

A SURVEY ON MALAYSIAN STUDENTS' WILLINGNESS TO USE A QUIZ-BASED PERSONAL KNOWLEDGE MANAGEMENT SYSTEM

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ABSTRACT

The outbreak of the COVID-19 pandemic has speeded up the process of adopting online learning platforms. However, even before the pandemic, various platforms were already in use while others were such as Kaji that is being developed. This study sought to determine the acceptability of this platform that uses a quiz-based personal knowledge management system. The study also sought to determine whether the students would adopt it for their online studies as soon as it is made available. The platform was tested with a sample of 34 undergraduate students who were from the School of Education and Modern Languages at Universiti Utara Malaysia. The findings of the study showed that the students were interested in the key features of the Kaji application and they would use it once it is made available. Notably, the convenience sampling used in the study limited the generalization of the finding beyond its immediate context. Therefore, the study, therefore, recommends that Kaji should be tested on its usability and effectiveness before expanding it to the university and other institutions. The gradual adoption will ensure that appropriate modifications are made to the application in response to the issues that the users are experiencing.

Keywords: Kaji, quiz, free response, and self-assessment.

INTRODUCTION

The outbreak of COVID-19 has disrupted all facets of life in social, economic, and even political dimension. As a way of containing the virus, many governments across the globe imposed movement restrictions, which significantly affected learning activities (Ali, 2020). In Malaysia, the government issued a restriction of movement order (Tang, 2020), which effectively translated into the closure of schools on March 18, 2020, thereby disrupting learning to more than five million students. But as a way to ensure that learning continued, the Ministry of Education launched a platform for online teaching and learning across the country. However, this national platform has only managed to ensure learning for about 3 million children (UNICEF, 2020). One of the key challenges that have affected online learning particularly when it comes to reaching all the targeted students has been characterized by unstable Internet connectivity in the use of online synchronous communication tools such as Zoom and Webex and more particularly in cases where many online participants are involved. Instead, asynchronous online learning platforms such as Telegram, WhatsApp, and emails have shown to be more effective since they do not require continuous stable Internet connections.

Coincidentally, as the pandemic fastened up the adoption of online platforms in Malaysia and across the world, the researcher was finalizing the development of a standalone learning tool

referred to as Kaji (see www.kaji.my), which seeks to promote university students to be more self-directed in their learning and also help lecturers evaluate the progress of their students. Kaji is a quiz-based personal knowledge management system that allows students to create quiz items and conduct self-evaluation, a feature that differentiates it from the typical drill and practice application. However, Kaji only allows free-response type items to further improve students' knowledge, thinking, and communication skills, which enables the students to reflect on their answers. Therefore, students can revise and improve on their items over time; they can print out the responses which will serve as personal notes in the forms of questions and answers. The print outs can also be used by the instructors as reports for monitoring the student's progress. This paper, therefore, discusses the results of a pilot study that was conducted on Kaji to ascertain its feasibility and effectiveness in e-learning with specific regard to student's assignments in the coming semesters. The pilot study was based on two key objectives:

1. To examine students' willingness to use Kaji in their studies
2. To evaluate students' acceptance of some particular features of Kaji.

LITERATURE REVIEW

The effectiveness of online quizzes has been the subject of interest in various studies that have been conducted regarding online learning. Cluskey, Hodges, & Smith (2006) found that the use of online quizzes in online learning platforms helps the students not to procrastinate and therefore cram several chapters ahead of their tests. The online quizzes enable students to study and understand their content chapter by chapter before they progress. They also found that online quizzes also prepared the students to tackle actual examinations.

Benefits of quiz applications

Kearns (2012) established that self-check quizzes help the instructors to assess their students informally, evaluate their level of understanding about the concepts that they have taught and provide them with feedback that could be helpful in correcting misconceptions or misunderstandings. This is especially achieved by providing platforms in which the students can take ungraded online quizzes that are based on their reading assignments. At the end of these quizzes, the student can see their grades and the answers to the questions that they failed. Moore & Lida (2010) found that whereas the quizzes do not contribute to their final grade, their score is recorded in the grade book for future reference by both the students and their instructors. The use of ungraded quizzes in this way has proved to be quite effective when it comes to conducting formative assessments of online students.

Cohen & Sasson (2016), found that online quizzes were effective in providing information that yielded feedback, which informed the necessary modification for improving teaching and learning. They established that students had a positive attitude towards online quizzes because they were relevant to their educational outcomes. According to Orr & Foster, (2013) the quizzes helped to improve the performance of the students throughout the learning process right from the first attempt up to the completion of their course. Their mean grades significantly improved and they also spent significantly less amount of time completing the quiz tasks. This demonstrated the willingness of the students to embrace a meaningful learning process that is provided through specific course design.

Salas-Morera, Arauzo-Azofra, & García-Hernández (2012) found that online quizzes are an incredible tool for formative assessment because they enable interactions between the students and their instructors, and enable the learners to make decisions about their studies and develop their knowledge base on their respective experiences. Marcell (2008) established that online self-check quizzes can be quite effective for obliging students to complete reading the required course content and especially for the technical and dense material. The quizzes also help the students and their instructors to evaluate the understanding of the course material. In most cases, CMS platforms have features that avail such quizzes to students and it is upon the instructors to experiment and determine the ones that most suit the teaching and learning needs of their students. Besides, many online platforms provide multiple options that generate automated feedback either later on or immediately after the student has completed the quiz.

In their study, Khan & Khan (2019) found that Moodle quizzes are effective when it comes to improving online instructional design and formative assessments. Some of the key features of online quizzes that enhance academic productivity for online students include having resource databases for teaching and assessing the class content particularly for course-specific terminologies and complicated mathematical calculations, which could be modified with very little academic effort. DePaolo & Wilkinson (2014) suggest that online quizzes also need to have automated and customized feedback that provides the students with prompt and adequate responses. The automated marking of the quizzes reduces the academic workload for the student whereas shuffling and randomized questions enable them to efficiently and effectively address issues such as plagiarism.

Gamage, Ayres, Behrend, & Smith (2019) established that online quizzes have numerous tremendous benefits to the students. For instance, the quiz questions are effective when it comes to teaching and learning of complex applied scientific or mathematical concepts. This is especially evident when the quiz questions are designed based on various multimodal resources that have embedded videos that enable the students to visualize the real-life scenario as the preliminary to the necessary problem-solving. The quiz questions also need to be staged with necessary repetition, which will ensure that the course concepts and skills are adequately developed. Once the quiz questions are designed they could be defined as an ongoing process with minimum academic effort.

According to Cook & Babon (2017), the other benefit of online quizzes in online learning courses is that they are customized and they provide students with automated feedback. The students are provided with relevant immediate feedback for each of the questions that they attempt and fail, which eliminates wastages in terms of repetitive feedbacks for the commonly occurring mistakes. Estacio & Raga (2017) established that in such learning contexts the staged online quizzes reduce the time that instructors spend on explaining the learning concepts. They can spend the time that they have saved on weekly helpdesk sessions through virtual classrooms, where they can focus on questions from the student instead of explaining the basic course concepts.

Quiz using free-response items

According to Haroa, Noroozia, Biemansa, & Muldera (2019), online learning activities characterized by free-response or rather essays have emerged as the most effective channels for students to reflect on what they have learnt in a particular course. For instance, through

argumentative essay the students are compelled to look at both sides of their argument and base their premise on their understanding of what side should be considered. This requires a little bit of research, which deepens their student's understanding of the course content. Besides, the communication skills of the students, particularly written skills are also developed as they support the premise of their argument in the essay.

Quiz using self-assessment

Castle & McGuire (2010) notes that students undertaking online courses are able to conduct self-assessment. They established that self-assessment encourages the student to take responsibility of their learning and be therefore more responsible. The online students are also encouraged to reflect on the contribution and role that they play particularly during class sessions or when they are assigned group work. Through self-assessments students are able to reflect on the assessment by their peers and therefore, develop their judgmental skills.

METHODOLOGY

A quantitative research method was adopted where surveys were used to collect the data for the study. The target population included students who were required to determine the readiness of using a Kaji like application. Kaji was not introduced to the students when the survey was conducted. A sample of 34 undergraduate students was drawn to the School of Education and Modern Languages at the Universiti Utara Malaysia. The survey used was divided into sections.

The first section of the instruments asked the respondents to provide information on their gender, age, and the type of operating system that they use on their computers. The second section of the survey asked students to provide information on the acceptance of using a drill and practice application based on some features typical to Kaji. The features were based on the researcher's personal experience as a student, an educator, using online applications and developing several learning materials. Among the features asked to the students were:

- The application is a freeware – people will most likely try something new when it is free.
- The application is standalone and portable – it can be run even on a pen drive. The application was designed to be standalone and not online so that students with unstable Internet access can use it. The students will only need to access the Internet when downloading the application.
- Students need to create free-response quiz items – students were briefed on what is free-response type format. This type of item was chosen so that students will need to type their answers and not simply choosing available answers like in multiple choice questions (MCQ). It is hoped that by answering free-response items, students lower-order (LOTS) and higher-order thinking skills (HOTS) would improve over time.
- Students need to do self-assessment – by comparing their answers to the answer scheme and give appropriate marks. This is to train students reflect on their own answers and improve not just their answers for the quiz but the scheme and even the question itself.
- The application can print quiz items as personal study notes – there will times when students will have difficulties accessing their personal computers such as during power shortages, PC maintenance and other problems. The teachers can use the printouts to monitor their

students understanding of the topics. Thus, being able to print the items as notes will be very useful not just to the students but for their teachers as well.

- The application can display marks for individual topics – this feature will allow students to determine which topics that they are strong and which topics that need more attention.
- The application can display overall marks for the subject – the total marks for the topics will be used to determine the overall score of the subject. This will allow the students to determine their master of the subject as a whole.
- Would try using the application once it is available – this question was asked to see whether or not the application is ready to be tested in the following semester based on the available features.

The questions in the second section of the survey were based on a Likert Scale that included measures such as Very not interested (0), Not interested (1), Neutral (2), Interested (3), and Very interested (4). The students' willingness and acceptance of a Kaji like application was determined using descriptive statistics. Therefore, a feature was considered accepted with a mean score of more than 2. In the third section, the respondents were asked if they had used any application with exact features mentioned in their studies and were required to say YES or NO. Descriptive statistics was used for data analysis and fulfilling the objectives of the study.

RESULTS AND DISCUSSION

Demographics

The results showed that out of the 34 students included in the study, 6 were males (17.6%) and 28 were females (82.4%). Their ages ranged between 20 – 23 years old ($M = 21$, $SD = .79$). All the students had personal laptops that ran Microsoft Windows operating system.

Students Acceptance of Application and its Features

The results in Table 1 showed that most students were very interested with the freeware application ($M = 4.76$, $SD = .5$); most students were interested with the standalone, portable application ($M = 3.5$, $SD = 1.11$); most students were interested on creating free response quiz items ($M = 3.59$, $SD = 1.16$) and most students were also interested in doing self-assessment ($M = 3.32$, $SD = 1.32$). The results also showed that most students were very interested in printing quiz items as personal study notes ($M = 4.32$, $SD = .73$); most students were very interested to have the application display their marks for individual topics ($M = 4.26$, $SD = .79$); most students were very interested to display their overall marks for each subject ($M = 4.29$, $SD = .87$) and would be very interested to use the application once it is available ($M = 4.71$, $SD = .68$). All students have not experienced using any application which have all the features mentioned in this study.

Table 1: Descriptive statistics results for survey items

Item	N	Mean	SD
Application is freeware	34	4.76	.5
Application is a standalone and portable type	34	3.5	1.11
Need to create free response quiz items individually	34	3.59	1.16
Need to do self-assessment individually	34	3.32	1.32
Can print quiz items as personal notes	34	4.32	.73
Can display and print scores for each topic	34	4.26	.79
Can display and print the overall score for the subject	34	4.29	.87
Would like to use the application once it is available	34	4.71	.68

It seems the features that the students are less interested about are the application is a standalone portable type, creating free response items and doing self-assessment. The researcher later asked the students what are their main concerns about these three features.

Most agreed that it is convenient that the application is portable that it can be run from a pen drive. However, some students were worried that standalone applications could be harmful to their computers. The application could be infected with computer viruses and the likes even though they have antivirus software installed with the latest virus definitions. These findings concurred with those of previous studies such as Khan & Khan (2019), established that online quizzes that are available in portable formats have improved online instructional design and formative assessments, especially when they had resource databases for teaching and assessing the class content.

The students were interested in the grading process of the online quizzes and the potential of evaluating their learning. They acknowledged the potential of online quizzes in improving their understanding of course content. This concurs with previous studies such as Cluskey, Hodges, & Smith (2006) found that online quizzes encourage students to study course content and understand it progressively, a factor that prepares them to handle actual examinations. The findings by Salas-Morera, Arauzo-Azofra, & García-Hernández (2012) showed that online quizzes are invaluable to instructors in terms of formative assessment as they enabled interactions between them and their students; they also enabled the students to decide on critical aspects of their study such as the elements that they need to grasp to further develop their competencies. Castle & McGuire (2010) found that the quizzes encourage students to reflect on the contribution and role that they play particularly during class sessions or when they are assigned group work. DePaolo & Wilkinson (2014) found that automated and customized feedback provided students with prompt and adequate responses. Gamage, Ayres, Behrend, & Smith (2019) established that the online quizzes are effective when it comes to teaching and learning of complex applied scientific or mathematical concepts.

The students were also interested in the features of the online platform, particularly in the manner in which it was going to boost their learning process. Previous studies have also reflected similar findings. For instance, Cluskey, Hodges, & Smith (2006) established that online quizzes incentive students to beat procrastination and can therefore study in preparation of their tests rather than engaging in last minute cramming. Cohen & Sasson (2016) found that instructors used online quizzes to understand their students, thereby providing them with the required feedback. The quizzes also served as feedback to the instructors and they used them to determine how they can improve on their pedagogy, thereby improving educational outcomes. Cook & Babon (2017) found that online quizzes become effective when they are customized and provide the students with immediate feedback. The students gave indications that they were not familiar with creating quiz items especially the free response type complete with an answer scheme. They were only used to answering items not creating them. The findings reflect those by Haroa, Noroozia, Biemansa, & Muldera (2019) who established that free-response quizzes that provide students with the most effective channels for reflecting on what they have learned in a particular course. In their study, Moore & Lida (2010) established that online quizzes were effective while undertaking formative assessments and could be used to determine the final grade. In another study, Orr & Foster, (2013) established that online quizzes were effective in monitoring and evaluating the teaching and learning process throughout the course, which later translated into the improvement of students' grades.

In addition, it emerged that when completing the quiz, the students have to self-assess. They were worried that they might overrate their answers thus giving an inaccurate feedback on their actual mastery of the knowledge. The implications of self-assessments are underscored in previous studies such as Marcell (2008), who found that self-check quizzes encourage students to focus on completing to read their course content before the tests are due. In a similar study, Kearns (2012) found that instructors benefit from self-check quizzes in terms of assessing their students, evaluate how they have understood what they have taught them, and provide them with feedback.

The findings of the study were based on the inclusion of perspectives from both genders of students and from the available age brackets. This reflects that the findings were based on a representation of a diverse scope of opinions and attitudes. The limitation of this study was obviously the data that was collected based on a small sample that was determined using convenience sampling, which indicates that the results may not be generalizable to students in contexts other than within the university.

CONCLUSIONS

Based on the findings of the study it is apparent that the students were willing to use an application like Kaji for their learning as they perceived that it would enhance their learning. Some of the features that made the application acceptable to the students include the capacity to print the quiz items as personal study notes, the ability to see marks for individual topics, and the overall marks for the subjects. This indicated the interest of the students in self-evaluation and improving on their academic outcomes. The application was also quite attractive to the students because they would be able to use it at no cost.

Although there were some concerns on the safety of the application, confidence in creating quiz items and doing self-assessments, overall the results indicate they were willing to try the application. The study recommends further development on the platform in the future to focus on these key areas. However, due to the positive feedback from the students thus, the researcher would like to implement Kaji in the following semester. Future works will look into the application's usability and effectiveness in improving students' learning.

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