

Usability of Online Educational Applications to Facilitate Distance Learning

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Abstract: The objective of the study is to evaluate the usability of Kahoot, Quizizz, Padlet, and Mentimeter applications. The study will be a basis for the extension of the Graduate School to train the teachers in DepEd schools in the use of the apps for their distance learning. The study utilized a quantitative method type of research. It used a descriptive method to gather data from the respondents using a modified System Usability Scale (SUS) to evaluate the usability of apps. Present, Apply, and Reflect (PAR) instructional model were utilized to identify the use of the apps in the lesson. This study was conducted in the second semester of S.Y. 2019-2020, Class C of the Graduate School of Bulacan State University. The fourteen students enrolled in the Research Methodology class were the respondents of study. More of the activities used Kahoot! for review, Based on the SUS, it was Mentimeter, Quizizz and Kahoot! were rated "Excellent" and find to be useful. Padlet was rated Poor. Though Kahoot! was used more often in the subject, the respondents rated Mentimeter to be more usable among all apps. This result of this study is only the first phase of the research project. An extension program was developed as one of the activities of the Graduate School. It is recommended to deepen the content of the training for the teachers and students to explore the other features of the apps.

Keywords— Kahoot!, Quizizz, Padlet, Mentimeter, System Usability Scale, Online Educational Applications

1. INTRODUCTION

The COVID-19 epidemic has had a profound impact on education. The COVID-19 school closures impact over 1.5 billion learners in 165 countries (UNESCO, 2020). Millions of instructors and students around the world have had to adapt to new ways of learning as a result of school closures. After school facilities were shut down to help the government flatten the curve, people turned to online learning to finish their education. People will not be able to return to normal as soon as the curve is flattened; instead, they will have to face a "new normal." These new normal calls for "Flexible Learning". Flexible learning is a method that teachers and students can use to attain a common goal for the subject. Flexible learning necessitates a balance of power between institutions and students, and it aims to provide choices that are both economically viable and manageable for both institutions and students [1]. According to CHED Commissioner Prospero de Vera, the "more practical solution" amid the coronavirus threat is to move toward flexible learning, which uses digital and non-digital technology [2]. One of the options for flexible learning is the implementation of Online Learning Education (OLE). OLE is a purely remote practice of online learning.

The Internet is now taking the lead to make distance learning possible in times of pandemic wherein going to school would be impossible. The use of online learning applications proved to be useful, which complement to face-to-face learning [3]. But, the situation is different now, wherein purely remote classes are currently being implemented since restrictions to most places are still on alert. In response to the spread of COVID-19, schools and universities have immediately changed their courses to remote and online versions, while they have shuttered their physical campuses [4]. Though distance learning through online education is new to most educators, the eagerness to deliver education interestingly is always a priority.

Online pedagogy is now on top of the priorities for educators to adopt. The teachers, some of whom had never taught online or at a distance before, came up with new ways to teach and learn, as well as creative solutions to the real-world problems that this new reality presents [5]. The online teacher must use technology to enhance the course content [6]. Further, the online teacher can have a better educational learning experience by making use of the positive aspects of technology. Furthermore, a Sloan Consortium Award for Excellence in Online Teaching winner and Professor of Psychology, outlines three characteristics for effective online teaching: Principle 1: Let the students do (most of) the work. The more time students spend engaged with the content, the

more they will learn; Principle 2: Interactivity is the heart and soul of effective asynchronous learning; and Principle 3: Strive for presence: social, cognitive, and teaching presence. These principles support the concept of this study wherein the use of additional tools for online learning could be more exciting and engaging for the students.

The world practice shows the effectiveness of educational work in blended learning format the teaching of foreign languages [7]. Further, the authors discuss that blended learning allows implementing interactive technologies, improving the quality of education, and attracting more students. The students' attitudes towards educational games and the educational use of social networks were found to be positive and had positive effects on the students' academic achievements [8]. Thus, the effectiveness of using an educational application leads to the completion of the given task or accessing the educational application successfully [9]. There is a positive perception by the academics of the usefulness of online learning with the aid of technology, which was regarded as an effective complement to face-to-face learning [3].

Kahoot!, Quizizz, Padlet, and Mentimeter are just some of the online educational applications that can be used in the distance online learning. Kahoot makes millions of teachers and students unleash the magic of learning. Kahoot creates contextualized Kahoot content in minutes or choose from 40+ million ready-to-play games. Game in class, engage students who aren't in school, and use game reports to gauge learning [10]. For students of all ages, Quizizz allows teachers to perform entertaining and engaging formative assessments that are timed by students and teachers [11]. Padlet celebrates creativity. This was created to express oneself freely and use it by the students to reflect and what they love, think, witness, and believe [13]. This is an excellent tool for teachers to involve their students in reflection of what they have learned, understand their learning, and collaborate with their classmates. Mentimeter is a powerful yet simple-to-use interactive presentation platform that allows you to create, present, and analyze presentations in a variety of ways. Teachers can build beautiful interactive presentations in the presentation builder, collect polls, data, and opinions from participants using smart devices, and get insights on participants with trends and data export. These apps feature interactive participation among students. Online learning should not be burdensome though it is part of the "new normal". Teachers, among all others, should think of ways on how learning could be fun and engaging. The use of these apps is assumed to give positive experience among the teacher-students who are participants of the study.

The Graduate School of Bulacan State University has been instructed by the administration to continue the last class for the second semester, S.Y. 2019-2020, this time through distance learning. This distance learning resulted in the use of the Internet as a tool for communication between the professors and the students. This is now the "new normal" in the Graduate School. Conducting lessons online should not be dull and tiresome for both the professors and students.

Interactive activities and collaborations must still be promoted to make learning worthwhile. The use of different online educational applications can make this a reality. For the number of online educational apps available on the Internet, which of those are more usable and appropriate for the subject. This study will help the teachers and students to evaluate the usability of each application and make a recommendation for those who are conducting online learning.

The objective of the study is to evaluate the usability of Kahoot, Quizizz, Padlet, and Mentimeter applications. The study finds out which among the apps was most significant to use in distance learning. The study would be a basis for the extension of the Graduate School to train the teachers in DepEd schools in the use of the apps for their distance learning.

Specifically, the following questions sought answers from the study:

2. How did Kahoot!, Quizizz, Padlet, and Mentimeter implemented in the study?
3. How was the system usability of the apps described?
4. What extension program was proposed to use the different apps to train the teachers in the distance online learning?

2. METHODS OF THE STUDY

The study utilized a quantitative method type of research. It used a descriptive method to gather data from the respondents using a modified System Usability Scale [14] to evaluate the apps. Present, Apply, and Reflect (PAR) instructional model [15] were utilized to identify the use of the apps in the lesson. This study was conducted in the second semester of S.Y. 2019-2020, Class C of the Graduate School of Bulacan State University. The fourteen teacher-students enrolled in the Research Methodology class were the respondents of the study. The respondents were basic education teachers teaching in public/private schools who voluntarily give consent to be part of the study. The class conducted online learning for five meetings to complete forty hours as required by the course. Within these five meetings, the Kahoot, Quizizz, Padlet, and Mentimeter applications were being used, respectively.

The System Usability Scale (SUS) [16] is, without doubt, the most widely used questionnaire for usability measurements. SUS is often used for users to fill in an online survey or after any usability test session. The SUS is made up of ten questions with five choices to choose from. In this study, the word 'system' was replaced by 'app' because the online educational apps were measured.

SUS score will be able to state the usability results in terms of quality, effectiveness, and ease of use overall. Even though each answer yields a score on a 0 – 100 scale, do not misinterpret it as a percentage or percentile. The average SUS score is 68. This simply means that a score of 68 will just put you at the 50th percentile.

3. RESULTS AND DISCUSSION

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3.1 Implementation of Kahoot!, Quizizz, Padlet, and Mentimeter

Research a subject that most of the students have gloomy apprehension; it is a complex subject with lots of information and writing. With all these negative thinking about the subject, the teacher integrated online educational apps that can make learning interactive and enjoyable to the students.

The different online educational apps were implemented using the Present, Apply, Review (PAR) Model. Petty’s extensive research into effective teaching suggests that the Present-Apply-Review (PAR) model is the most effective [17]. Teaching includes three stages: Present, Apply, and Review. **Present** new material; **Apply** the new learning; **Review** the skills learned from the lesson.

Table 1. Implementation of online educational apps

Topic	K	Q	P	M
1. What is research?				✓
2. Introduction to Research	✓			
3. Characteristics of Research				
4. Qualities of a Good Researcher	✓			✓
5. Epistemology and Ontology				✓
6. Types of variables	✓	✓	✓	✓
7. Type of research	✓	✓		✓
8. Variable, Concept, Construct, and Indicators	✓			
9. Independent and Dependent Variables	✓			
10. Sources of a Research Problem	✓			✓
11. Formulating Research Statement			✓	
12. Research Statement			✓	
13. Statement of the Problem		✓	✓	
14. Research Hypothesis	✓			
15. Significance of the Study and Scope and Delimitation of the Study	✓			
16. Research Methodology	✓			✓

17. Quantitative and Qualitative Research	✓	✓		
18. Population and Sample	✓	✓		
19. Basic Statistics for Research	✓			
20. Validity and Reliability of the Instrument			✓	

Percentage of Use 76% 33% 28% 39%

P-Present; A-Apply; R-Review; K-Kahoot; Q-Quizizz; P-Padlet; M-Mentimeter

Table 1 shows the different topics in the discussion of Methods of Research course. Among the listed 20 topics, 76% used Kahoot! for review of lesson, 33% used Quizizz also for the review of the lesson, 28% of Padlet for the application of learning, and 39% used Mentimeter for the presentation of the lesson. College students in Turkey preferred playing Kahoot! over other popular learning tools ClassDojo, Socrative, and Classcraft [18]. It’s relevant for college professors, academic researchers, and educators looking for game-based classroom tools. Quizizz demonstrated to be a speedy, protected, keen, and simple to utilize device which offers a few assets to work with and deal with the production of inquiries in the instructive setting [19]. Mentimeter, especially encompassing the development of instructively sound, higher-order questions, and effect of moving away from instructor-focused into student-focused learning on the teaching session itself [20]. Padlet made lectures more interesting, reading suggestions posted by other students enhanced students via Padlet than verbal [21].

Each online educational app (Kahoot!, Quizizz, Padlet, and Mentimeter) were used in the five meetings in the Graduate School, which were all done through distance online learning and evaluated its usability by the respondents.

3.2 System Usability Scale Result

Table 2. System Usability Scale Result

	K	Q	P	M
1. I think that I would like to use this app frequently.	4.64	4.55	3.55	4.55
2. I found the app unnecessarily complex. (The app should not be complex to use.)	3.00	2.64	2.82	2.18
3. I thought the app was easy to use.	4.45	4.36	3.73	4.73
4. I think that I would need the support of a technical person to be able to use this app.	1.82	1.64	2.45	1.55

5. I found the various functions in this app were well integrated.	4.36	4.18	3.64	4.00	<p>respondents answered in the follow up question which app/s will be more useful in teaching their subject answered it was Kahoot!. For the respondents, aside from using the app to check for understanding and assess learning, it is also easy, colorful, and enjoyable to use.</p> <p>Though the implementation of the use of Quizizz (33%) and Mentimeter (39%) were not as exposed as the use of Kahoot!, the respondents find the two applications also excellent. Quizizz incorporates fun multiplayer movement in the bookkeeping homeroom application, the understudies report that this application welcomes positive effect on their growth opportunities [24]. Class segment in which Quizizz is applied even more much of the time reports higher scores on the fulfillment of utilizing this application and higher scores on the educator's instructing assessment. During the Arabic skill classroom, found that all students were very active to answer the questions which provided by researches, and more concentrated on the topic [25]. Mentimeter as a student reaction framework, focuses on that anonymity (in contrast to a display of approval, for example) could be invaluable to test the comprehension of understudies in a more autonomous manner [26]. Furthermore, the anonymity of the instrument might expand commitment, as members who are typically hesitant to take an interest may likewise share their perspectives and replies. The innovation upgraded learning instruments, for example, Mentimeter are successful in advancing student commitment and interest and propose that an ideal methodology is to utilize these in blend with verbal interactive discussions to suit an assorted populace of students [27]. Though, Mentimeter is not a favorite app of the respondents because out of eleven respondents only one of them mentioned Mentimeter as an applicable app to his subject, the rating of the respondents is still 'Excellent'.</p> <p>Nine out of eleven respondents answered in the follow up question which app/s will be more useful in teaching their subject answered it was Kahoot!, and six out of 11 of them answered Quizizz. For the respondents, aside from using the apps to check for understanding and assess learning, it is also easy, colorful, and enjoyable to use. Comparing the three applications Kahoot!, Quizizz, and Google Form, Kahoot! and Quizizz have introduced a great deal of up-sides over Google structures when utilized in the homeroom [28]. However, the activities gamified with Kahoot application, albeit statistically insignificant, had a more positive impact on academic achievement and student engagement when compared to the other groups [29]. Then again, it was seen that the positive effect of the exercises gamified with Quizizz application was lower than that of the guidance strategy used in the benchmark group both in view of scholarly accomplishment and understudy commitment.</p> <p>The implementation of Padlet which more on the application of learning only been utilized for 28% that makes the app not exposed on the experience of the respondents that made the score the lowest and interpreted as 'Poor'. Though using Padlet in instruction has established a non-threatening space to collect and cure collaborative work in the classroom, there are still barriers the expected participation of the</p>
6. I thought there was too much inconsistency in this system.	1.91	1.91	2.27	1.82	
7. I would imagine that most people would learn to use this app very quickly.	4.64	4.64	3.73	4.36	
8. I found the app is very inconvenient to use.	1.64	1.27	1.91	1.27	
9. I felt very confident using the system.	4.55	4.45	3.45	4.64	
10. I needed to learn a lot of things before I could get going with this app.	2.09	1.91	2.91	1.91	
X	19.90	19.4	14.9	19.5	
Y	13.50	14.7	11.4	15.4	
SUS	83.5	85.25	65.75	87.25	
Grade	A	A	D	A	
Adjective Rating	Excell-ent	Excel-lent	Poor	Excellent	

P-Present; A-Apply; R-Review; K-Kahoot; Q-Quizizz; P-Padlet; M-Mentimeter

Table shows the SUS result of the four online educational apps. Mentimeter (87.5), Quizizz (85.5), and Kahoot! (83.5) were graded 'A' which having the interpretation of 'Excellent'. Among all the other apps, it was Padlet got the lowest score which is 65.75 and graded as 'Poor'. Based on the implementation of these online educational apps in Table 1, it revealed that a higher percentage use of Kahoot! (76%) made the experience of the respondents perceive that the app is useful for them. the students seemed to indicate that the Kahoot! activity permitted them to foster a greater number of abilities than the multiple-choice written test [22]. Further, the review affirmed that information acquired in the study appears to show that the understudies emphatically esteemed the utilization of Kahoot! As this tool is a clear example of gamification, it could be inferred with a certain potential error that these types of new study techniques improve students' perceptions of the subject matter, as these techniques enhance student participation in class while improving their experience by providing them with new tools whose use can be replicated in the future. Learners' performance and engagement are enhanced when using Kahoot! versus traditional teaching methods [23]. Nine out of eleven

students. Based on the result of the study, Mentimeter got the lowest usability score of 65.75 which is interpreted as 'Poor'. Some of the obstacles in the involvement of the students [30]. Since that Padlet app allows collaboration of the student since they can see the work of each other, there are some students who feel like their thoughts and opinions are not yet well-formed and thus unworthy to be made public. Further, students are evaluating to figure out what sort of interest they are searching for and the amount it strays from the normal study hall stream. Subsequently, for the students, it is unsafe to communicate with a class facilitator, and students might be awkward straying a lot from homeroom conduct standards laid out by the normal teacher. Despite of the findings of the previous study, the students could learn and generate new ideas when using this tool [31]. Subsequently, Padlet can be utilized for cooperative learning in the organization of a discussion to get groundbreaking thoughts. On the other study, indicates that Padlet could be used for communication among deaf students [32].

4. CONCLUSION AND RECOMMENDATIONS

The study aims to identify the usability of Kahoot!, Quizizz, Padlet, and Mentimeter based on the experiences of the respondents as it is being used in the course Methods of Research. The use of PAR gives way to how the apps are used in the lesson. More of the activities used Kahoot! for review, followed by Mentimeter for Presentation of the lesson, third on the rank is Quizizz, which is also used for review. Lastly, the Padlet, which is used in the application. Based on the SUS, it was Mentimeter, Quizizz and Kahoot! were rated "Excellent" and find to be useful. Padlet was rated Poor. Though Kahoot! was used more often in the subject, the respondents rated Mentimeter to be more usable among all apps. This result of this study is only the first phase of the research project. Since the apps will be used as an extension activity of the Graduate School to train public school teachers to have an engaging teaching-learning process, the study will continue by rating again the SUS of the apps based on the experience of the teachers and students. An extension program was developed as one of the activities of the Graduate School. It is recommended to deepen the content of the training for the teachers and students to explore the other features of the apps.

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