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Using i-Learn for Online Assessment: Lecturers' Perceptions

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Abstract

This paper describes a study carried out in Universiti Teknologi MARA to explore the lecturers' perceptions of online assessment. A survey questionnaire was administered on a sample of 40 full-time Computer and Mathematical Sciences lecturers in October 2017. The survey items focus on seven dimensions: (1) affective factors, (2) validity, (3) practical issues, (4) reliability and fairness, (5) security, (6) pedagogy issues and (7) the intention to conduct online assessment. The aim of the survey was to investigate lecturers' perceptions of using i-Learn as assessment tool and to analyze whether their perceptions differ based on their area of specialization. The findings of the survey indicate that i-Learn online assessment tool was under used and the lecturers' intentions to conduct online assessment are still very low. Their main concern is generally due to the nature of the subject taught which they think it is not appropriate to be tested online. Besides that, issues related to system security, cheating in digital age, and multiple-choice type of test items were some factors that hindered them from adopting online assessment. Lastly, the paper concludes that i-Learn does not fully address the critical need of Computer and Mathematical Sciences lecturers in order for them to adopt and increase their use of online assessment in their courses. Furthermore, perhaps the training module for this group of lecturers should be redesigned to expose them how to design the new test items which can assess on the higher order thinking skills.

Keywords: Formative assessment; online quizzes; Online tests; Computer and Mathematical Sciences lecturers.

1. Introduction

To promote the blended learning, some universities are starting to use various e-learning platforms, such as Blackboard, Moodle, and world wide web as a mechanism for delivery of knowledge. At the same time, researches are carried out to find ways and focus on the possibilities to reform the operational of assessment so that it will be consistent with the changing educational needs of students. Although the infusion of technologies such as smart phones, tablets, laptops and internet in teaching and learning in Malaysia education settings are widespread, but their usage for educational assessment is still limited.

i-Learn is an official e-learning portal for Universiti Teknologi MARA (UiTM) that uses the internet to support UiTM face-to-face teaching and blended learning activities. The evaluation components for most of the courses offered in UiTM are divided into two types, namely formative assessment and summative assessment. There are differences between these two types of assessment. Formative assessment is an assessment for learning, and summative assessment is an assessment of learning. Currently, the i-Learn system for online assessment in UiTM is for formative rather than summative assessment. The features available in the system to support formative assessment are online discussion forums, online quizzes, and electronic submission of written assignments, which can streamline administrative processes. It is hoped that the system will help to manage large volumes of marking, and provides efficiency for assessment-related administration work. Thus reduce lecturer academic workloads. i-Learn has been implemented for quite some time since 2005. Many professional trainings had been carried out to encourage and promote the lecturers to use this system (Adora Endut et al., 2012).

The interface of the first assessment page of i-Learn is shown in Figure 1. In this page, the lecturer is required to type in the name of the assessment.

Add New Assessment:

Course Information

Course Code

Course Name

Assessment Setting

Name

Title of assessment

Description

Description for the assessment (optional)

Save

Figure 1: A screen-shot of creation of online assessment page via i-Learn portal

Figure 2 depicts the interface of the second assessment page of i-Learn where the lecturer can start to design the assessment item. There are four types of question can be created as shown in Figure 3. Lecturers have a full control to create their own assessment questions.

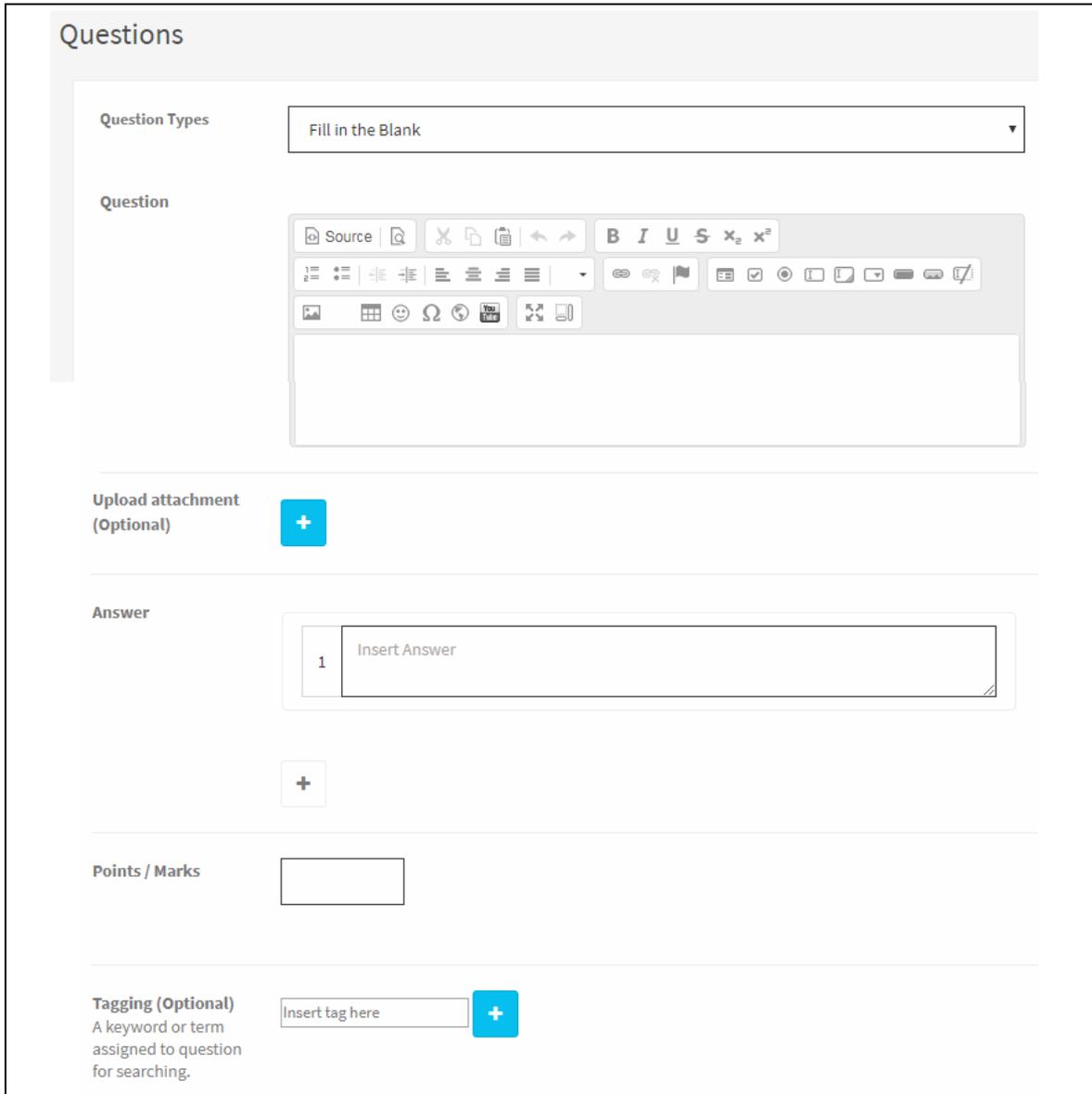


Figure 2: A screen-shot of creation of a question page via i-Learn portal

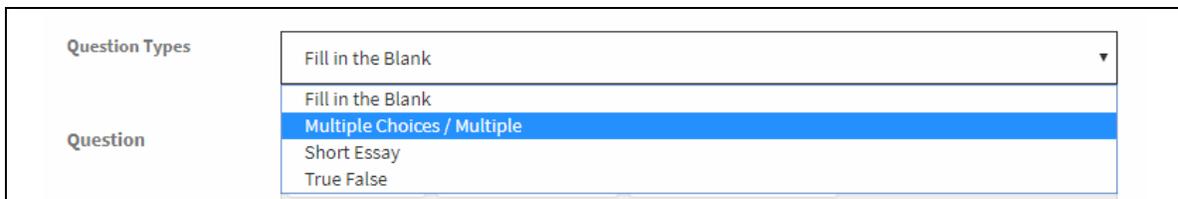


Figure 3: Four types of questions can be created via i-Learn portal

Once the assessment is conducted, the lecturer can assess the Gradebook page as shown in Figure 4. This is the page where allows the lecturer to view and download the marks of the students. Automated marking is only available for fill in the blank, true-false, and multiple choice items.

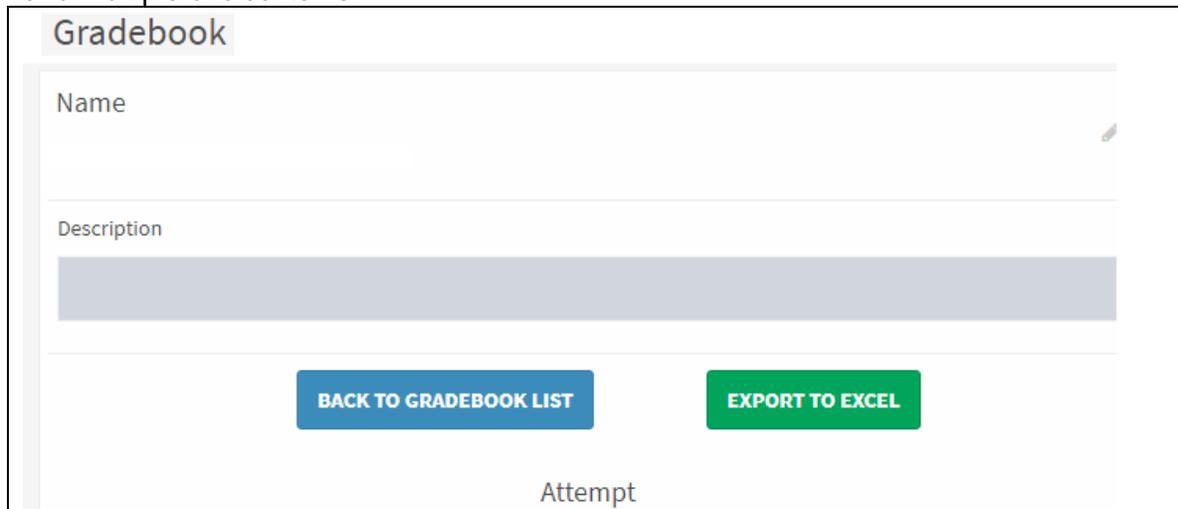


Figure 4: A screen-shot of gradebook page via i-Learn portal

What is the implication of the introduction of technology into assessment? Perhaps, it would be valuable to investigate on the usage of this system in conducting formative assessment among the lecturers, and to find out whether the technology addresses a critical need particularly among Computer and Mathematical Sciences lecturers. The purpose of the study is to answer the following questions.

The specific research questions of this study are listed below:

- (1) How many of the Computer and Mathematical Sciences lecturers have tried out conducting online assessment with i-Learn within their courses?
- (2) What are the lecturers' perceptions of each dimension (i.e., affective factor, validity, practicality, reliability and fairness, security, and pedagogy) related to the use of i-Learn for online assessment?
- (3) Do the Computer and Mathematical Sciences lecturers have the intention to continue in adopting i-Learn online assessment as a form of formative assessment for their teaching courses?
- (4) Is there a significant difference among lecturers' area specializations in terms of their perceptions towards the affective factors, validity, practicality, reliability and fairness, security and pedagogy scales?
- (5) Is there a significant difference among the lecturers' area of specializations in terms of their intention to use online assessment?

2. Methodology

This study adopted the descriptive approach in the survey research. The population for this study consists of all the lecturers in Faculty of Computer and Mathematical Sciences of Universiti Teknologi MARA (UiTM). A convenience sampling technique is used to select the respondents for this study. A sample of 40 lecturers from the Department of Computer and Mathematical Sciences (JSKM) in Universiti Teknologi MARA Pulau Pinang was invited to participate in this study. Lecturers in this department of this campus are responsible for the delivery of the teaching of computer sciences, mathematics and statistics for undergraduate engineering students, and hotel and management students. There is a total of 14 courses offered in this campus including diploma and degree levels. Three courses taught by the computer sciences lecturers are CSC128-Fundamentals of Computer Problem Solving, CSC425-Introduction to Programming, and, CSC430-Computer Programming and Applications. Nine courses taught by the mathematics lecturers are MAT133-Pre Calculus, MAT183-Calculus I, MAT235-Calculus II for Engineers, MAT285-Further Mathematics for Engineers, MAT435-Calculus for Engineers, MAT455-Further Calculus for Engineers, MAT480-Further Differential Equations, MAT575-Introduction to Numerical Analysis, and, MAT565-Advance Differential Equations. Two courses taught by the statistics lecturers are STA404-Statistics for Business and Social Sciences, and, STA408-Statistics for Science and Engineering.

A questionnaire entitled “Lecturers’ Perceptions of Using Online Assessment” was used in this study. The questionnaire was adapted from a study conducted by Dermo (2009). Originally, Dermo (2009) researched the students’ perceptions of e-assessment by breaking down the main concepts into six dimensions which were affective factors, validity, practicality, reliability and fairness, security and pedagogy. In order to suit the purpose of this study, the authors of this paper have modified Dermo’s instrument which intended to measure the lecturer’s perceptions in seven dimensions. These include the affective factor, validity, practicality, reliability and fairness, security, pedagogy, and the intention to use. A rating scale of (1) to (7) was used in the questionnaire, where the smallest value (1) represents “Strongly disagree” and the largest value (7) represents “Strongly agree”.

This survey was conducted in October 2017. The questionnaires were distributed in two formats, paper-based as well as online format. The questionnaire was then checked for the internal validity using the reliability test. It was done using the data collected from the questionnaires which involved $N = 31$ lecturers. In this study, the coefficient of reliability, Cronbach’s alpha value, is 0.701 which means that about 70.1% of variation in the data has been explained. It can be considered as an acceptable value indeed (George & Mallery, 2003; Sakaran, 2003).

The results of the administered questionnaire were first analysed with descriptive statistics. The data were coded and analysed using Statistical Package for Social Sciences (SPSS) version 21 for windows. The statistical tests used were the descriptive analysis involving the percentage and mean. The mean value for each dimension within the quantitative component was calculated. These values were used to group variables based on their value. Values relate to a scale of one to seven. One-way analysis of variance (ANOVA) was then conducted to compare whether there is a significant difference in the rating scores among the three lecturer's area specialization groups. All the tests were assumed to be a two-tailed test and 5% significance level.

3. Results and Discussion

3.1 Demographic Profile of the Participants

This section presents a summary of the background of the lecturers that participated voluntarily in this study. The questionnaire was directed to each respondent to ensure that the necessary information was captured and measured accurately. Of the 40 JSKM lecturers invited for the sample, a total of 31 responded and this provided a final response rate of 77.5%.

Among the 31 participants, 7 (22.6%) were males and 24 (77.4%) were females. Majority of them (51.6%) were in the age of 31 – 40 years old. This also supports that majority of them have 6 – 10 years of teaching experience. In terms of the area of specialisation, the participants were found to be 6 (19.4%) of computer science, 19 (61.3%) of mathematics, and 6 (19.4%) of statistics. The demographic representation of lecturers is depicted in Table 1.

Table 1: Demographic profile of the participants (n=31)

Variable		Frequency	Percentage
Gender	Male	7	22.6%
	Female	24	77.4%
Age	Below 30 years old	6	19.4%
	31 - 40 years old	16	51.6%
	41 - 50 years old	5	16.1%
	51 years old and above	4	12.9%
Years of Teaching Experience	5 years and below	6	19.4%
	6 - 10 years	16	51.6%
	11 years and above	9	29.0%
Area of Specialisation	Computer Science	6	19.4%
	Mathematics	19	61.3%
	Statistics	6	19.4%

Among the 31 participants, 20 (64.5%) participants who claimed that they have had some experience of conducting online assessments within their courses. The distribution of the participants regarding the experience of conducting online assessment is shown in Figure 5.

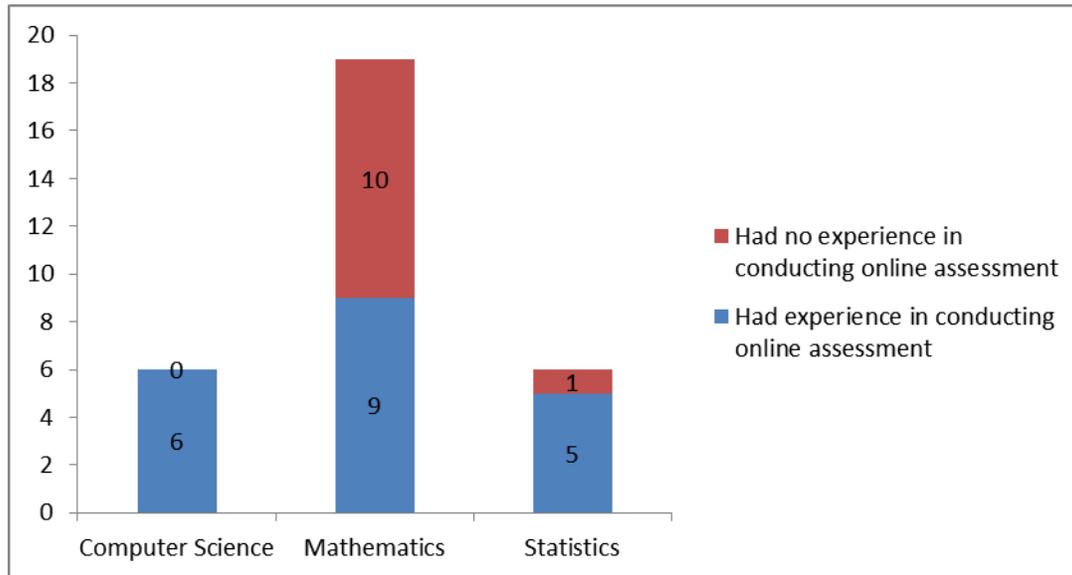


Figure 5: The distribution of participants based on their experience of conducting online assessment

Nine from mathematics and five from statistics had conducted online assessment. Based on this result, it shows that all the computer science lecturers had the experience conducting online assessments. It is interesting to find that almost 50% of the mathematics lecturers and one statistics lecturer did not attempt to conduct any forms of online assessment in their courses (See Table 2).

Table 2: The distribution of participants based on their experience of conducting online assessment

Area of Specialisation	Had experience in conducting online assessment		Had no experience in conducting online assessment		Total number of participants
	Frequency	Percentage	Frequency	Percentage	
Computer Science	6	100%	0	0%	6
Mathematics	9	47%	10	53%	19
Statistics	5	83%	1	17%	6

3.2 Lecturers' Perceptions towards Conducting Online Assessment using i-Learn

This section provides the results of the analyses on lecturers' perceptions of online assessment in 7 dimensions, i.e. affective factors, validity, practicality, reliability and fairness, security, pedagogy, and the intention to use.

3.2.1 Lecturers' rating score on affective factors

Affective factors relate to any effects on student's feelings when they are taking an online assessment (Dermo, 2009) from the perspective of lecturer. There were four items included in the survey assessing the lecturers' opinions on this matter. Table 3 depicts the findings.

Table 3: Perceptions on affective factors (N=31)

Item	Disagree	Neither agree nor disagree	Agree	Mean	S.D
My students have stress when answering online test/quiz.	25.8%	29.0%	45.2%	4.13	1.628
My students would feel more comfortable if the test or quiz is on paper, not online.	9.7%	12.9%	77.4%	5.52	1.387
My students will find it hard to concentrate on the questions when answering online test or quiz.	32.3%	9.7%	58.1%	4.65	1.723
My students prefer answering test/quiz on computer than on paper, because they are used to working online.	45.2%	35.5%	19.4%	3.55	1.234

Note: Scale (1) to (3) were merged to "Disagree". Scale (4) is classified as "Neither agree nor disagree". Scale (5) to (7) were merged to "Agree".

Although we know that our students are used to work or play online, but based on Table 3, it is interesting to see that 45.2% of the lecturers perceived that their students do not like to do online assessment. Majority of them thought that the students prefer to do paper-based test or quiz. Perhaps, one of the reasons to support this fact is because they think that their students are stressful when answering online test or quizzes. Furthermore, they also worried that the students hardly to concentrate if the questions are posted online and this might affect the students' grades. We didn't know whether this group of lecturers has given the students a choice whether they want to do online assessment or paper-based assessment.

Based on the result of One-Way ANOVA analysis as shown in Table 9, the test statistic $F_{2,28} = 0.440$ ($p\text{-value} > 0.05$), we can conclude that there is no significant difference in the perceptions on the scale of affective factors among the three groups of lecturers based on their area of specialisation (i.e., computer science, mathematics, and statistics).

3.2.2 Lecturers' rating score on validity scale

Validity in this study is defined as the appropriateness of online assessment to measure the course outcomes (Dermo, 2009) from the perspective of lecturer. As shown in Table 4, we found that 67.7% of the lecturers agreed that students can easily score a good grade through guessing in online assessment. This is supported with the finding that 80.6% of the lecturers perceived that online assessment can only be used to test knowledge level which is the lowest cognitive level listed in Bloom taxonomy. Therefore it is a challenge to use online assessment for mathematical sciences and computer science courses which involving more complex problem solving types of questions.

The result indicates that quite a high percentage (74.2%) disagreement that online assessment is appropriate for computer and mathematical sciences related courses. Perhaps this is due to the nature of the subjects where the students are required to perform mathematical proofs, graphing, image drawing, data analysis, write programming codes etc. Or maybe the workings to solve a problem can be very lengthy, or too many mathematical symbols, superscripts, subscripts, and Greek letters are involved, which are not easy to handle if the test is conducted online. Therefore, a special feature to create mathematical expressions is a very important feature if the use of the online testing system for this group of lecturers is to be promoted. Figure 6 depicts a list of special characters is made available in the i-Learn portal. Generally, it is found that the list is too limited and it cannot support the flexible usage in the design of computer and mathematical sciences test items.

Table 4: Perceptions on validity scale (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
In many online test or quiz questions it is possible for my students to get a correct answer by guessing.	19.4%	12.9%	67.7%	4.65	1.355
Online assessment is appropriate for all my courses.	74.2%	12.9%	12.9%	2.81	1.195
All my courses are too	19.4%	19.4%	61.3%	4.87	1.668

complex to be dealt with by online multiple choice questions.					
Online test or quiz can be used to test knowledge of the subject.	3.2%	16.1%	80.6%	5.48	1.151

Note: Scale (1) to (3) were merged to “Disagree”. Scale (4) is classified as “Neither agree nor disagree”. Scale (5) to (7) were merged to “Agree”.

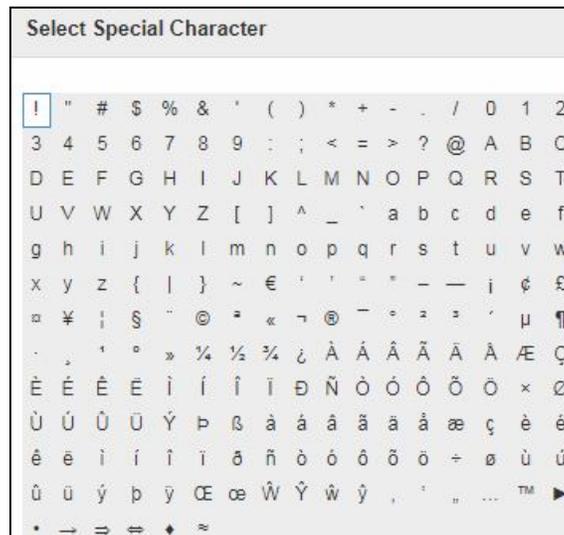


Figure 6: A screen-shot of a list of special character provided in i-Learn portal

Based on the One-Way ANOVA analysis output as shown in Table 9, it indicates that there is no significant difference in opinions on the validity scale among the three groups of lecturers since the test statistic $F_{2,28} = 2.089$ (p -value > 0.05).

3.2.3 Lecturers’ rating score on practicality scale

The practicality of conducting online assessment is an important issue to be considered if online assessment is to be enforced as a compulsory assessment in the higher education level. As shown in Table 5, the lecturers were having positive perceptions on the time issue allocated for online assessment was sufficient and they also concerned about the paper usage issue. But the result of this study found that quite a large percentage (74.2%) of the lecturers perceived that technical problems hinder them from conducting online assessment. Perhaps, it is due to many factors such as the system, server, skill, knowledge, or nature of the subject itself.

Table 5: Perceptions on practicality scale (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
There are serious health and safety issues with online tests or quizzes	35.5%	16.1%	48.4%	4.10	1.739
Online assessments use less paper, which is important to me.	16.1%	32.3%	51.6%	4.71	1.419
Technical problems make online tests/ quizzes impractical	16.1%	9.7%	74.2%	5.26	1.673
Online tests or quizzes are more accessible than paper-based tests.	19.4%	35.5%	45.2%	4.35	1.380
I expect the time allocated for the online test or quiz is sufficient.	3.2%	19.4%	77.4%	5.06	0.892

Note: Scale (1) to (3) were merged to “Disagree”. Scale (4) is classified as “Neither agree nor disagree”. Scale (5) to (7) were merged to “Agree”.

The output of One-Way ANOVA analysis as shown in Table 9 suggests that there is no significant difference in opinions on the validity scale among the three groups of lecturers since the test statistic $F_{2,28} = 0.666$ (p -value > 0.05).

3.2.4 Lecturers’ rating score on reliability and fairness scale

In the context of this study, a system named as i-Learn is an official system used in Universiti Teknologi MARA to support blended learning as well as online assessment. All the lecturers and the students registered are able to assess the system with a personal login name and password. In comparison with the paper-based assessment, the reliability and fairness of online assessment is being investigated in this study. Four items are listed under this dimension and the results are shown in Table 6. There are 32.3% of the lecturers who disagreed that the system provided by the university is unreliable. It is interesting to find that a majority (58.1%) of the lecturers chose to be neither agree nor disagree that the system is unreliable. In terms of fairness, 51.6% of the lecturers perceived that paper-based tests or quizzes are fairer than online assessment.

Table 6: Perceptions on reliability and fairness scale (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
Grading is more accurate, because computers don't suffer from human error.	29.0%	19.4%	51.6%	4.65	1.624
The system (e.g. i-Learn) used in online assessments is unreliable.	32.3%	58.1%	9.7%	3.42	1.232
Online assessments favour some students more than others.	35.5%	38.7%	25.8%	3.65	1.404
Paper-based tests or quizzes are fairer than online tests/quizzes.	19.4%	29.0%	51.6%	4.65	1.473

Note: Scale (1) to (3) were merged to "Disagree". Scale (4) is classified as "Neither agree nor disagree". Scale (5) to (7) were merged to "Agree".

Based on the output of One-Way ANOVA analysis as shown in Table 9, it shows that there is no significant difference in opinions on the reliability and fairness scale among the three groups of lecturers since the test statistic $F_{2,28} = 0.616$ (p -value > 0.05).

3.2.5 Lecturers' rating score on security scale

The security is an important issue to be considered for any assessments. Five items have been included in the survey and the results are shown in Table 7. Only one third of the lecturers (32.3%) are confident that their students' grades for online assessment are secured. On the other hand, more than half of the lecturers (61.3%) have the perception that it is easy for their students to cheat on online assessment as compared to paper-based assessment. Cheating is considered as academic dishonesty behavior among students. Even in classroom paper-based assessment, students are caught for cheating such as copying from books, and from friends. Educators are alerted about this issue and try to reduce it from occurrence. In Grijalva, et al. (2006) study, it was found that approximately 3% of undergraduate students had cheated in their study, and that there was no significant difference between cheating on paper-based tests and online assessments. On the other hand, Lanier (2006) found that students cheating in online courses was significantly higher than that done in regular classroom. However, Stuber-McEwen et. al. (2009) had a conflicting result, whereby it was found that students cheated less in e-learning courses. In a different study, it has been reported that the students have admitted that they were more than 4 times as likely as to cheat in an online class compared to face-to-face classes (Watson & Sottile, 2010). Therefore, it is still a challenge for the lecturers to conduct online assessment.

Table 7: Perceptions on security scale (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
Online assessment is just as secure as paper-based assessment	32.3%	41.9%	25.8%	3.87	1.231
I am confident that my students' grades for online assessments are secured.	12.9%	54.8%	32.3%	4.35	1.226
It is easier to cheat on online tests/ quizzes than with paper-based tests or quizzes.	16.1%	22.6%	61.3%	4.90	1.491
The online assessment system (e.g. iLearn) is vulnerable to hackers.	12.9%	38.7%	48.4%	4.39	1.256
Username and password used in online assessment login system provide adequate security.	12.9%	35.5%	51.6%	4.58	1.455

Note: Scale (1) to (3) were merged to "Disagree". Scale (4) is classified as "Neither agree nor disagree". Scale (5) to (7) were merged to "Agree".

Based on the result of One-Way ANOVA analysis as shown in Table 9, the test statistic $F_{2,28} = 0.305$ ($p\text{-value} > 0.05$), we can conclude that there is no significant difference in the perceptions on the scale of security among the three groups of lecturers.

3.2.6 Lecturers' rating score on pedagogy scale

Pedagogy in this study is referred to whether online assessment has any effects on student's learning, either having positive or negative effects. Three items were used to evaluate this dimension as listed in Table 8. Majority of the lecturers (58.1%) agreed that online test or quiz questions are mostly about memorizing the content being assessed. But on the other hand, 61.3% of the lecturers revealed that they like online assessment because the students can obtain the score immediately. There are 38.7% of the lecturers who disagreed that online assessment has more functions than paper-based tests. These results show that positively online assessment in education is more centered on the immediate feedback that the system can provide.

The above findings supported the claim saying that many academic staff tend to associate the online assessment with automated multiple-choice questions, possibly because it was one of the earliest uses of computer technologies. Actually, online assessment does not only automate routine tasks like marking multiple-choice

questions, but also can enrich student's learning experiences (Brown, Race, & Bull, 1999; Baleni, 2015).

Table 8: Perceptions on pedagogy scale (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
The online test/quiz questions are mostly about memorizing the content being assessed.	19.4%	22.6%	58.1%	4.58	1.566
I like online test/quiz because my students can obtain the score immediately.	22.6%	16.1%	61.3%	4.77	1.543
Online assessment has more functions than paper-based tests.	38.7%	32.3%	29.0%	3.87	1.500

Note: Scale (1) to (3) were merged to "Disagree". Scale (4) is classified as "Neither agree nor disagree". Scale (5) to (7) were merged to "Agree".

Based on the result of One-Way ANOVA analysis as shown in Table 9, the test statistic $F_{2,28} = 0.070$ (p -value > 0.05), we can conclude that there is no significant difference in the perceptions on the scale of pedagogy among the three groups of lecturers.

Table 9: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Overall Perceptions	Between Groups	323.390	2	161.695	.455	.639
	Within Groups	9941.965	28	355.070		
	Total	10265.355	30			
Affective factors	Between Groups	.549	2	.274	.440	.648
	Within Groups	17.435	28	.623		
	Total	17.984	30			
validity	Between Groups	2.180	2	1.090	2.089	.143
	Within Groups	14.614	28	.522		
	Total	16.795	30			
practicality	Between Groups	.789	2	.394	.666	.522
	Within Groups	16.591	28	.593		
	Total	17.380	30			
reliability and fairness	Between Groups	.887	2	.443	.616	.547
	Within Groups	20.162	28	.720		
	Total	21.048	30			
security	Between Groups	.383	2	.191	.305	.740
	Within Groups	17.591	28	.628		
	Total	17.974	30			
pedagogy	Between Groups	.148	2	.074	.070	.933
	Within Groups	29.630	28	1.058		
	Total	29.778	30			

3.2.7 Lecturers' intention to conduct online assessment

The final section in this survey is regarding the lecturer's intention to use the online assessment in their courses in the near future. Table 10 reveals that there are only 29% of the lecturers who agreed that they shall continue or have the intention to conduct online assessment in their courses. However, there are also another 29% of lecturers who neither agreeing nor disagreeing that they will use online assessment in their courses. Maybe with more training or exposure on online assessment to the lecturers, the benefits and advantages of online assessment could be introduced to the lecturers and hopefully the acceptance of online assessment is increased.

Table 10: Lecturers' intentions to use online assessment (N=31)

	Disagree	Neither agree nor disagree	Agree	Mean	S.D
I intend to use more often online tests/ quizzes in all my courses.	41.9%	29.0%	29.0%	3.61	1.407
If online assessment is not mandatory in my university, I would still use it.	32.3%	25.8%	41.9%	4.06	1.569

Note: Scale (1) to (3) were merged to "Disagree". Scale (4) is classified as "Neither agree nor disagree". Scale (5) to (7) were merged to "Agree".

Results of the ANOVA as shown in Table 11, showed that the test statistic $F_{2,28} = 0.712$ (p -value > 0.05), we can conclude that there is no significant difference in the intention to conduct online assessment among the three groups of lecturers.

Table 11: ANOVA

intention to use

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.696	2	1.348	.712	.499
Within Groups	52.998	28	1.893		
Total	55.694	30			

4. Conclusions

In the current learning environment, the academicians have to change their mindset because they are no longer practising traditional delivery method of the university education. According to McLoughlin and Luca (2006), traditional university education has often operated within a "transmissive paradigm", which is just emphasizing the transfer of knowledge from lecturer to student. Therefore, the appropriate assessment practices for this type of education would focus on students' capacity to recall information and facts during examination. The dependency on the traditional assessment method is that it is no longer suits the needs of 21st century education where our future students and their learning styles are totally different from current days (Jerald, 2009). In order to cater the needs for 21st century, our education should be constructive, active learning where students take a pro-active role in questioning, sharing ideas and applying prior knowledge to new ideas. In such a case, the traditional university assessment may not test for deep conceptual understanding (Anderson &

Krathwohl, 2001). Therefore, the researchers would like to suggest the training for professional development to find ways to change the academicians' mindset.

With the inclusion of ICTs in assessment, we believed that our assessment model requires lecturers to be re-considered and rethought, modified or changed as opposed to the traditional testing models. Based on past literature, it has been justified that the online assessment tools are widely accepted by educators because the tools are able to reduce the burden of educators and facilitate them to conduct assessments purposefully. In addition, technology-based assessments can be utilized to promote better learning because it can be used to test a variety of skills, knowledge and understanding which paper-based assessment may not be able to test (Brown, Race, & Bull, 1999). On the other hand, McLoughlin and Luca (2006) have presented some interesting ways on how the ICT can be utilized to support authentic assessment.

Some interesting findings emerged from this study. It was found that lecturers seem to have some positive perceptions toward the use of online assessment but in terms of the intention to conduct online assessment is not high. From this study, we can classify the factors into two main perspectives that hindered the adoption, i.e., student perspective and the subject course perspective. In the opinion of the lecturers from the student's perspective, they view that their students would prefer paper-based test than online test. They also think that their students are having more stress if they are to take up online test. From the subject course perspective, the lecturers view that it is not suitable due to technical issues as for them the paper-based test is fairer, because they can control their students from cheating during the test. In addition, they also think that the type of question items to be posted online is considered of the lower level of thinking skill, which can only be used to test knowledge level or memory recall type items.

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