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E-Assessment in Higher Education: Students' Perspective

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ABSTRACT

This paper aims to examine the effectiveness of e-assessment in higher education from the perspective of students, and it also examines the student's reaction to this method. There are many developing countries that have begun to explore technology-based assessment systems. The new assessment system has benefits to institutions and to students. The purpose of this paper is to understand the benefits students are receiving from e-assessment as well as the complications they are facing when institutions are adapting e-assessment and switching from traditional assessment. The paper is based on the views of a small sample of university students chosen randomly, which found mixed reactions to e-assessment. Although students appreciate the importance of e-assessment, they have some fears about technology-based examinations as all of them do not have an equal level of IT competence. Further research should be carried out to explore other aspects of e-assessment in the higher education context.

Keywords: *Technological advances, Computer based test system, Higher education, and Information and communications technology.*

INTRODUCTION

An assessment could be an exceptionally fundamental component in the teaching and learning environment and ought to advance knowledge as well as measure or certify results (Clements & Cord, 2013). E-assessment means using the technology to manage and deliver assessment which can be diagnostic, summative, or formative (University of Bristol, 2002-2017). Education has evolved from a content-based process, where a course instructor provides information to students so that they can learn at their own pace (Nwosu, 2017). There are numerous conventional examination strategies in higher education institutions to assess academic advance, like paper-pencil-based examinations, presentations, assignments and numerous more (Nwosu, 2017). E-assessment is a valuable tool in higher education because students receive feedback instantly and individually, which helps them to improve their work. It can include methods such as online submissions, quizzes and marking.

LITERATURE REVIEW

Mass education has developed rapidly in recent times. In the United Kingdom the percentage of eligible students attending university rose from about 5% to about 40% over a 30 year period resulting in an immense pressure to restructure the academic assessment system (Ridgway et al., 2004). Ridgway et al. (2004) also stated that high-stakes assessments exemplify the ambition of curriculum, and define what is worth knowing. It is essential to develop systems for evaluation which reflect the goals of education so that students can gain skills which can provide long-term benefit to the society and to themselves (Ridgway et al., 2004).

Improving the quality of the student learning experience is a big challenge within the higher education sector, and it has been broadly acknowledged that e-assessment can make contributions to this. There are some factors on which the effectiveness of a computer-based testing system

depends, including: standardization, security, examination conditions, and mode of administering the examination, and cost (Kuyoro et al., 2016).

In the context of teaching and learning, various digital tools can transform student-centered instructional practices (Tinoca et al., 2014). Wikis, blogs, different online forums, e-portfolios, Learning Management Systems and computer mediated communication can create a virtual learning environment that can add value to the learning process (Tinoca et al., 2014).

When the mass-driven examination is conducted, then there will be no need for printing question papers and answer booklets so that CBTS is proven to be the cost-effective method (Fagbola, Adigun & Oke, 2013). Furthermore, there is less concern for security issues because a test taker's identity will be checked by biometric fingerprint authentication, picture capture and data encryption and decryption (Adebayo & Abdulhamid, 2014). A study conducted on a different mode of test administration like the total scores and duration of the exam among undergraduate level students concluded that undergraduate students' finished their exam faster in a computer-based assessment system rather than the paper-based assessment system (Bodmann & Robinson, 2004).

The use of multiple-choice questions (MCQs) as a method of assessment has increased over the last decade because of more significant student numbers, reduced resources and increasing use of new technologies (Nicol, 2007). The web-based online examination enables students to sit for a test at convenient times and desirable places and e-assessment can generate questions randomly for each test taker so this might prevent students taking the e-assessment in the same room, from copying from each other (Kuyoro et al., 2016), although there are concerns that students may get more scope for engaging in unfair means during the examination.

STUDY OBJECTIVES

The principal objective of the study is to explore the impact of e-assessment from the perspective of students in higher education in Bangladesh. This paper is also designed to investigate the readiness of students to adopt the e-assessment method and the potential challenges and benefits associated with it.

METHODOLOGY

The information was collected from both primary and secondary data. The primary data was collected through a survey of 200 undergraduate and post-graduate students from Bangladesh who were randomly chosen from selected universities of Dhaka. The survey instrument consisted of 27 statements on a Likert scale that was developed based on information in the literature. The secondary data were collected from journals, research papers, and websites.

DATA COLLECTION AND ANALYSIS

Tertiary level students in Bangladesh were the participants of the survey. The students were asked to evaluate 27 statements on a Likert scale that used 6 different sets of factors - Affective Factors, Validity, Practicality, Reliability, Security, and Teaching and Learning.

All of the participants were students. Among them:

- 71.2% were male and 28.8% were female.

- 97.1% of participants were aged between 21-25 years. Only a very few of them were between 15-20 years and above 30 years old.
- 97.1% of participants were currently enrolled at the undergraduate level, and 2.9% of the participants were in post-graduate programmes.
- 57.7% of participants were doing or graduated from Marketing programmes, followed by Finance with a percentage of 23.1%. Among others, 12.5% were from Accounting, 4.8% were from Human Resource Management, and 1.9% were from other majors.
- 33.7% of participants were first-year students, 10.6% were in their second year, 23.1% were in their third year, while 32.7% were in their fourth year.
- 8.7% of students had come from a family that had a monthly income between 10,000 to 20,000 Taka. 9.6% had 21,000 to 30,000 Taka, 22.1% had 31,000-40,000 Taka, and 59.6% had above 40,000 Taka as a monthly income (family).

The results of the survey are shown and discussed below:

Table 1: *Affective Factors*

Table 1: Affective Factors

Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)

Factors		1	2	3	4	5
		(In percentage %)				
A1	Using a computer adds to the stress of exams.	5.8	26.9	29.8	30.8	6.7
A2	I expect computers to be used as a part of assessment at university.	1.9	4.8	10.6	44.2	38.5
A3	I'd feel more comfortable if the exam was on paper, not online.	1.9	5.8	29.8	28.8	33.7
A4	I find it hard to concentrate on the questions when doing an online exam.	5.8	14.4	27.9	35.6	16.3
A5	I'd rather do exams on a computer than on paper, because I am used to working online.	14.4	34.6	26.0	20.2	4.8

The first five statements shown in Table 1 were about the affective factors.

Participants were asked if the use of the computers adds to the stress of the exam. 30.8% agreed with this statement, followed by 29.8% who were neutral. The extreme opinions (strongly agree or disagree) were the lowest. Overall, students agreed with the statement.

44.2% agreed followed by 38.5% who strongly agreed that they expected computers to be used as a part of assessment at university.

Most participants indicated that they feel more comfortable doing paper examination than online. Moreover, the majority of them thought online examination would make it difficult to concentrate, but 34.6% of the participants disagreed that they like to do an exam on the computer because they are used to working online. 14.4% strongly disagreed, and 26% were neutral.

The second section was about validity and the results are shown in Table 2 below.

Table 2: *Validity Factors*

Table 2: Validity						
Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)						
Factors		**1**	**2**	**3**	**4**	**5**
		(In percentage %)				
V1	Online assessment is appropriate for my subject area.	5.8	25.0	27.9	26.0	15.4
V2	My subject area is too complex to be dealt with online multiple-choice questions.	9.6	28.8	24.0	28.8	8.7
V3	Online exams don't just test knowledge of the subject, but IT skills as well.	.9	8.5	11.3	50.0	29.2
V4	Online exams have an important role to play in higher education.	1.9	6.7	20.2	41.3	29.8
V5	Because you can guess the answer, online multiple-choice questions don't really reflect your level of knowledge.	10.6	23.1	26.0	31.7	7.7

This section had five statements. The majority of the participants were neutral in determining whether the online assessment is appropriate for their subject area or not. 26% agreed, closely followed by 25% of the participants who disagreed. An equal number of participants (28.8%) agreed and disagreed with evaluating if their subject area was too complex to be dealt with online multiple-choice questions. A good number of participants were neutral (24%). An almost equal number of participants strongly agreed (8.7%) and strongly disagreed (9.6%) as well. But, the majority of people were heavily in favor - half of the participants (50%) agreed online exams required IT skills as well apart from knowledge of the subject, followed by 29.2% who strongly agreed. A similar pattern of answers was found regarding the statement that online exams have an essential role to play in higher education. But responses were diverse in how much online multiple-choice questions reflect the level of knowledge. Although 31.7% agreed with it, a large percentage of participants disagreed (23.1%) or were neutral (26%).

The next statements were about practicality as shown in Table 3 below. A significant percentage of people were neutral on these statements and the results indicate a mix of opinion regarding practicality. The online assessment uses less paper. But is it important? 43.3% of the participants remained neutral on this issue. 26.9% agreed, and a fair percentage (14.4%) disagreed. In regard to the view that technical problems make online exams impractical, 41.3% agreed, and 21.2% strongly believed that. But most participants disagreed on health and safety issues about online examinations. Still, a fair number of participants believe that the online process can cause harm. 44.2% of participants remained neutral on whether it was practical doing online exams in the computer cluster. But most participants agreed on the accessibility of online-based examinations compared to paper examinations.

Table 3: *Practicality Factors*

Table 3: Practicality						
Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)						
Factors		**1**	**2**	**3**	**4**	**5**
		(In percentage %)				
P1	Online assessments use less paper, which is important to me.	4.8	14.4	43.3	26.9	9.6
P2	Technical problems make online exams impractical.	4.8	10.6	22.1	41.3	21.2
P3	There are serious health and safety issues with online exams.	17.3	33.7	21.2	20.2	7.7
P4	It isn't practical doing online exams in the computer clusters.	5.8	19.2	44.2	25.0	4.8
P5	Online exams are more accessible than paper-based exams.	3.8	14.4	21.2	40.4	19.2

The next statements are about reliability and the results are shown in Table 4 below.

Table 4: *Reliability Factors*

Table 4: Reliability						
Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)						
Factors		**1**	**2**	**3**	**4**	**5**
		(In percentage %)				
R1	Marking is more accurate, because computers don't suffer from human error.	3.8	11.5	13.5	42.3	28.8
R2	The technology used in online assessments is unreliable.	15.4	33.7	30.8	13.5	6.7
R3	Online assessments favor some students more than others.	11.5	18.3	29.8	26.9	13.5
R4	Paper-based exams are fairer than online exams.	6.7	25.0	29.8	27.9	10.6

A considerable percentage of the participants supported the view that online marking is more accurate because it does not suffer from human error. When they were asked if the technological use is unreliable, the highest response categories were disagree and neutral. But, 29.8% of participants remained neutral on whether online assessment was favoring some students, while 26.9% of participants agreed and 13.5% strongly agreed. The critical question about fairness showed diversity in the responses. 29.8% participants were neutral while 27.9% agreed and 25% disagreed.

In Table 5 below, the statements were about security issues.

Table 5: *Security Factors*

Table 5: Security						
Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)						
Factors		1	2	3	4	5
		(In percentage %)				
S1	Online assessment is just as secure as paper-based assessment.	5.8	17.3	30.8	37.5	8.7
S2	I am confident that my grades for online assessments are secure.	2.9	8.7	27.9	39.4	21.2
S3	It is easier to cheat on online exams than with paper-based exams.	11.5	22.1	15.4	33.7	17.3

Participants largely remained neutral regarding the security factors. 37.5% believed online assessment was just as secure as a paper-based assessment, while 8.7% agreed strongly. But, 30.8% of the participants were neutral regarding the issue. Most participants were confident that their grades on online submission were secure. However, the majority of the participants also agreed that it was easier to cheat on online exams.

The last section was about teaching and learning factors, the results of which are shown in Table 6 below.

As shown in the table most of the participants believed Computer Assisted Assessment (CAA) had the potential for immediate feedback. 38.5% of participants thought online assessment could do more than the paper-based exams. Although 34.6% remained neutral on this, 43.3% believed that e-assessment added value in their learning. 12.5% of participants disagreed and 1.9% strongly disagreed. Most of the participants disagreed with the contradictory statement that it is not benefitting learning. 47.1% agreed, and 15.4% strongly agreed that online assessment went hand in hand with e-learning. While participants were mostly positive on this factor, 26% remained neutral.

Table 6: *Teaching and Learning Factors*

Table 6: Teaching and Learning						
Measurement: (Strongly Disagree=1), (Disagree=2), (Neutral=3), (Agree=4), (Strongly Agree=5)						
Factors		1	2	3	4	5
		(In percentage %)				
TL1	The potential for immediate feedback with CAA could help me learn.	3.8	7.7	31.7	44.2	12.5
TL2	Online assessment can do things paper-based exams can't.	1.9	18.3	34.6	38.5	6.7
TL3	Online assessment can add value to my learning.	1.9	12.5	30.8	43.3	11.5
TL4	Online assessment is just a gimmick that does not really benefit learning.	12.5	28.8	34.6	19.2	4.8
TL5	Online assessment goes hand-in-hand with e-learning (e.g., using Dashboard).	3.8	7.7	26.0	47.1	15.4

DISCUSSION

The outcome of the survey shows that students are positive about e-assessment. However, participants expressed mixed views on whether the computer adds stress as they are not used to it. Participants admitted that they are not comfortable with it, and this can make it hard to concentrate as it is a new system, but still they welcomed e-assessment in higher education. The results indicate that students understand the importance of e-assessment, and they are ready to use it. However, question remain about the viability of online examinations as it is not only about testing subject knowledge but also their competency in use of technology. Students need to learn IT skills in order to be successful in an online examination

All of the factors that impact e-assessment are not yet understood. Despite the limitations of e-assessment it may be used more frequently in higher education as it opens a new horizon of learning and expects to provide new opportunities to both the educator and students. The survey responses indicate that that student considered e-assessments as more reliable and more objective as it is evaluated by an automated system, thus minimizing human error. It provides instant feedback to the students, which helps them to understand their progress right after taking the assessment so they know the areas they need to improve on. The responses indicate that students believe it is adding value to their learning.

CONCLUSION

Crisp et al. (2016) stated that technology has become an essential tool to promote authentic as well as meaningful and more efficient assessments. Assessment analytics has started to encourage learning analytics from the current move (Knight et al., 2014). So, given the findings of the survey there is support for e-assessment as part of the future of higher education. The advent of the COVID-19 pandemic, has changed the landscape of higher education. E-education and assessment have become a reality in different parts of the world and this now provides a larger

testing ground for the model of e-assessment in education. It is expected that this learning from field will create a new opportunity for developing e-education and e-assessment further and may establish it as a firm model of education along with conventional classroom based education. It is also evident that not many studies are undertaken to examine the pros-and cons of e-assessment in Bangladesh, but further research is suggested on different areas of e-assessment to explore and examine the different aspects of it.

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