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The Effectiveness of Using Wordwall as a Media for Mathematical Learning Assessment in Madrasah Ibtidaiyah

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ABSTRACT

Mathematics lessons are one of the lessons that are considered difficult, so educators must be creative in choosing learning media to reduce the stereotype that mathematics lessons are difficult. One assessment medium that can be used to attract student interest is Wordwall. This research aims to determine the effectiveness and level of enthusiasm for Wordwall as an assessment medium in mathematics learning. The method used in this research is descriptive quantitative with a one-group pretest-posttest research design. The sample from this study uses a saturated sample, which means the entire population is included in the sample. The number of class V students at MI Soko, Pekalongan City is 36 students. Data collection was carried out by administering questionnaires and carrying out pretest-posttest related to mathematics questions. Then the data analysis technique uses the N-gain test, hypothesis testing, and Likert scale. The results of this research are: (1) Students feel enthusiastic about carrying out assessments using Wordwall with an enthusiasm percentage of 81.4% with effective information. (2) The use of Wordwall as a medium for assessing mathematics learning has proven to be effective with an N-gain value of 0.33, including the medium category and hypothesis testing with a large value. 0.000 < 0.05 which proves that there is a significant difference between before using Wordwall (pretest) and after using Wordwall (posttest). It is hoped that the research results will be able to provide information for educators regarding assessment media that are appropriate to developments in this century. The use of wordwalls has also been shown to be able to improve learning outcomes and student enthusiasm, especially in learning mathematics.
Keywords: Assessment, Enthusiastic, Mathematics Learning, Wordwall

ABSTRAK

Pelajaran matematika merupakan salah satu pelajaran yang dianggap sulit, sehingga pendidik harus kreatif dalam memilih media pembelajaran untuk mengurangi stereotip bahwa pelajaran matematika itu sulit. Salah satu media penilaian yang dapat digunakan untuk menarik minat siswa adalah Wordwall. Penelitian ini bertujuan untuk mengetahui efektivitas dan tingkat antusiasme Wordwall sebagai media penilaian dalam pembelajaran matematika. Metode yang digunakan dalam penelitian ini adalah deskriptif kuantitatif dengan desain penelitian one-group pretest-posttest. Sampel dari penelitian ini menggunakan sampel jenuh yang artinya seluruh populasi termasuk dalam sampel. Jumlah siswa kelas V MI Soko Kota Pekalongan berjumlah 36 siswa. Pengumpulan data dilakukan dengan pemberian angket dan melaksanakan pretest-posttest terkait soal matematika. Kemudian teknik analisis datanya menggunakan uji N-gain, uji hipotesis, dan skala likert. Hasil dari penelitian ini adalah: (1) Siswa merasa antusias dalam melaksanakan penilaian menggunakan Wordwall dengan persentase antusiasme sebesar 81,4% dengan informasi sangat efektif. (2) Penggunaan Wordwall sebagai media penilaian pembelajaran matematika terbukti efektif dengan nilai N-gain sebesar 0,33 termasuk kategori sedang dan uji hipotesis dengan nilai besar. 0,000 < 0,05 yang membuktikan bahwa terdapat perbedaan yang signifikan antara sebelum menggunakan Wordwall (pretest) dan setelah menggunakan Wordwall (posttest). Hasil penelitian diharapkan mampu memberikan informasi bagi para pendidik mengenai media penilaian yang sesuai dengan perkembangan abad ini. Penggunaan

wordwall juga terbukti mampu meningkatkan hasil belajar dan semangat siswa khususnya dalam pembelajaran matematika.
Kata kunci: Asesmen, Antusiasme, Pembelajaran Matematika, Wordwall

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Introduction

It cannot be denied that the rapid development of technology also has an impact on the learning system in this era. Learning media is also experiencing development, which was previously only limited to print media, is now starting to shift to digital media. So as educators we are required to be technologically literate in order to be able to adapt to the current environment and innovate in developing or utilizing learning media. There are several digital media that educators are starting to use as a means of delivering material, such as interactive PPT, quizzes, bamboozle, wordwall, and others. The use of digital media in learning must also be adapted to students' conditions so that they feel interested in the learning process. Therefore, educators need to utilize digital media to create a learning environment that is fun and not boring, especially when learning mathematics.

Learning mathematics is known to be difficult and unpleasant for students. Never mind starting the material, sometimes even hearing the material can make students discouraged. This lesson is difficult because it contains the concept of number science, number relationships, and operational steps for solving numbers related to numbers (Sarah et al., 2021). There is a need for appropriate teaching methods in delivering mathematics learning so that students understand and develop learning skills (Nissa et al., 2023). Apart from that, educators also need to change students' mindset about mathematics which is difficult and boring so that interest in mathematics arises. This opens up a small gap so that students understand and are interested in mathematics and eliminates the mindset that mathematics is difficult. Therefore, educators need to utilize digital media to stimulate students' interest and change their mindset that mathematics is difficult.

Educators have a very important role in the world of education. Educators can be said to be facilitators who can direct and develop students' potential in various fields, including social, cognitive, skills, creative, and others. Apart from being a facilitator, educators are also observers in the learning process. The interactions that exist between educators and students in the learning process are used as guidelines for output in the form of student learning outcomes (Festiawan, 2020). Educators must also be able to provide appropriate methods and assessments to determine good student development based on assessments.

Assessment is a series of questions or exercises used on the object of assessment (Sohilait, 2021). The assessment aims to find out how the learning process takes place between educators and students to achieve the learning goals that have been set (Rosmana et al., 2023). Assessment in the regulations of the Minister of Education, Culture, Research and Technology concerning Standards for Assessment of Early Childhood Education, Basic Education and Secondary Education, article 9 (1) Number 21 of 2022 is divided into formative and summative assessments (Permendikbud, 2022). Formative assessment is an initial assessment to determine the obstacles and difficulties experienced by students (Rahmawati et al., 2015). Meanwhile, summative assessment is used during or after learning takes place. Usually in the form of numbers that are used as a benchmark for student development (Warsah & Habibullah, 2022).

Assessment in this era can be done by utilizing digital media. Through digital media, it is hoped that it will be able to increase student enthusiasm and learning outcomes (Aeni et al., 2022). Because student learning outcomes influence the use of methods and media used by educators in learning assessment. Therefore, it is hoped that educators will be able to help students obtain complete learning outcomes according to the targets given by the school (Novita et al., 2019). Among the digital media that can be used as an assessment of mathematics learning is a game-based Wordwall so that students become more enthusiastic, interested and happy in learning (Gandasari & Pramudiani, 2021).

Wordwall is a website that can be accessed for free and can be accessed anytime and anywhere. Apart from that, the wordwall is also based on educational games which make it easier for teachers to design the material being taught (Zalillah & Alfurqan, 2022). On the Wordwall website, various templates can be used to create games such as quizzes, matching, matching pairs, anagrams, random words, word searches, true and false, short answer questions, grouping, random cards, airplanes, wack a mole and balloon popping (Rahman et al., 2023). This website can be used as a forum for educators' creativity in creating a fun learning environment and as an interesting assessment tool. Wordwall can be used online or offline. If online, educators can provide students with a link or display it on a projector screen.

Using a wordwall can also increase student enthusiasm. In the Big Indonesian Dictionary (KBBI), enthusiasm can be said to be a burning interest or enthusiasm. In line with Asria et al. (2021) that enthusiasm is said to be passion, enthusiasm and interest of students in learning. Meanwhile, according to Intaniasari et al. (2022), enthusiasm is said to be an attitude or motivation that encourages students to feel happy during the learning process. So, it can be said that enthusiasm is the spirit that burns within students when learning takes place. The level of enthusiasm also has an

impact on student learning outcomes. Because they feel enthusiastic and happy when learning, so it also has an impact on their learning outcomes.

Apart from that, the use of wordwalls is also considered effective in improving learning outcomes and eliminating boredom in mathematics lessons. Apart from that, the use of wordwalls is also in line with developments in the times that use technology. This is in line with research Latifa et al. (2023) which shows the effectiveness as an evaluation medium using wordwall. Apart from that, research conducted Zalillah & Alfurqan (2022) also said that using wordwall as an evaluation medium can make students interested and happy. Muzaini et al. (2023) also said that the use of wordwalls also had an impact on increasing students' critical thinking. Therefore, researchers conducted research to determine the level of enthusiasm of students and analyze the effectiveness of wordwalls on student learning outcomes.

Based on this background, it is necessary to carry out further research regarding the level of enthusiasm and learning outcomes of students. This research uses different material from previous research, namely spatial building material. Therefore, the aim of this research is to analyze the level of enthusiasm and learning outcomes of students when using wordwall.

Research Methods

The method used in this research is quantitative descriptive. This research design uses a one group pretest-posttest design with a saturated sample. This means that the entire population is included in the research sample. According to Sugiyono, quantitative descriptive research is a method that aims to describe a situation objectively using numbers without intending to draw conclusions (Sugiyono, 2019). Meanwhile, according to Arikunto, quantitative descriptive research is describing data using numbers objectively and displaying the results (Arikunto, 2009).

This research was carried out at MI Soko, Pekalongan City, class V. The research subjects were 36 students. Data collection techniques in this research used tests and questionnaires to analyze students' enthusiasm for mathematics assessments. There are two hypotheses in this research, namely: Ha_1: The use of wordwalls in assessing mathematics learning is considered effective; $H0_1$: The use of wordwalls in assessing mathematics learning is less effective; Ha_2: Students are enthusiastic about answering assessment questions using wordwall; $H0_2$: Students are less enthusiastic about answering assessment questions using a wordwall. After that the researcher used SPSS to test the hypothesis. The parametric tests used were the paired sample t test and the Shapiro-Wilk normality test. Data analysis in this research was carried out quantitatively.

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This analysis was carried out by converting values using a Likert scale. Data analysis of the validation sheet also goes through several stages starting from data tabulation, calculating the average score for each aspect, and changing the average score into category values. Then the scores are converted according to the table below. Table 1. Conversion of validation sheet scores.

Table 1. Conversion of validation sheet scores

Intervals	Percent	Category
3.26-4	82-100	Very effective
2.51-3.25	64-81	Effective
1.76 -2.5	44-63	No effective
1 - 1.75	<44	Very No effective

Result and Discussions

Use of Wordwall as an Assessment Media

Wordwall is a game in the form of a website that can be used as a student assessment. This is also supported by various wordwall features (Wayan Mertha & Mahfud, 2022). The use of wordwalls in mathematics learning can increase student enthusiasm as per research by Kharisma, et. al (Lestari et al., 2022). Wordwalls are also suitable for elementary school level because they are able to motivate students to learn rather than using traditional methods (Diyora & Mohinakhon, 2022). Following are the steps for using Wordwall as an evaluation medium.

1. Open Wordwall on Google https://wordwallnet/

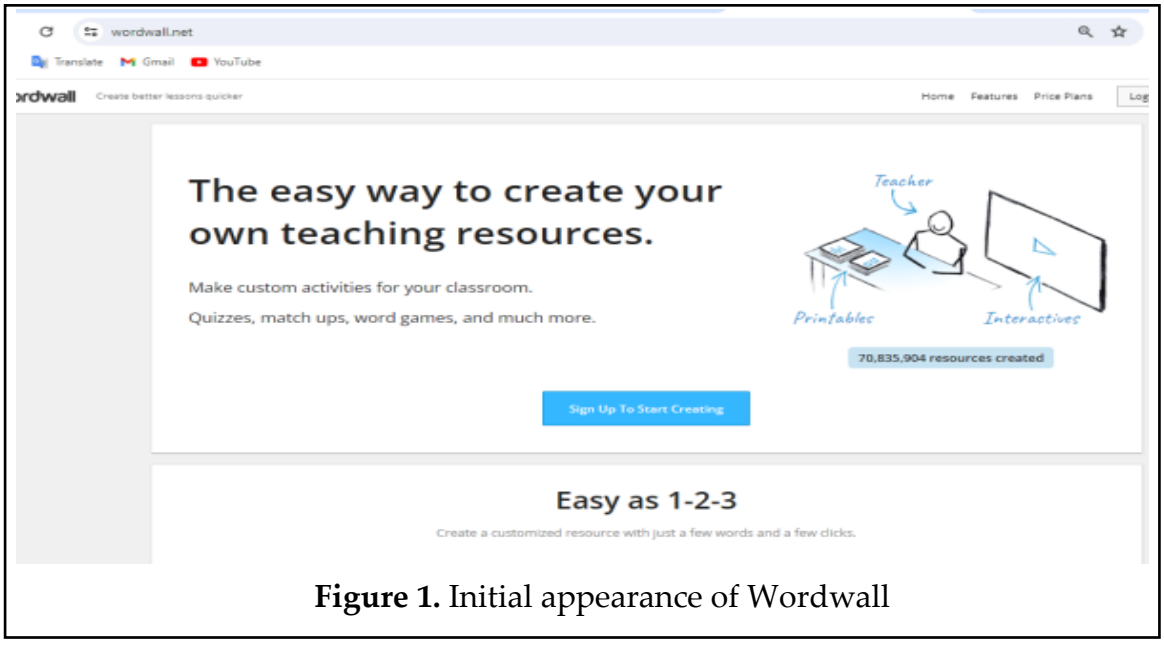

Figure 1. Initial appearance of Wordwall

2. Create a Wordwall account or you can log in via Google account

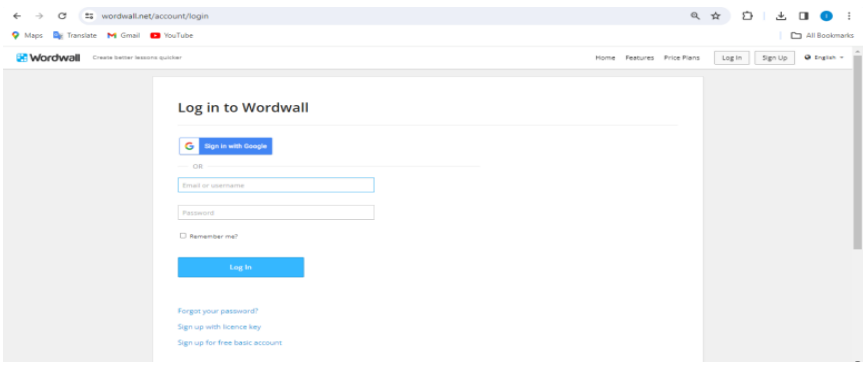

Figure 2. Creating a Wordwall account

3. If you are already logged in, please select the template you will use. Because the templates on Wordwall are very diverse.

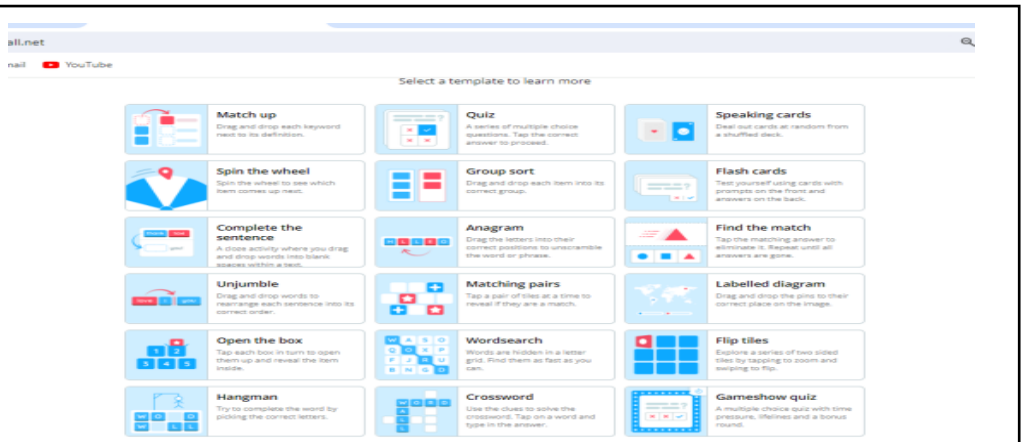

Figure 3. Wordwall template

4. After selecting a template, you can start typing the assessment questions that will be tested.

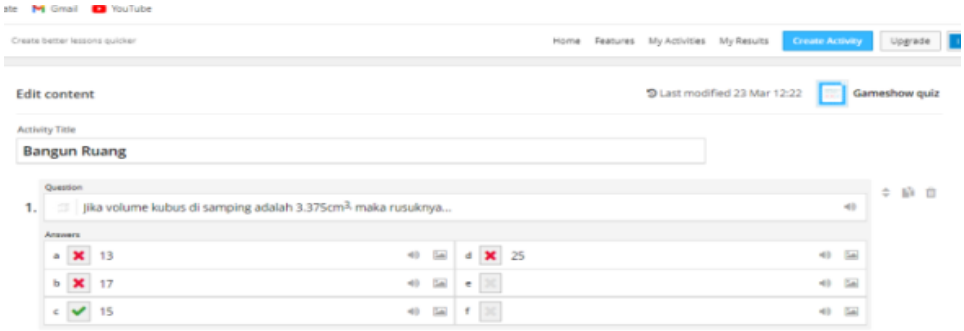

Figure 4. Creating questions on Wordwall

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5. If the question is considered complete, click finish and a display like this will appear.

Figure 5. Displays the questions that have been created

6. Then scroll down to determine time limits, bonuses and other features.

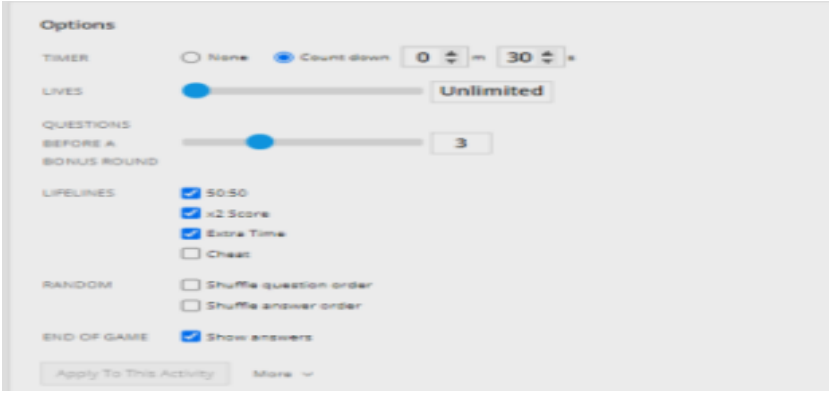

Figure 6. Setting the bonus display, time and other features

7. In this menu, you can also see the ranking of each participant who has completed their work.

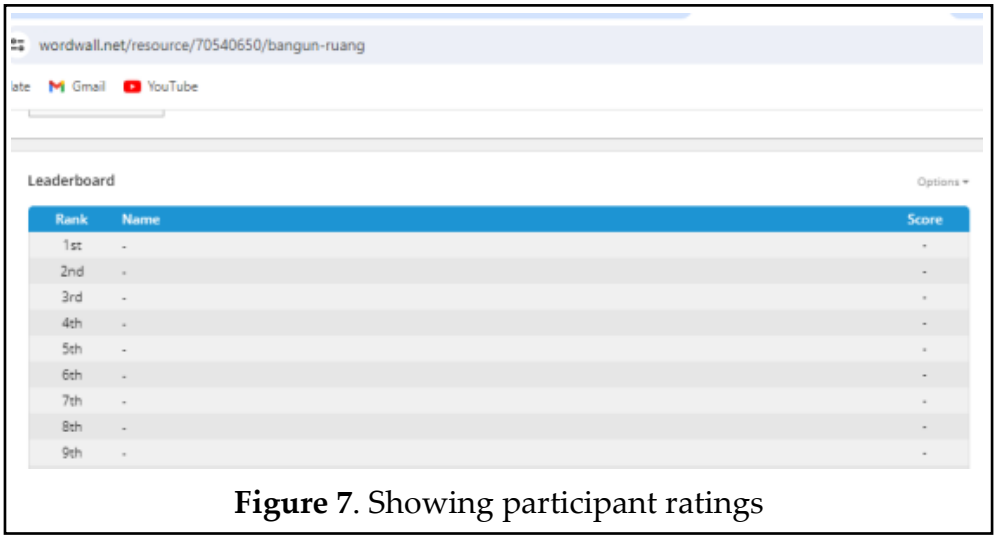

Figure 7. Showing participant ratings

The open wordwall on google last seen Figure 1, create a Wordwall account or you can log in via Google account can be seen Figure 2, if you are already logged in, please select the template you will use. Because the templates on Wordwall are very diverse can be seen Figure 3, creating questions on Wordwall can be seen Figure 4, displays the questions that have been created can be seen Figure 5, Setting the bonus display, time and other features can be seen Figure 6, and the last you can be seen Figure 7 to showing participant ratings.

Effectiveness of using wordwall as an evaluation medium

To measure the effectiveness of using wordwalls as an assessment medium, researchers collected data. Data collection was carried out before using the wordwall (pretest) and after using the wordwall (posttest). The material tested is spatial construction which consists of 20 multiple choice questions with different levels of difficulty and completion time. The sample in this study used a saturated sample, namely all 36 grade 5 students at MI Soko. Then the researchers used N-gain to determine the significance of mathematics learning outcomes before and after using wordwall. The following is the formula for finding N-gain (Equation 1). Table 2 N-gain value category and Table 3 N-gain score for pretest-posttest mathematics learning outcomes with Wordwall.

$$N - Gain\ Score\ \frac{Score\ posttest - Score\ pretest}{Score\ ideal - score\ pretest} \quad (1)$$

Table 2. N-gain value category

N-Gain Score	Category
$g > 0{,}7$	Tall
$0{,}3 \geq g \leq 0{,}7$	Currently
$g < 0{,}3$	Law

Based on the N-gain above, an average value of 0.33 is obtained, which is included in the medium category (Arikunto, 2009). So, it can be concluded that the use of word walls can be used as an alternative media in learning evaluation. This is due to the significance of the pretest and posttest scores in using word wall. After carrying out the N-gain, the researcher tested the hypothesis using a paired difference test (paired sample t-test) assisted by SPSS.

Table 3. N-gain score for pretest-posttest mathematics learning outcomes with Wordwall

Prates	Post test	N-profit	Information
60	80	0.50	Currently
65	75	0.29	Low
70	75	0.17	Low

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Prates	Post test	N-profit	Information
70	70	0.00	Low
75	80	0.20	Low
50	60	0.20	Low
70	80	0.33	Currently
75	85	0.40	Currently
50	65	0.30	Currently
85	90	0.33	Currently
80	90	0.50	Currently
50	60	0.20	Low
80	90	0.50	Currently
65	75	0.29	Currently
50	55	0.10	Low
80	95	0.75	Tall
45	60	0.27	Low
80	95	0.75	Tall
75	80	0.20	Low
50	55	0.10	Low
55	65	0.22	Low
75	90	0.60	Currently
65	70	0.14	Low
70	80	0.33	Currently
70	75	0.17	Low
55	60	0.11	Low
65	75	0.29	Low
60	70	0.25	Low
90	100	1.00	Tall
70	80	0.33	Currently
75	85	0.40	Currently
65	70	0.14	Low
70	80	0.33	Currently
80	90	0.50	Currently
55	70	0.33	Currently
55	65	0.22	Low
Means		0.33	Currently

Table 4. Normality Test

	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistics	df	signature.	Statistics	df	signature.
Prates	,141	36	,068	,954	36	,139
Posttest	,100	36	,200 *	,966	36	,317

*. This is the lower limit of the true meaning.

A. Lilliefors Significance Correction

Based on the Table 4 above, it is known that the pretest value is 0.139 and the posttest value is 0.317. The basis for decision making in the normality test is said to be normal if the sig value is > 0.05. So it can be concluded that the data above is normally distributed because the pretest and posttest significance values are more than 0.05 (Ramadhani & Bina, 2021).

Table 5. Hypothesis Testing (Dependent Sample t-test)

		Paired Sample Correlation		
		N	Correlation	signature.
Pair 1	Pretest & Posttest	36	,940	,000

Based on the Table 5 above, the sig value (0.000) is smaller than 0.05 (Sig < 0.05), meaning that H_{01} is rejected and H_{a1} is accepted (Sugiyono, 2019). So, it can be concluded that the use of wordwall is effective as a medium for evaluating mathematics learning.

Students are enthusiastic about using Wordwall

Wordwall is a gamification media which is better known as game-based media. So that in its application students become more interested. Plus there are also various interesting templates available such as; Quiz, matching, shuffle wheel, unboxing, sorting groups, find a match, random cards, matching pairs, missing words, unjumble, anagrams, game show quizzes, word search, labeled diagrams, handmade, flashcards, maze chase , true or false, what is a mole, crossword puzzle, folding tiles, balloon pop, picture quiz, airplane, categorization, rank order, parsing, conveyor belt, win or lose quiz, word magnet, seating chart, higher or lower and Mathematics generator (Diyora & Mohinakhon, 2022).

Using Wordwall in learning can be said to be one way for students to be technologically literate. It cannot be denied that the use of technology is closely related to everyday life, such as; at work, at home, and in class. Technology in the world of education is also used in the teaching and learning process as a form of innovation that will bring change and have a good impact on education (Aprilia et al., 2024). The use of Wordwall also introduces students to being able to adapt to the field of technology (Anisah, 2022).

Research conducted by Safitri and Lestari also states that wordwalls can increase and increase student learning motivation through wordwall-based digital games (Safitri et al., 2021). In line with Firdiasnyah's opinion, using wordwalls as an assessment can also increase learning motivation (Firdiansyah & Pamungkas, 2021). Similar research

was also conducted by Sasongko and Suswanto who said that assessments given through games can stimulate students to be interested and motivated. That way they will be enthusiastic about taking part in the assessment (Sasongko & Suswanto, 2017).

Table 6. Students' Enthusiasm in Using Wordwall in Mathematics Learning Assessment

NO	Statement	Means	%	Information
1	Do you enjoy learning using Wordwall media?	3.57	89	Very enthusiastic
2	By working on the questions using Wordwall media, I didn't experience any difficulties	3.19	80	Enthusiastic
3	I like answering questions using Wordwall media to increase my knowledge	3.48	87	Very enthusiastic
4	I am enthusiastic about working on questions using Wordwall media	3.33	83	Very enthusiastic
5	Wordwall Media Helped Me Do the Questions Correctly	3.33	83	Very enthusiastic
6	Using Wordwall Media is Very Interesting in Working on Questions	3.52	88	Very enthusiastic
7	Wordwall can make it easier for me to ask questions	3.05	76	Enthusiastic
8	I Have Difficulty When Doing Questions Using Wordwall	2.81	70	Enthusiastic
9	I love how each question looks on Wordwall media	3.10	77	Enthusiastic
10	By using Wordwall media, I can work on questions quickly	3.19	80	Enthusiastic
	Mean Total	3.26	81.4	Enthusiastic

Students are interested in using Wordwall as an assessment because it is colorful, can move, and has attractive bonuses, images and text (Komara, 2022). Additionally, they become more active in answering questions. This is because the media used makes students happy, motivated, and makes learning easier (Lestari et al., 2022). Because learning media is a supporting factor that makes learning effective and efficient, learning objectives are achieved, and students become more enthusiastic about participating in learning (Mujiyono et al., 2021). Researchers also conducted field tests after the literature survey. This aims to prove the validity of literature studies and data in the field. Testing the data uses a Likert scale, following are the results on the Table 6.

Conclusion

Based on this research, it can be concluded that the use of wordwall as an assessment medium is effective. This is proven by the questionnaire data given to students which

obtained an average score of 81.4, which is included in the effective category. Apart from that, the researchers also carried out reinforcement based on the results of the pre-test and post-test on mathematics questions on geometry material which obtained an N-gain result of 0.33, which is in the medium category, which means the wordwall is effective as an assessment. Mathematics learning. Apart from that, the hypothesis test results are 0.000 < 0.05, which means H_0 is rejected and H_1 is accepted. So it can be concluded that wordwall is effective as a medium for assessing mathematics learning. Researchers hope that the results of this research can become a reference for further research and can be developed according to further research needs.

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