *International Handbook of Educational Evaluation: Kluwer International Handbooks of Education* 9: 4 - 33. https://doi.org/10.1007/978-94-010-0309-

Florea, O. & M.A.P. Purcaru 2016. Teaching CBT for Students: Good Practice Example. *Bulletin of the Transylvania University of Brasov. Series VII: Social Sciences Law* 9: 129-136. https://ukzn.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=121252482&site=ehost-live&scope=site

Hussain, M., W. Zhu, W. Zhang & S.M.R. Abidi 2018. Student Engagement Predictions in an E-Learning System and their Impact on Student Course Assessment Scores. *Computational Intelligence & Neuroscience* Article ID 6347186*:* 1 – 21. https://doi.org/10.1155/2018/6347186

Jeljeli, R., L. Alnaji & K. Khazam 2018. A Comparison between Moodle, Facebook, and Paper-based Assessment Tools. *International Journal of Emerging Technologies in Learning* 13,5: 86 – 99. https://doi.org/10.3991/ijet.v13i05.8091

Johnson, D. & D. Samora 2016. The Potential Transformation of Higher Education through Computer-based Adaptive Learning Systems. *Global Education Journal* 1: 1-17. https://ukzn.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=112407351&site=ehost-live&scope=site

Kasim, N.N.M. & F. Khalid 2016. Choosing the Right Learning Management System (LMS) for the Higher Education Institution Context: A Systematic Review. *International Journal of Emerging Technologies in Learning* 11,6: 55 – 61. https://doi.org/10.3991/ijet.v11i06.5644

Koneru, I. 2017. Exploring Moodle Functionality for Managing Open Distance learning e-assessments. *Turkish Online Journal of Distance Education* 18,4: 129 – 141. http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1161811&site=ehost-live&scope=site

Mojarro Aliaño, Á., A.M. Duarte Hueros, M.D. Guzmán Franco & I. Aguaded 2019. Mobile Learning in University Contexts Based on the Unified Theory of Acceptance and Use of Technology (UTAUT). *Journal of New*

Approaches in Educational Research 8,1: 7 – 17. https://ukzn.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1202931&site=ehost-live&scope=site

Robinson, L. 2017. Embracing Online Education: Exploring Options for Success. *Journal of Marketing for Higher Education* 27,1: 99 – 111. https://doi.org/10.1080/08841241.2016.1261978

Santoso, H.B., A.K. Batuparan, R.Y.K. Isal & W.H. Goodridge 2018. The Development of a Learning Dashboard for Lecturers: A Case Study on a Student-centered E-learning Environment. *Journal of Educators Online*, 15,1: 1-15. http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1168957&site=ehost-live&scope=site

Silva, E.B. 2015. Class in Contemporary Britain: Comparing the Cultural Capital and Social Exclusion (CCSE) Project and the Great British Class Survey (GBCS). *The Sociological Review* 63,2: 373 – 392. https://doi.org/10.1111/1467-954X.12286

Sobikwa, D. & G. Ditsa 2017. The Usage of Gauteng Online Schools' Systems for Basic Education in Soweto. *Journal of Information Technology & Economic Development* 81: 1 – 24. http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=124889725&site=ehost-live&scope=site

Taherdoost, H. 2018. Development of an Adoption Model to Assess User Acceptance of E-service Technology: E-service Technology Acceptance Model. *Behaviour & Information Technology* 37,2: 173 – 197. https://doi.org/10.1080/0144929X.2018.1427793

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