

Research Article

Implementing Wordwall in Teaching Sampling Techniques for Higher Education Students

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ORCIDTanti Listiani: <https://orcid.org/0000-0003-2170-3680>**Abstract.**

This research aimed to determine the use of the Wordwall in online learning on sampling techniques material for higher education students. The use of this application was reviewed through test results and questionnaires. This research used combination research by combining quantitative and qualitative data collection techniques. The subjects of this research were 53 students from Teachers College in Universitas Pelita Harapan (UPH) that took Statistics for Educational Research course. The result displayed that the quizzes given on Wordwall can help students to learn about sampling techniques and materials with positive responses. Good feedback from students showed that they felt happy in doing the learning activity on Wordwall. There were almost 90% of students who said that they enjoyed the learning. In the end, Wordwall is recommended to be implemented in higher education classrooms.

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1. INTRODUCTION

Education is closely related to the learning process. The learning and teaching process also certainly involves students and lecturers. Lecturers as teachers usually apply various methods or learning media that can support the learning process. The use of effective learning media should adapted for students needs. If there are problems with students, the lecturer as a teacher can determine the appropriate learning methods and media. The most concerned problem in one of the private universities in Tangerang was the lack of student response in learning. When students are given material in class, students tend to be passive and do not want to ask questions. This condition occurs when the world, including Indonesia, has overcome the Covid-19 pandemic. The government of Indonesia requires that learning which was originally face-to-face, must be carried out online [1, 2]. All levels of education are transformed to implement distance learning by implementing various digital features. A challenge for educators to

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teach online is by utilizing digital media without reducing the effectiveness of learning outcomes [3]. Students for approximately two years must follow every online learning process. This condition makes students feel bored and less active, as happened to prospective student-teachers at UPH. The lack of activeness can certainly have an impact on their learning outcomes. If the lecturer asks them which material is not understood, they tend to be silent. When he/she asks a question, students also cannot answer precisely. If those problems are taken for granted, it will become more serious because their learning outcomes will decrease and not be achieved optimally.

In this situation, lecturer needs to think of a step to attract the students' attention, so that they want to be actively involved in learning. Many things have been done by lecturers, one of those things is by using the Wordwall. It is an attractive application that can function as games and even quizzes [4]. Wordwall is usually used as more dominant Question and Answer (QnA) application to learn words. In this study, lecturer tried to apply this for Statistics for Educational Research course. The choice of this course is because it does not only contain formulas but also contains concepts and theories. Students may feel difficult for the next stage in determining formulas and other concepts if they do not understand the theory. One of the materials that refer to the theory is the sampling technique. Having the understanding to determine sampling technique in research is needed for students.

Wordwall is suitable as an alternative teaching medium, especially in online learning [5]. It can encourage students to study more actively. This application can be provided for elementary to higher education students. By looking the existing problems and solutions, this study aims to see whether Wordwall can encourage students to have a good response in studying sampling technique in this course.

Media are forms of communication, both printed and audiovisual, and their equipments [6]. Media should be manipulated, seen, heard, and read. While learning media is a messenger technology that can be used for learning needs, it is a physical means, in the forms of printed, audiovisual, and even hardware technology, to deliver learning material. The benefits of learning media are to make learning more interesting and increase motivation in learning, It makes learning materials can be conveyed properly, then students are not bored with a monotonous classroom atmosphere. One of the learning media that can be applied is Wordwall. Wordwall is an interesting application that can be accessed via browser. This application specifically aims as a fun learning resource, media, and assessment tool for students. In some pages, it also provides examples of the teachers' creations so that new users can get an idea of what kind of creation will be. Wordwall can be interpreted as a web application that we use to create

fun quiz-based games. This web application is suitable for designing and reviewing a learning assessment. Wordwall is the perfect game platform for drilling and practicing vocabulary [7] as it provides variety of game formats that are useful to the selected crowd of pupils, in this scenario of primary school. Wordwall is a strong platform for using educational games in teaching and learning, thus having the right platform to use is crucial [8]. It is unique, which can be used as an evaluation tool in the form of quiz questions, crosswords, matching pairs, finding the match, and others, which can be used as formative and even summative tests [9]. Wordwall is also an application that can be used as a learning tool, learning resource, or online evaluation to attract students' attention [4]. Another uniqueness is that the teacher can see the level of difficulty per item and can see the percentage so that the teacher can see which questions are the most difficult and which are the easiest questions to work on. It can be accessed via wordwall.net with an attractive and varied appearance. Selecting interesting, correct, and good media can increase student learning motivation. With the concept of playing while learning, Wordwall is very suitable for teachers, especially when teaching in online situation [10]. Below is a display of the Wordwall features, which can be seen in Figure 1.

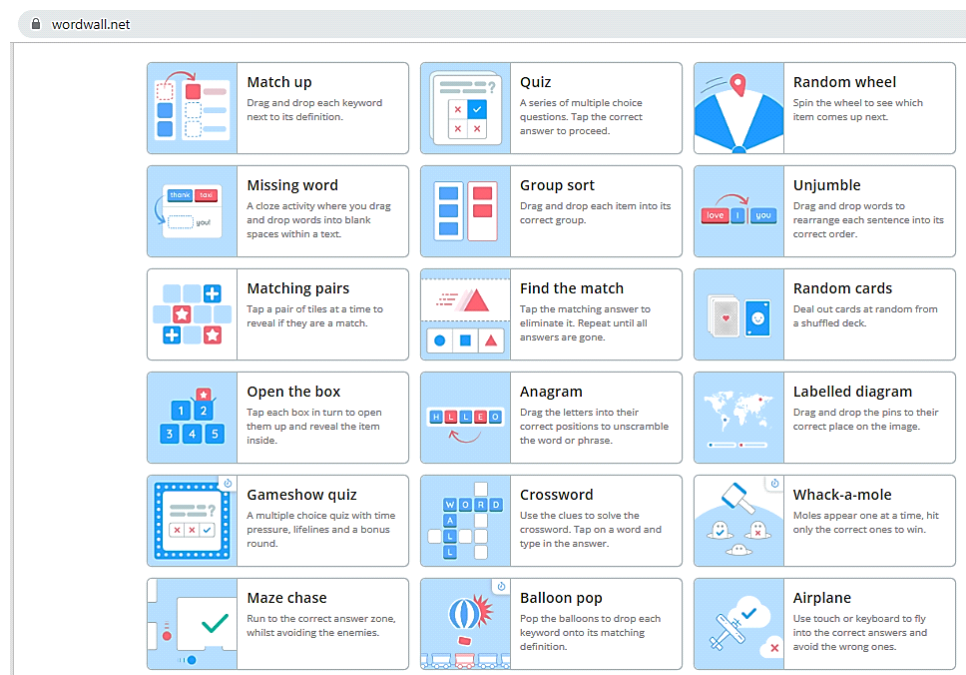


Figure 1: Features of the wordwall application.

In Figure 1 there are many features from quizzes, word searches, even anagrams presented by Wordwall. Users can choose features that are suitable to be used as quizzes when teaching or playing games.

2. RESEARCH METHOD

The type of research used is to combine qualitative data and quantitative data. The method used to collect data is a questionnaire to see students' responses while using Wordwall. The research is carried out within one semester (6 months), which is even semester of the 2021/2022 academic year. The place of research is in Teachers College in Universitas Pelita Harapan (UPH). The research subjects were students who took Statistics of Educational Research course, from 53 students in Primary Teacher study program. Meanwhile, the object of the research is the implementation of learning by using application to support online learning. Processed data is obtained from questionnaires and student learning outcomes data after using Wordwall. The questionnaire used for research was circulated through Microsoft Office Forms.

3. RESULTS AND DISCUSSION

This research was conducted on Statistics for Educational Research, especially on the material of sampling technique. Sampling Technique was given at third meeting, before students learnt about collecting data and processing statistics data. Giving quizzes through Wordwall was done after students studied independently. The lecturer first provided material that was uploaded to Moodle, besides that students were also given an explanation video about various kinds of sampling techniques between random sampling and non-random sampling. To solve the students problem in responding, students were given a quiz combined with a game called Wordwall. It consists of various types of quizzes. For this study, the researcher chose Maze Chaze. The interesting thing about this type of quiz is that students try to answer questions but go through obstacles by fighting enemies. The questions given to complete this game are ten items. The following are the stages that students need to do in playing the quiz.

The first thing to do is that students need to enter their names before starting the quiz and selecting start to start working. This appearance can be seen in Figure 2.

After students click the start button, there will be a display of astronauts fighting aliens. This astronaut is in a maze, and inside the maze there is a room containing answer choices. This astronaut is a student representative who will walk into the room containing the answers. The most appropriate answer should be chosen by students. But the challenge given is not only answering the question correctly. Students must also try to fight aliens so that their lives are alive and they can continue this game (see

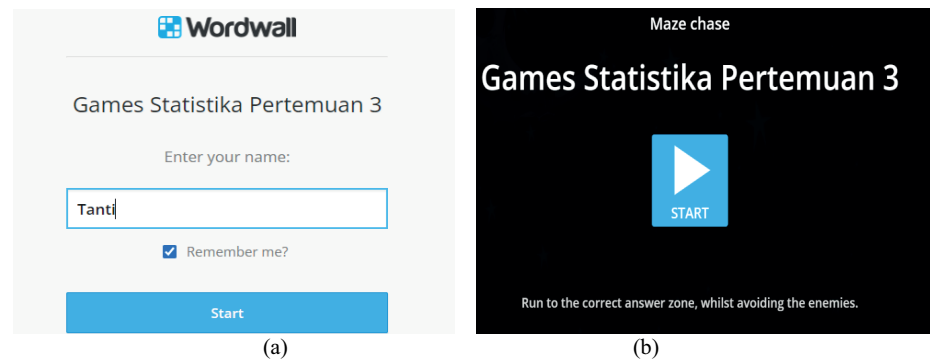


Figure 2: Wordwall display; (a) Students enter a name; (b) Students click start.

Figure 3). If students can answer the question, they will automatically be directed to the next question until all questions can be answered.



Figure 3: Quiz display with maze chase type on wordwall.

Giving quizzes using this wordwall is done during synchronous session. It is because the quizzes can be done simultaneously in one statistics class. The time given to take the quiz is also limited, which make students have to focus on working and may not even have time to open the book. This game is interesting because students are challenged to learn the material first before they start to take the quiz. Students who have not studied will feel it difficult because they have to repeat the game several times until they know the true answer. The positive side is that by giving a quiz using Wordwall, students can learn which questions are correct and which questions have not been answered correctly. Students will also find it easier to remember learning material when learning from their mistakes.

From the questionnaires that have been distributed to students, it can be seen that many students have a good response in participating in this game. In Table 1 will be shown the results of the questionnaire regarding student responses in using Wordwall.

TABLE 1: Percentage of student answers to the questionnaire.

Nu	Statement	Percentage of Student Answers (%)					Total
		Strongly Agree	Agree	Doubtful	Less Agree	No Agree	
1	Interest with the use of Wordwall	66.04	24.53	5.66	0.00	3.77	53
2	No trouble working with Wordwall	35.85	41.51	11.32	7.55	3.77	53
3	Happy to answer questions with Wordwall	71.70	18.87	3.77	1.89	3.77	53
4	Passion for using Wordwall	69.81	20.75	3.77	1.89	3.77	53
5	Wordwall helps to do the problem correctly	60.38	24.53	9.43	3.77	1.89	53
6	Wordwall is very interesting in doing questions	67.92	22.64	7.55	0.00	1.89	53
7	Wordwall makes easier to work on questions	54.72	30.19	7.55	5.66	1.89	53
8	Feel trouble to do practice questions using Wordwall	22.64	24.53	15.09	22.64	15.09	53
9	Like the display of Wordwall	69.81	24.53	0.00	3.77	1.89	53
10	Faster to do the tasks with Wordwall	35.85	37.74	18.87	5.66	1.89	53

Table 1. is a table of percentages regarding student responses when using Wordwall. The data presented above is the result of a questionnaire distributed to students via Microsoft Office Forms. The total subjects were 53 students from the Primary School study program. The following is an explanation of the contents of the Table 1. The first is a statement about whether students like to use Wordwall. From the student's first statement, it shows that 66.04% of students answered "strongly agree" and 24.53% "agreed". If those data are added up, there are 90.57% of students happy when learning using Wordwall. Furthermore, the statement regarding whether students have difficulty using Wordwall, obtained 35.85% of students answered "strongly agree" and 41.51% of students "agree". If the data are added up, there are 77.36% of students find it easy to use Wordwall.

When stated whether students like to answer questions with wordwall, the answers obtained are 71.70% strongly agree and 18.87% agree. This means that 90.57% of students like to answer questions with Wordwall. For the spirit of using wordwall, 68.81% answered strongly agree and 20.75% agreed. Therefore, 90.57% of students feel enthusiastic in using wordwall. The next statement is to see student responses regarding whether Wordwall can help students answer questions correctly. The results obtained are that 60.38% of students answered strongly agree and 24.53% of students agreed, or a total of 84.91% of students felt it was helpful to know the right answer.

Next is the student response regarding interest in using Wordwall, the table shows there are 67.92% of students strongly agree and 22.64% of students agree, or 90.57% of students are interested in the wordwall application. The next statement whether the questions become easier to do through Wordwall, obtained 54.72% strongly agree and 30.19% students agree. This means that 84.91% of students find it easy to work on questions through Wordwall. Meanwhile, when stating whether students find the difficulties to do the questions, it was found that 22.64% of students strongly agreed, 24.53 % agreed, 15.09% hesitated, 22.64% did not agree and 15.09% disagreed. Or it can be concluded that 47.17% agree that they have difficulty, and 52.83% of students feel that they have no difficulty in working on the questions. The reason why there are 47.17% of students is because they have to study first before working on the problem and students also have to avoid the aliens in the game.

The next statement is related to the appearance of the application. It was found that 69.81% of students strongly agree with the appearance of Wordwall and 24.53% of students agree, which means that 94.34% of students are happy with the appearance presented on Wordwall. The last statement is about speed in working on the quiz. It was found that 35.83% of students answered “strongly agree” and 37.74% of students answered “agree”. Or 73.58% of students agree that they can work on the quiz quickly. This is because students can repeat working on questions and correct errors in questions so they become faster in working on questions because they have memorized the right answers. In Table 2, is an explanation of students’ learning outcomes after using the wordwall application.

The results show that Wordwall in learning Statistics brings a positive response from students. The results of the questionnaire show fantastic value, where more than 50% of students agreed and were happy to use this. One thing that makes students less comfortable is with the Maze Chase game. The type of game-used turned out to be overwhelming for students, less focused on doing problems because students also had to focus on defeating “the aliens”. This is what hinders students from being able to work

TABLE 2: Size of data centering student learning outcomes.

No	Data Center Size Student Learning Outcomes	Result
1	Average learning outcomes	94.3
2	Standard Deviation	12.56
3	Variance	157.79
4	Minimum	30
5	Maximum	100

on the questions to the maximum. However, this application can still be an alternative in giving formative quizzes that can challenge students to study before taking the quiz. Students do not have much time to open books. Students must also master the content to get the maximum score. In addition, students can also try repeatedly, until they can get the maximum score. Student learning outcomes also showed high scores, where the average obtained was 94.3 out of 53 students who worked. Students also got maximum score in 100 with the standard deviation at 12.56. It means that the data is good. At the end, the students' responses in using Wordwall and the values obtained have good synchronization.

Wordwall is an interesting application that can encourage students to respond well, besides that student learning outcomes are also better [11, 12]. Students can learn and play at the same time, yet this application can not only be used for elementary and middle school students. It can still be used for college students. Another advantage of using Wordwall is also because this application is free, even though there is indeed limited access. If the teacher needs more complete features, then you need to subscribe to the premium version. Wordwall can be the choice so that teachers can easily understand the concept of gamification and create various quiz/evaluation templates that are owned by Wordwall. The expected target is for teachers to understand concepts and use gamification to increase students' involvement in the online learning process [13].

4. CONCLUSION

The implementation of online learning requires educators to be more creative in delivering material through various digital media or applications. The media can be developed or created by themselves by utilizing digital media which are already available for free or paid. Wordwall has various advantages, which has the various features and can be used for free. The use of online gamification features through Wordwall is effective in increasing students' understanding of learning materials. Students' responses about the

application are satisfying because more than 50% of students feel happy and interested. In addition, their learning outcomes also show a good average. Wordwall is also suitable besides higher education students. There are some suggestions for lecturers and students related to this research. For lecturers, they need to think about the material which is suitable with the features on Wordwall. For students, it is necessary to study first before taking the quiz for the sake of fluency in doing the quiz. By gamification, the teaching and learning process becomes more interesting, yet playing games requires concentration so that students have a good response in learning process.

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