Quiz in a Virtual Learning Environment as a Tool for Assessing Students' Learning: Perception of Royal University of Bhutan Lecturers

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Abstract

Technology integration in education has been a priority in universities across the world now. Virtual Learning Environment (VLE) is one such technological tool the Royal University of Bhutan (RUB) colleges have integrated as a learning platform to enhance teaching and learning. A cross-sectional descriptive study was carried out among RUB lecturers to investigate their perceptions towards VLE quiz to assess students' learning. A total of 154 lecturers (48.1%) from VLE quiz users and 80 (51.9%) from VLE quiz non users participated in the study. The data were analyzed statistically. The results from the VLE quiz users indicated that the use of VLE quiz makes marking easier, improves quality of assessment for students and also influences other lecturers to use VLE in their assessment. Furthermore, the results indicated that, it is convenient to supervise the test and students also find it easy to use VLE. Moreover, the results also indicated that VLE quiz allowed lecturers to conduct the test easily and also measured students' ability. Quite interestingly, the study also highlighted that the VLE quiz non users have positive attitudes towards VLE quiz to assess students learning though they did not use due to lack of competency, impeding working conditions and weak ICT connectivity in the RUB colleges. Generally, there is a strong belief among RUB lecturers that VLE quiz can enhance assessment processes.

Keywords: e-assessment, computer based test, VLE quiz, VLE quiz user, VLE quiz non users, RUB colleges, paper-pen based assessment

Introduction

Use of technology has been a priority as an engaging tool in the teaching and learning process in this 21st century. Virtual Learning Environment (VLE) is one such educational technology that provides diverse functions to enhance and enrich learning. The quiz is one important function embedded within VLE as a part of e-assessment. Considering the enormous potential and benefits of VLE, Royal University of Bhutan (RUB) has formally introduced it in April 2011 by issuing policy to the colleges (Kinley et al., 2013). Thereafter, some RUB lecturers have started to use quiz to assess students' learning as part of VLE usage in some of the modules they offered to the students. Prior to this new shift (quiz), paper-pen based assessment was prominent over the past decades to assess

students' learning, particularly the summative assessment part. But paper-pen based assessment has increasingly faced problems in providing timely and constructive feedback to the students' work due to the increase in teaching workload, students' enrollment and programmes offered by the colleges (Utha et al., 2018). To address such issues, an emphasis has been given to review the assessment practices in the colleges over the past few years using various assessment tools and technique. For example, draft assignment submission was implemented by Samtse College of Education (SCE) to improve the quality of assignment feedback given to the student's work. Anecdotally, this did help in improving the quality of assessment practices but increased the amount of work for the lecturers. Now with the integration of technologies in education, assessment using web tools, also known as e-assessment has been widely used to assess student learning across universities and school and it has also been the subject of several studies (as cited in Cohen & Sasson, 2016). Many studies have focused on e-assessment in science education, especially in higher education, while others have focused on the subject of physics (Cohen & Sasson, 2016). The study by Ogunlade, Oyeronke and Oladimeji (2014) recommended to encourage lecturers to constantly use computer based tests (CBT) while conducting their tests and examination to promote efficiency of the students' learning assessment and to improve the credibility of the test and exam. Similarly, (Dammas, 2016) has investigated students' attitudes towards computer based test (CBT) and inferenced that students in general are becoming more interested in the use of this new method of e-assessment.

Quiz in a VLE

Quiz in a VLE enables a teacher to create quizzes comprising of various question types including multiple choice, short answer and numerical. When the teacher create the quiz, the number of settings can be customized such as time limit, attempt allowed, grading method, shuffle within questions, provide specific and general feedback to the students among others. The teacher can use this quiz to assess the ongoing progress of the students or it can be used to grade the students in the tests and course exams. Cohen et al. (2016) found out that, students' attitudes towards quizzes were generally positive which demonstrates formative assessment in higher education. Similarly, Jiscinfonet (2016) revealed that assessment tools including quizzes assist timely feedback and also provide a wealth of feedback for students' work. Despite numerous advantages and benefits, there are also challenges inherent in using online quizzes. According to Choeda, Penjor and Dukpa (2016), adequate training should be given to use VLE by the RUB lecturers.

Therefore, this study investigated the lecturers' perceptions of online quiz to assess student learning in RUB colleges. This study focused on the following two questions:

i. How do lecturers (*VLE quiz users*) perceive the usefulness, ease of use and credibility of a VLE quiz in assessing the students work?

ii. What are the lecturers'(*VLE quiz non users)* perception towards VLE quiz in assessing students work?

Methodology

A cross-sectional descriptive study was conducted from August to October 2018, among RUB lecturers. Random sampling method was used to select the participants from the population. All the lecturers who are currently in the college campus were included as study subjects and those staff who are out of the campus were excluded for the study. Data were collected either through printed or online questionnaires designed in Google forms. The questionnaire included details about demographics, perception of the *VLE quiz users* and also perception of *VLE quiz non users*. A researcher-designed survey questionnaire entitled "Lecturers' perceptions of computer-based test in Nigerian universities (LPCBTNU)" was adapted for the collection of data from the *VLE quiz users* because of the similar nature of the research study. The *VLE quiz users* survey part constitute of three categorized themes namely: perceived usefulness, perceived ease of use and perceived credibility consisting of 14,16 and 15 items respectively using Likert scale (1-5) indicating the degree they perceived i.e. strongly disagree, disagree, neutral, agree and strongly agree. For the *VLE quiz non users*, there were five open ended questions to determine the perceptions of not using VLE quiz to assess students' learning. In order to analyze quantitative data, separate numeric codes were assigned to the data for each participant. Then, the data were entered in statistical package for social sciences (SPSS) and did the data screening, missing value analysis and recoding for some categorical items. After that, the coded data were analyzed using descriptive statistics and principal component analysis to determine the perceptions from *VLE quiz users*. For the *VLE quiz non users*, the raw data were coded and categorized into various themes for the interpretation by adopting a thematic approach (Creswell, 2007; Tesch, 1990).

Results and Discussions

Demographics Characteristics

A total of 154 RUB lecturers participated in this study, which constitutes of 119 (73.3%) male and 34 (22.1%) female. Most of the lecturers were from ages less than 30 years or 31-35 years category which constitutes a total sample 98 (63.7%). In terms of qualification, the majority of the lecturers have a master qualification 108 (70.1%), with the remaining either a Bachelor or PhD qualification. The demographic representation of lecturers from the RUB colleges is shown in Table 1 below.

Table 1

Demographic Representation of Lecturers

RUB Colleges	Frequency	Percent
College of Natural Resources(CNR)	25	16.2
College of Science and Technology(CST)	10	6.5
Gaeddu College of Business Studies(GCBS)	26	16.9
College of Language and Cultural Studies(CLCS)	23	14.9
Jigme Namgyel Engineering College(JNEC)	2	1.3
Paro College of Education(PCE)	18	11.7
Samtse College of Education(SCE)	23	14.9
Sherubtse College(SC)	27	17.5

Table 1 shows that there was a relatively equal distribution of participants from the RUB colleges except from CST and JNEC which have low representations of 10 (6.5%) and 2 (1.3%) respectively. The RUB lecturers were grouped into two depending upon whether they use VLE quiz or not. There were 74 (48.1%) *VLE quiz users* and 80 (51.9%) *VLE quiz non users*. For ethical reasons, each participant is anonymously numbered as 1,2,3……154 out of which participants 74,75,76…….154 were *VLE quiz non users*.

Results of the *VLE Quiz Users*

This section presents the results of the *VLE quiz users'* perceptions to assess students' learning under three categorized themes namely: perceived usefulness, perceived ease of use and perceived credibility.

Perceived Usefulness.

To answer perceived usefulness of a *VLE quiz users*, a principal component analysis was conducted on the items in order to delete all non-performing items and to produce a refined solution, the final solution for a number of items produced three valid components. Component one comprised of 4 items, component two comprised of 3 items and component three comprised of 2 items. These three components accounted for a substantive 60.1% of the variance in the items and each component demonstrated acceptable reliability as shown in Table 2 when the lower limit reduced to 0.50 since the measurement scales have been adapted.

Table 2

Reliability Statistics of Perceived Usefulness

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
0.514	0.522	3

The descriptive analysis was conducted on three valid components to examine perceived usefulness of a *VLE quiz users*. The Table 3 indicated perceived usefulness of a VLE quiz in terms of a) easy marking, b) enhance assessment processes, and c) influence other lecturers to use VLE quiz. The perceived usefulness of *VLE quiz users* on easy marking has a mean score (M=4.47; SD=.989), indicating on the highest side of the five point Likert scale with less variability as compared to the other two components. This could be due to VLE quiz using model answers to mark students work, resulting in easy marking for the lecturers. Another perceived usefulness of *VLE quiz users* was the enhancement of assessment processes with the mean scores (M=4.16; SD=1.187), indicating too on the higher side of the five point Likert scale but scores seem to vary among lecturers most as compared to other two components. The reasons could be due to the availability of VLE quiz features such as statistics, charting, graphing which gives the lecturers greater control over the assessment work. The other perceived usefulness of *VLE quiz users* was on influencing other lecturers to use VLE quiz with the mean score (M=3.94; SD=1.021), indicating also on the higher side of the five point Likert scale item but the score seems to vary among lecturers. The reason could be due to lecturers' competency to use VLE quiz in their course. In addition, it is mandatory for lecturers to integrate VLE technology in their teaching and learning.

Table 3

Descriptive Statistics of Perceived Usefulness

Composite	No	Mean	Std. Deviation
PUVQ_influence_others	73	3.94	1.021
PUVQ_Easy_Marking	73	4.47	0.989
PUVQ_enhances_assessment	73	4.16	1.187

Perceived Ease of Use.

For perceived ease of use of *VLE quiz users*, principal component analysis was conducted and produced two valid components. Component one comprised of 3 items and component two comprised of 2 items. The two components accounted for a substantive 69.38% of the variance in the items and each component

demonstrated acceptable reliability when the lower limit reduced to 0.40 as shown below.

Table 4

Reliability Statistics of Perceived Ease of Use

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
0.401	0.408	2

The descriptive analysis was conducted on two valid components to examine perceived ease of use of a *VLE quiz users*. The Table 5 indicated perceived ease of a VLE quiz in terms of a) convenient to supervise, and b) find it easy to use by the students. The perceived ease of use of a *VLE quiz users* on convenient to supervise has a mean score (M=4.30; SD=1.154), indicating on the highest side of the five point Likert scale item but the score seemed to vary more compared to the other components. The reasons may be due to the question behavior setting where questions can be shuffled within question and every question can be shown in a new page to minimize malpractices. The other reason was of the quiz time setting in which students can attempt the quiz at different timing within the open and close timing with the given specific time limits. The other perceived ease of use of *VLE quiz users* was that the students find it easy to use with the mean score (M=3.97; SD=0.928), which was also found on the higher side of the five point Likert scale with little variability as compared to the earlier perceived convenient to use. This was due to navigational features and precise instructions given which allows students to attempt it without any difficulty.

Table 5

Descriptive Statistics of Perceived Ease of Use

Composite items on Perceived ease	No	Mean	Std. Deviation
PEVQ_convenient_supervise	73	4.30	1.154
PEVQ_Ease_By_Students	73	3.97	0.928

Perceived Credibility.

To answer perceived credibility of a *VLE quiz user*, again principal component analysis was conducted and produced two valid components. Both the components comprised of 4 items each with two components accounted for a substantive 59.28% of the variance in the items and each component demonstrated acceptable reliability when the lower limit reduced to .50 as shown below Table 6.

Table 6

Reliability Statistics of a Credibility

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
0.642	0.644	2

The descriptive analysis was conducted on two valid components to examine perceived credibility of *VLE quiz users*. The credibility of a VLE quiz in terms of a) effective course evaluation of student's work, and b) measurement of student's ability to communicate with the lecturers is indicated in Table 7. The perceived credibility of a *VLE quiz users* on effective course evaluation of student's work has the mean score (M=4.27; SD=0.818), indicating on the highest side of the five point Likert scale with low variability. This was due to elimination of the double marking which allows course evaluation by the lecturers, opportunity for reusing the question and reduces the time dedicated to marking. The other perceived credibility of a VLE quiz was measurement of student's ability to communicate with the lecturers with the mean score (M=3.67; SD=.860), which was also found on the higher side of the five point Likert scale item, again without varying the scores much. This may be due to the lecturer's ICT competency and VLE quiz gradebook management features which enables lecturers to know the detailed knowledge of students' progress.

Table 7

Descriptive Statistics of a Credibility

Composite items on credibility	No	Mean	Std. Deviation
PCVQ_Measure_StudientsAbility	73	3.67	0.860
PCVQ_Evaluation_effective	74	4.27	0.818

Results of the VLE Quiz Non Users

The *VLE quiz non users'* perceptions towards VLE quiz to assess students' learning is presented under two themes namely; Opportunity themes and recommendation themes which were derived from the analysis.

Opportunity Themes.

Many benefits and positive attitudes were observed among *VLE quiz non users* towards VLE quiz to assess students' learning and below are descriptions and evidences provided.

Opinion on Enhancement of Students' Assessment for Learning

The data revealed that *VLE quiz non users* in RUB colleges, in general were of the opinion that VLE can enhance students' assessment for learning. These opinion was expressed by many participants relating to timeliness, transparency, and fair feedback as the correction is done by the system (Participants 100, 126, 128, 146 & 148). Furthermore, use of the VLE quiz would help students to manage time as they have to answer within a time frame as indicated by participant 100; and, saves resources, as it helps to go paperless (Participant 143). Other participants were also of the opinion that the use of VLE quiz will enhance students' assessment for learning. On the other hand, a small group of participants were not certain that VLE quiz would enhance students' assessment for learning because students could easily indulge in proxy practices despite the tutor's monitoring (Participant 91, 98, 113, & 116).

Interest to Use VLE Quiz to Assess Students' Learning

About 53% of the participants (n=80) expressed their deep interest to use VLE quiz but lacked competency to use VLE quiz. For instance, Participant 100 expressed that it is difficult to create questions with options. The other reasons were related to time constraints and more teaching workload (Participants 103,110 &129).On the other hand, some participants remarked that they were not interested to use it, as it poses credibility issues such as a) it test only the elementary knowledge and skills of the students, b) it all depends on internet and computer which is not promising as technical glitches and system crashing could lead to complete loss of data leading to double work (Participants 110 & 143). Furthermore, some other participants are also not interested to use this instrument as their subjects require extended responses which VLE quiz normally limits.

Recommendation

Study finding also suggested ways to promote the use of VLE quiz in the colleges, referred to as recommendation in this study.

Training and Workshops

Most of the participants have expressed that they have not used VLE quiz as they do not have knowledge and skills to prepare. Even if they have received training, it is mentioned that they are not feeling competent enough to use it. Even those who have been using VLE, it is limited to uploading assignments and teaching materials. So it is felt that training or workshops should be organized for the college faculty members on preparation and use of VLE quiz .Thereafter, VLE quiz can be used as a basic tool for assessment.

It is mentioned that awareness should be created regarding benefits of using VLE quizzes. Some of the participants expressed that preparing VLE quiz is time consuming. Considering the work load in the college, it has been felt that it cannot be practiced. However, VLE quiz has many benefits: it eases correction, takes less time to correct, marks and feedback can be shared instantly. The assessment is fair since correction is done automatically by the system. Providing immediate feedback which is crucial in assessment process is by far easier and convenient than that of paper based assessment. Moreover, the use of VLE and ICT can be made compulsory as these are considered as the integral part of 21st century teaching pedagogy.

Internet Connectivity

It has been expressed that strong internet connectivity is essential for VLE use. Some of the participants expressed that they have not been able to use VLE as the internet connection is either erratic or slow. It has also been expressed that internet connectivity should have a wide range coverage, such as in hostels, in all working places of the college so that VLE is accessed anytime and anywhere within the college premises.

VLE as a Learning Platform

One possibility of promoting the use of VLE is by making use of VLE mandatory both for tutors and students. Students would be required to use VLE when the tutors make it as part of teaching and assessment process. So it is expressed that management needs to reinforce the use of VLE and monitor constantly.

Discussions

The study determines lecturers' perceptions on the use of VLE quiz to assess students' learning in RUB colleges. When *VLE quiz users* were asked about their perceptions in terms of usefulness, the result indicated, VLE quiz makes marking easier, improve quality of assessment for students and influenced other lecturers to use VLE in their assessment. Similarly, when asked about their perceptions in terms of ease of use, the result indicated, it is convenient to supervise and students find it easy to use. The other perceptions asked was in terms of credibility, the result indicated that VLE quiz allows course evaluation by the lecturers to be undertaken more easily and also measure student's ability to communicate with the lecturers. Quite interestingly, the findings revealed that more than 50% of the *VLE quiz non users* are also of the opinion that VLE quiz will enhance students' assessment for learning. This finding is consistent with the finding (JSC, 2016), who reported that online quiz assist timely feedback and provide a wealth

of feedback for students work. Although *VLE quiz non users* also expressed their interest to use VLE quiz to assess students' learning but they are not able to use due to lack of VLE competency and weak internet connection in their colleges. This finding is consistent with the finding by Choeda et al. (2016) that indicated adequate training should be given to the lecturers to use VLE in addition to the establishment of adequate ICT infrastructure and connectivity in the RUB colleges.

Conclusion

The views expressed by 154 lecturers enabled the researcher to conclude that there is a strong belief among RUB lecturers that VLE quiz can enhance assessment processes by measuring the student's ability, assist timely and providing constructive feedback to the students' work. There is a keen interest expressed among RUB lecturers to use VLE quiz to assess students' work. Besides many advantages of VLE, there are also challenges such as poor internet connectivity, lack of training availed to the lecturers on ICT front. Therefore, there is a need to increase internet connectivity and provide training on ICT competency in general, and also make the VLE mandatory for lecturers to use in the RUB colleges.

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