



## Development of learning media using QuizWhizzer based on ethnomathematics as a learning exercise

Asma Shofa Nadia Muthmainah\*, Asep Jihad, Rikrik Nurdiansyah

Universitas Islam Negeri Sunan Gunung Djati Bandung, Bandung, West Java, Indonesia

\*Corresponding Author: [nadiashfaa5@gmail.com](mailto:nadiashfaa5@gmail.com)

Submission: December 1<sup>st</sup>, 2024; Accepted: December 24<sup>th</sup>, 2024; Published: December 31<sup>st</sup>, 2024

DOI: <https://doi.org/10.31629/jg.v9i2.7461>

### Abstract

The utilization of ethnomathematics-based learning media has driven this research to explore students' understanding of the application of mathematics in daily life. This study aims to (1) Describe how the ethnomathematics-based learning media using QuizWhizzer as a learning exercise is developed; (2) Evaluate the validity of the ethnomathematics-based learning media using QuizWhizzer as a learning exercise; (3) Assess the practicality of the ethnomathematics-based learning media using QuizWhizzer as a learning exercise; (4) To evaluate the effectiveness of the ethnomathematics-based learning media using QuizWhizzer as a learning exercise. The research and development (R&D) method, specifically the ADDIE model, was used for this study. Data sources were obtained from the validation results of media and content experts and eighth-grade students at SMP Negeri 50 Bandung. The findings indicate that (1) The development process adhered to the stages of the ADDIE model; (2) The validation of the mathematics learning media was rated as "highly valid" by both media and content experts; (3) The practicality of the learning media using QuizWhizzer was rated as "highly practical"; (4) The effectiveness of the QuizWhizzer-based learning media was rated as "effective."

**Keywords:** learning media; quizwhizzer; ethnomathematics; learning exercise

**How to cite:** Muthmainah, A. S., Jihad, A., & Nurdiansyah, R. Development of learning media using QuizWhizzer based on ethnomathematics as a learning exercise. *Jurnal Gantang*, 9(2), 135 – 146. <https://doi.org/10.31629/jg.v9i2.7461>

### I. Introduction

The development of mathematics continues to increase every year in line with the needs of the times, which requires humans to be more creative in developing mathematics, including learning activities. According to the *National Council of Teachers of Mathematics* (NCTM) (2000) in Riyani & Hadi, (2023), Five main aspects play a role in improving students' mathematics learning abilities, including 1)

mathematical problem solving, 2) reasoning, 3) communication, 4) connection, and 5) representation. With the rapid development of technology and communication, there has been a renewal in the world of education that uses applications in learning that aim to facilitate the learning process, especially in mathematics lessons, so that the concept of material learned can be understood and understood not as memorization but as an understanding (Husnul et



al., [2020](#)). Students must understand scientific concepts well in mathematics to solve various problems in everyday life and mathematics. Mathematical concepts are organized clearly and logically, from basic to complex ([Simbolon, 2019](#)).

Based on the findings from an interview conducted with a mathematics teacher at one of the junior high schools in Bandung, it was found that students at the junior high school had a relatively low level of mathematical understanding. Although some students can understand the material quickly, most need more time to master the mathematics material taught. This is supported by [Putri Khairani et al., \(2021\)](#). Generally, students have a level of mathematical ability that is not optimal. The causes include conceptual errors, a negative view of math as a complex field, and a lack of desire to learn ([Rusmana & Isna, 2020](#)). Figure 1 shows the level of mathematical understanding of students in this school. Of the 34 students, more than half get scores less than the KKM of 75. Thus, it is concluded that students in this school still have low mathematical understanding and need more attention to improve their understanding of mathematical material.

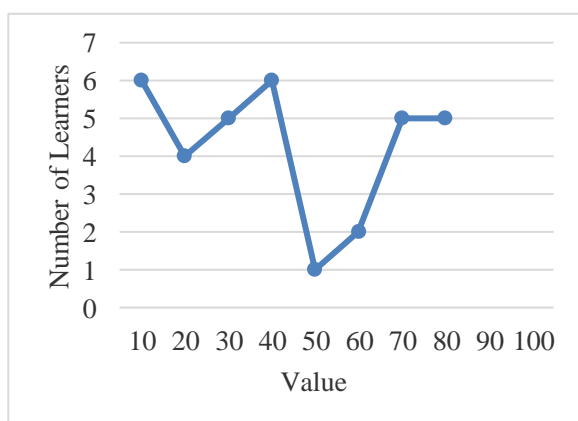


Figure 1. Daily assessment results

The teacher also stated that in the process of learning mathematics, the use of learning media other than textbooks and other teaching materials is still rarely done. Despite having complete electronic facilities, teachers here are still not accustomed to utilizing electronic-based

media in this SMP. This is because teachers prefer to directly teach the material to students to make the learning process more effective and time efficient. According to [Handayani and Wandini, \(2020\)](#), The use of ineffective learning media limits students' mathematical understanding. The math teacher also agrees with this opinion. Therefore, one way to improve students' mathematics ability is to use media during the teaching and learning process ([Rusmana & Isna, 2020](#)). This is also supported by [Novita et al., \(2020\)](#). Learning objectives can be achieved through the use of media.

Media utilization by the material being taught can be developed innovatively. The use of media also reduces verbalism experienced by students. Abstract concepts can be understood in real terms by students using media in learning ([Risanjani, 2023](#)). One of the learning media that can be utilized is QuizWhizzer. QuizWhizzer is an interactive and practical online media used for learners, especially in creating a fun and exciting learning environment that can increase the desire and motivation for new learning ([Agustiniingsih et al., 2022](#)). Research [Faijah dkk., \(2022\)](#) shows that QuizWhizzer can improve mathematical understanding and mathematics learning.

In QuizWhizzer, teachers can present questions to learners in a race format following a predetermined path, similar to a Snakes and Ladders game. QuizWhizzer is equipped with various interesting features, such as measuring learners' learning speed, BYOD (Bring Your Device), quiz editing, reports, and quiz customization options ([Susanto & Ismaya, 2022](#)). Using QuizWhizzer is also relatively easy, as it allows users to upload images, sounds, or YouTube links into the questions created, which are automatically saved. This is supported by [Audina et al., \(2022\)](#) that QuizWhizzer is a user-friendly quiz media that allows you to increase learners' attention by adding game boards and interesting music. In addition, QuizWhizzer offers a variety of test types, including numerical, true/false, multiple-choice, short answer, and drag-and-drop to-text.

In delivering the material, teachers should start with things close to students, such as the culture around them. Culture and education are two interrelated aspects because culture has inherent characteristics in society, while education is also a basic need of every individual in society. Ethnomathematics bridges culture and education in mathematics learning (Utami dkk., [2018](#)). One of the advantages of learning mathematics is that it is a tool to raise awareness about cultural development (Ningsih et al., [2021](#)). To create awareness about artistic development, researchers will apply Ethnomathematics-based learning, where culture increases students' understanding of the knowledge the teacher conveys through learning exercises. Ethnomathematics aims to teach learners how to understand, process, articulate, and apply mathematical concepts, ideas, and practices to help them address cultural issues that arise during their daily activities. Materials can be used in various contexts, using the ideas of Ethnomathematics, as these concepts involve categorizing, calculating, measuring, designing, and many other things. So educators seek to connect math learning activities with the cultural aspects surrounding learners, allowing them to understand mathematics deeply (Az-Zahroh dkk., [2019](#)). In this study, researchers included Ethnomathematics of Sundanese culture in Bandung that are easily found around students who will be used as objects in problems, such as traditional musical instruments, traditional food, traditional games, or other aspects that are included in the culture in Bandung.

Therefore, learning media are needed to help improve students' understanding of mathematics, one of which is using QuizWhizzer based on Ethnomathematics. Several previous studies have proven the benefits of QuizWhizzer (Faijah et al., [2022](#)). QuizWhizzer can improve students' understanding of mathematics, making the learning atmosphere more interesting and enjoyable (Susanto & Ismaya, [2022](#)). It is also explained that QuizWhizzer is an engaging and interactive media emphasizing cooperation and communication so students can build positive interactions through learning media.

Other studies, such as those conducted by Az-Zahroh et al. ([2019](#)), have shown that Learning mathematics with cultural elements helps students understand mathematical concepts more quickly. This supports the purpose of this study, namely to combine Ethnomathematics with interactive media so that mathematics learning is more interesting in students' daily lives.

Through this research, the use of QuizWhizzer in a cultural context is expanded to show how technology and culture can be combined to increase students' interest, make them more independent, and help them understand mathematics better without forgetting the culture around them.

## **II. Research Method**

This research uses the Research & Development (R&D) method to develop specific products and evaluate their effectiveness. R&D research has a longitudinal nature or, in another sense, it is gradual because to create specific products, one must first analyze the needs required and test their effectiveness using research (Sugiyono, [2013](#)). Then, according to Borg and Gall in Amalia et al., ([2022](#)), The research and development (R&D) method is an approach to designing or testing a product's validity to gain knowledge or answers to problems. This technique ensures that the products produced meet user needs and function optimally.

This research produces a new learning tool using QuizWhizzer based on Ethnomathematics as a learning exercise for learning mathematics. This research was conducted using the ADDIE model design according to Kurt, Sehart (Jabali et al., [2020](#)). The ADDIE model consists of five stages: analysis (Analysis of details that will be needed), Design (Design of the initial plan for making media), Development (Development of media to be made according to the design stage), Implementation (Implementation on a small and large scale), and Evaluation (Evaluation of the media designed based on the results of the practicality questionnaire and effectiveness value). These steps are presented in Figure 2.

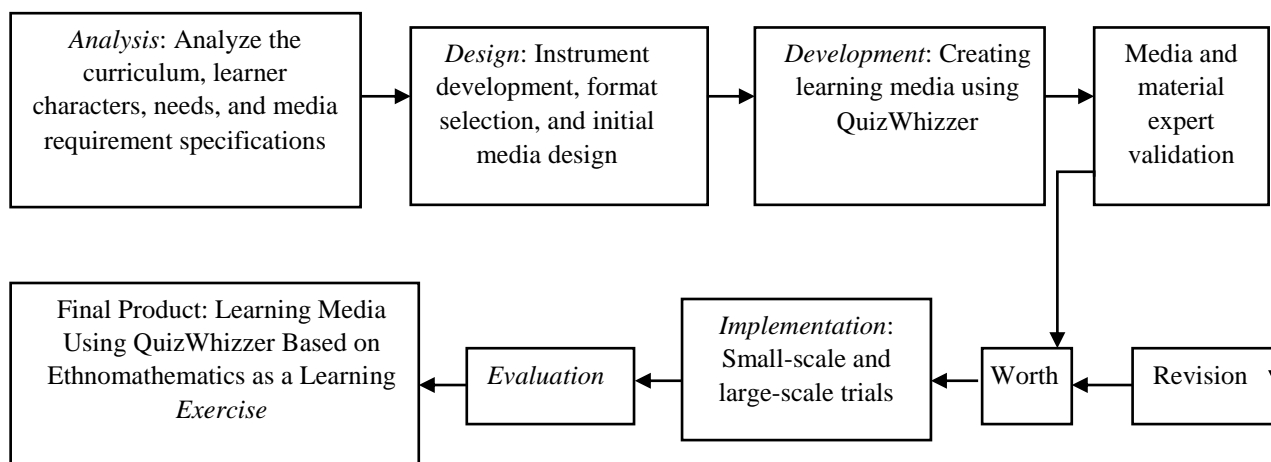


Figure 2. Pengembangan media pembelajaran dengan model ADDIE

In Figure 2, the development of learning media using QuizWhizzer based on Ethnomathematics as a learning exercise with the ADDIE model is explained by researchers with the analysis process, including curriculum analysis, analysis of learner characteristics, needs analysis, and analysis of the required media specifications. Furthermore, the design stage contains instrument preparation, format selection, and initial media design. At the development stage, learning media is made using QuizWhizzer; after that, researchers will conduct expert validation of material and media experts at the implementation stage. Until the product is valid, it can be implemented for students by testing practicality and effectiveness. After implementation, the researcher will evaluate and correct the shortcomings of the learning media using QuizWhizzer based on Ethnomathematics as a learning exercise.

This research will use test and non-test instruments. The questions that students will work on in the learning media are Ethnomathematics-based instruments. Non-test instruments are also used, such as validation sheets for media and material experts and practical questionnaires. This research applies qualitative and quantitative data analysis. This approach allows researchers to gain an in-depth understanding and a broader picture of the phenomenon under study. Quantitative data sources are practicality questionnaires, media

validation scores, and scores of students' results after working on questions in learning media about SPLDV. Qualitative data from interviews and field notes are descriptive data about learning media development, including notes on shortcomings and suggestions for improvement from expert validators.

Table 1 shows the media validity criteria, and Table 2 shows the practicality criteria for using QuizWhizzer for learning.

Table 1. Validity criteria

Validity Level (%)	Validity Criteria
81,26 – 100,00	Very valid
62,51 – 81,25	Valid
43,76 – 62,50	Less valid
0,00 – 43,75	Invalid

(Modified Sugiyono (2019) in Riza et al., 2020)

Table 2. Practicality criteria

Practicality Level (%)	Practicality Criteria
75,01 - 100	Very Practical
50,01 - 75	Practical
25,01 - 50	Less Practical
0 - 25	Not Practical

(Akbar (2011) in Kumalasan, 2018)

Meanwhile, the effectiveness of learning media using QuizWhizzer is obtained from the completeness of students in answering test questions on SPLDV material from the KKTP set at SMP Negeri 50 Bandung, which is 75, then categorized as Table 3.  $\leq 75$ , then categorized in Table 3.

Table 3. Media effectiveness criteria

Effectiveness (%)	Category
$80 < e < 100$	Highly Effective
$60 < e < 80$	Effective
$40 < e < 60$	Effective Enough
$20 < e < 40$	Less Effective
$e \leq 20$	Not Effective

(Arikunto, 2014)

### III. Results and Discussion

The research and development was conducted at SMP Negeri 50 Bandung. This research was implemented in classes VIII-A and VIII-D to test the learning media using the developed QuizWhizzer. The research and development results are learning media using QuizWhizzer based on Ethnomathematics as a learning exercise. The results of the research and development are described as follows:

#### Learning Media Development Process Using QuizWhizzer Based on Ethnomathematics as a Learning Exercise

In making this learning media, the ADDIE development model is applied, which involves several essential stages; the ADDIE model consists of five main stages: Analysis, Design, Development, Implementation, and Evaluation. Each step is essential in ensuring the learning media is designed, implemented effectively, and evaluated for improvement. Researchers developed a product that can be used to teach mathematics more effectively based on the five steps of ADDIE, which resulted in a learning exercise using QuizWhizzer based on Ethnomathematics in class VIII material on the System of Linear Equations of Two Variables (SPLDV). The following is an explanation of the results of the development of learning media that researchers have carried out:

##### a. Analysis Stage

At this stage, the analysis is carried out on several aspects, including analysis of student characters, curriculum analysis, needs analysis, and analysis of media requirements specifications using Quizwhizzer. This analysis is carried out to guide researchers in product development.

##### 1) Analyze learner characteristics

As a result of interviews conducted with mathematics teachers in class VIII and direct

observation, it is known that the level of mathematical understanding of students is still low, coupled with a lack of interest and enthusiasm for mathematics lessons and accustomed to using gadgets so that they are more likely to be unfocused when learning. Many learners also faced difficulties connecting the subject matter with their daily activities, so their conceptual understanding was lacking. They hope to become more active in learning and show interest in the material. Then, learners can understand many examples of mathematics in everyday life and the existing culture.

##### 2) Curriculum analysis

The interview results show that SMP Negeri 50 Bandung implements the Merdeka Curriculum for grade VIII. The results of analyzing the applicable curriculum show that the 8th-grade Learning Outcomes are in Phase D. Furthermore, based on curriculum analysis, the mathematics material that refers to the Merdeka Curriculum in 2022 is in grade VIII on the material of the Two-Variable Linear Equation System (SPLDV). SPLDV can be integrated into Sundanese cultural Ethnomathematics because it often occurs in everyday life and is suitable for integration into media using Quizwhizzer as a learning exercise. At the end of phase D, learners can solve the system of linear equations of two variables by utilizing various problem-solving methods, such as graphs, substitution, elimination, and a combination of these methods.

##### 3) Needs analysis

The needs analysis stage is carried out to collect information needed to support the mathematics learning process. One of the materials that students often apply in their daily lives is SPLDV. A learning media that trains students to apply SPLDV is needed so students can more easily understand this material. In connection with the findings from interviews with mathematics teachers in delivering SPLDV material, they usually only use the question-and-answer method with explanations from the package book without utilizing additional learning media that support learning activities. Therefore, researchers develop technology-based or digital learning media using QuizWhizzer.

4) Analyze media requirement specifications.

Technology analysis is carried out to obtain information related to the technology used by researchers in the development of learning media. The analysis starts with the advantages and disadvantages of a technology used in the development. Many software programs support

the development of a learning exercise. However, as a result of the analysis, the researcher finally decided to use QuizWhizzer to help develop learning media. QuizWhizzer software has complete features for creating learning media and is easy to use.

b. Design Stage



Figure 3. Background to Quizzes as initial media design

The design or design stage is carried out based on the analysis results. The aim is to find the initial concept of product development, which will be developed by preparing instruments, selecting formats, and creating initial media designs.

1) Instrument Preparation

The instrument's preparation is divided into validation sheets from material experts and media experts, media practicability questionnaires, and test questions for quizzes on media with SPLDV material.

2) Format Selection

The purpose of format selection is to arrange the appearance or presentation in media development using QuizWhizzer as a learning exercise, including background design and question layout. This media format also makes it easier for researchers during media development.

3) Initial design

In the initial design stage, a storyboard is made as an initial and brief overview of the content in developing learning media using

QuizWhizzer based on Ethnomathematics as a learning exercise. Figure 3 is one of the initial designs made as a quiz background displaying the path students will take by applying Sundanese culture.

c. Development Stage

Making media is carried out more fully at this development stage by the initial design at the design stage as a reference, which is then consulted with the supervisor. After being made, researchers validated the media to validators consisting of material and media experts. This validation is carried out so that the media that has been created gets validation or revision suggestions regarding the appearance and content of the press. The results of the validator's assessment are recommendations for researchers to make modifications so that the learning media developed are eligible for field tests.

d. Implementation Stage

After the use of QuizWhizzer as a learning media, it was validated by experts in the field of media. Furthermore, small and large-

scale trials were conducted on 10 students from class VIII-A and 34 from class VIII-D at SMP Negeri 50 Bandung to determine whether this learning media could be used and disseminated. After learning and asking questions with SPLDV material and filling in the practicality questionnaire, the researcher asked students for comments on the application of teaching media using QuizWhizzer based on Ethnomathematics. The students' response was excellent, and they gave positive feedback. So, the learning media using Quizwhizzer based on Ethnomathematics as a learning exercise is suitable for use in the mathematics learning process without revision.

#### e. Evaluation Stage

The development of learning media using QuizWhizzer has been carried out through the ADDIE model process. The five stages are carried out regularly and adequately so that learning media using Quizwhizzer based on Ethnomathematics as a learning exercise can be produced that is suitable for use in mathematics learning, especially in SPLDV material at the junior high school level.

### Feasibility of Learning Media Using QuizWhizzer Based on Ethnomathematics as a Learning Exercise

The validation results from material and media experts become a benchmark for whether or not the learning media using QuizWhizzer based on Ethnomathematics is suitable for use in mathematics learning. The learning media validation process using QuizWhizzer was carried out twice, first before the small-scale trial and second afterward:

#### a. Media expert validation

Learning media using QuizWhizzer in terms of media was assessed by two validators, expert lecturers at UIN Sunan Gunung Djati Bandung, and 8th-grade mathematics teachers at SMP Negeri 50 Bandung, who acted as media experts. Table 4 shows the results of the assessment of learning media using QuizWhizzer by media experts.

Table 4. Media expert validation test results

Aspects	Validator 1		Validator 2	
	Score	%	Score	%
Display or Design Usage	20	83,33	21	87,50
Ethnomathematics	14	87,50	14	87,50
	15	93,75	13	81,25
<b>Average</b>	<b>88,19%</b>		<b>85,42%</b>	
<b>Criteria</b>	<b>Very Valid</b>		<b>Very Valid</b>	

The results of media expert validation show that the overall scores of validators 1 and 2 are 88.19% and 85.42%, with a very valid rating. Validator 2 suggested improvements regarding the form of questions for the substitution method, elimination method, and the application of SPLDV in everyday life into the form of arrangement questions to make it easier for students to use.

#### b. Material expert validation

The learning media assessment using QuizWhizzer was developed and concluded in terms of material by mathematics teachers of grade VIII SMP Negeri 50 Bandung as material experts. Table 5 shows the results of the learning media assessment of material experts using QuizWhizzer.

Table 5. Material expert validation test results

No	Aspects	Assessment	
		Score	%
1	Content Quality	17	85,00
2	Media Quality	21	87,50
3	Grammar	11	91,67
4	Ethnomathematics	8	100
	<b>Average</b>	<b>91,04%</b>	
	<b>Criteria</b>	<b>Very Valid</b>	

The validation results from material experts show that the overall value of the validator is 91.04%, with very valid criteria. However, there are suggestions for improvement, namely on the editorial questions for multiple-choice and arrangement, because there are mistakes.

### Practicality of Learning Media Development Using QuizWhizzer Based on Ethnomathematics as a Learning Exercise

The practicality of learning media using QuizWhizzer refers to the acquisition of

practicality questionnaire analysis given to 8th-grade mathematics teachers and students using learning media after learning by using QuizWhizzer. The following are the results obtained from the practicality test.

a. Practicality by 8th-grade math teachers

Practicality assessment filled by teachers is an assessment conducted to determine the practicality of learning media using QuizWhizzer from the perspective of mathematics teachers as teachers. Table 6 is the result of the practicality analysis by mathematics teachers at SMP Negeri 50 Bandung.

Table 6. Teacher practicality test results

Aspects	Score	%
Usage	18	90%
Ease of Use	12	100%
Ethnomathematics	12	100%
Behavior After Use	6	75%
<b>Overall Score</b>		<b>91%</b>
<b>Category</b>		<b>Very Practical</b>

The practicality assessment of learning media and mathematics teachers of SMP Negeri 50 Bandung obtained a score of 91% with efficient criteria, meaning that QuizWhizzer is an efficient and easy-to-use learning media when teaching mathematics.

b. Small-scale test practicality

Ten learners from class VIII-A at SMP Negeri 50 Bandung participated in the small-scale trial. Table 7 analyses the practicality of questionnaire results applied in the small-scale trial.

Table 7. Results of small scale practicality test

Aspects	Score	%
Learning Desain	0,8188	81,88%
Operational	0,8083	80,83%
Ethnomathematics	0,7833	78,33%
<b>Overall Score</b>		<b>80,35%</b>
<b>Category</b>		<b>Very Practical</b>

Table 7 shows the practicality of learning media using QuizWhizzer based on Ethnomathematics as a learning exercise in small-scale trials. The practicality score reached 80.35%, with a very practical category.

c. The practicality of large-scale test

Thirty-four learners from class VIII-D at SMP Negeri 50 Bandung participated in the large-scale trial. Table 8 contains the analysis of the practicality questionnaire results for the large-scale trial.

Table 8. Large-scale practicality test results

Aspects	Score	%
Learning Desain	0,8640	86,40%
Operational	0,8309	83,09%
Ethnomathematics	0,8262	81,62%
<b>Overall Score</b>		<b>83,70%</b>
<b>Category</b>		<b>Very Practical</b>

Based on the questionnaire analysis of the practicality of learning media using QuizWhizzer based on Ethnomathematics as a learning exercise on a large scale, a practicality score of 83.70% was obtained, which was included in the very practical criteria. But in aspect 2: Operational, one learner feels that the learning media using QuizWhizzer is not easy to use because of the form of questions that compile answers, so these learners find it difficult and think that this media is difficult to use.

Figure 4 illustrates the results of the practicality test for small and large scales. The practicality assessment data from both scales can be presented as a bar chart.

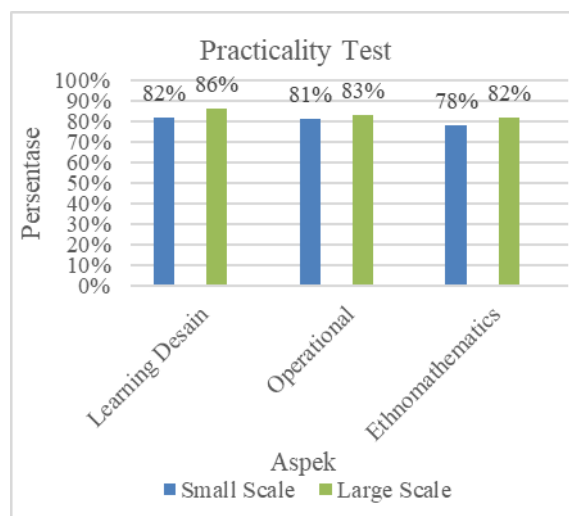


Figure 4. Diagram of practicality test



**Effectiveness of Learning Media Using QuizWhizzer Based on Ethnomathematics as a Learning Exercise**

The effectiveness of learning media using QuizWhizzer based on Ethnomathematics as a learning exercise is assessed based on the test results done by students after the learning process. The test results will be compared with the KKTP scores available at school. The KKTP value for class VIII mathematics at SMP Negeri 50 Bandung is 75. The following are the results of the effectiveness of learning media using QuizWhizzer based on Ethnomathematics as a learning exercise in the two trials that have been carried out.

a. Small-scale effectiveness

The results of the small-scale trial conducted by 10 students in class VIII-A on SPLDV material at SMP Negeri 50 Bandung achieved a KKTP score ( $\leq 75$ ) of 60% or 6 out of 10 students met the effective criteria, which means that learning media using QuizWhizzer based on Ethnomathematics as a learning exercise in learning mathematics can produce

good results in students' mathematical understanding. Figure 5 shows the percentage of completeness of test questions on a small scale.

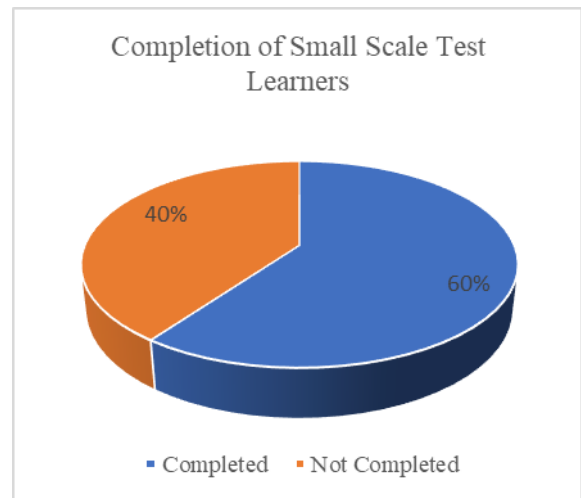


Figure 5. Completion of small scale test learners

b. Large-scale effectiveness

The acquisition of SPLDV material test scores was conducted in class VIII-D on 34 students at SMP Negeri 50 Bandung in a large-scale trial over four meetings. Table 9 analyzes the completeness of each meeting.

Table 9. Effectiveness analysis of large-scale test

Pert.	Number of Learners		Percentase		Criteria
	Completed	Not Completed	Completed	Not Completed	
1	28	6	82.35%	17.65%	Highly Effective
2	22	12	64.71%	35.29%	Effective
3	27	7	79.41%	20.59%	Effective
4	31	3	91.18%	8.82%	Highly Effective

(Arikunto, 2014)

From Table 9, completeness at the first meeting of 34 students, as many as 28 had a percentage of 82.35% with very effective criteria, completeness at the second meeting of 34 students, as many as 22 with a rate of 64.71% with effective criteria, completeness at the third meeting of 34 students, as many as 27 with a percentage of 79.41% with effective criteria, and completeness at the fourth meeting of 34 students, as many as 31 with a rate of 91.18% with very effective criteria. The percentage of test completeness given to students from the first to the fourth meeting is presented in Figure 6.

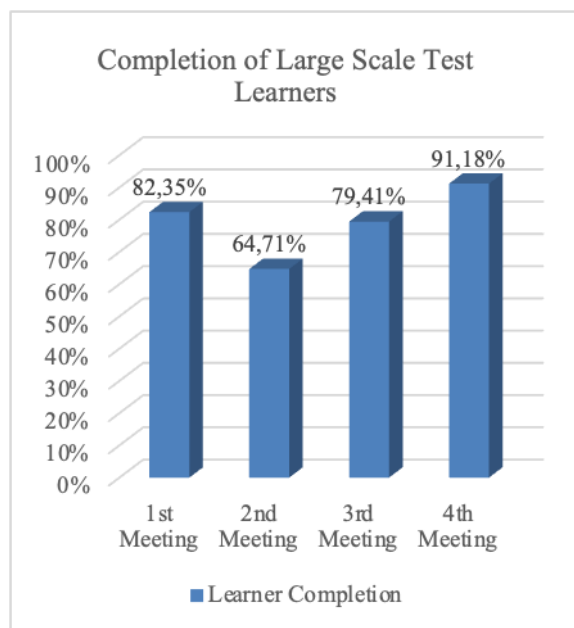


Figure 6. Diagram of percentage of completion of large-scale test learners

Based on Figure 6, the increase in completeness does not always run consistently. There was a decrease. There was a decrease from the first to the second meeting, but it increased again from the second to the third and fourth meetings. The increase and decrease were influenced by students' adaptation to the learning media and their understanding of the SPLDV material. Nevertheless, SPLDV learning using the QuizWhizzer learning media was overall effective. The overall completion of students based on the average total score from the four meetings reached 27 out of 34 students who completed it, exceeding the KKTP standard ( $\leq 75$ ) with a percentage of 79.41% in the effective category. This finding aligns with the research Fajjah et al., (2022). This shows that QuizWhizzer effectively improves mathematical understanding through engaging and interactive methods. In addition, Susanto and Ismaya, (2022) Emphasized that the QuizWhizzer feature encourages active learning and increases student motivation.

The results of this study indicate that QuizWhizzer if designed according to culture and context, such as Ethnomathematics, can help improve mathematical understanding and student engagement effectively. However, because the

results have decreased, a plan is needed to make it easier for students to adapt to this learning media. Future research could look at the long-term impact of using this media on different groups of students or study how this media can be combined with other teaching methods for maximum results. The percentage of completion of the test questions given to students is presented in Figure 7.

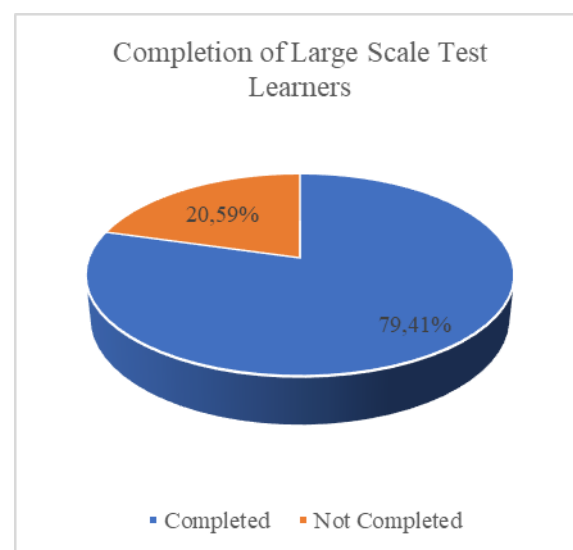


Figure 7. Completion of large scale test learners

### Conclusion

Learning media development using QuizWhizzer based on Ethnomathematics as a learning exercise is carried out using the research and development (R&D) method by applying the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. All these stages have been completed, resulting in learning media that is ready to use. The feasibility of learning media using QuizWhizzer is assessed based on the media aspect, which is classified in the "Very Valid" category; in addition, the material validity of the learning media is also evaluated, and the results show that the material aspect is included in the "Very Valid" category. This indicates that the learning media that utilizes QuizWhizzer gets a good assessment of its media and material and has met the validity criteria. Hence, the media is suitable for use.

The practicality of learning media using QuizWhizzer based on Ethnomathematics is considered very practical to use in learning mathematics. The practicality assessment was carried out by involving respondents consisting of grade VIII mathematics teachers and students in the media trial, namely classes VIII-A and VIII-D.

Learning media using QuizWhizzer based on Ethnomathematics improves students' mathematical understanding. As seen from the test results acquired on SPLDV class VIII material, most students have reached the KKTP applicable at SMP Negeri 50 Bandung.

## References

- Agustiningih, W., Sulistiono, M., & Musthofa, I. (2022). Implementasi aplikasi Quizwhizzer pada mata pelajaran PAI di SMP Islam Ma'arif 02 Malang. *VICRATINA: Jurnal Pendidikan Islam*, 7(6), 222–231.
- Amalia, C., Alamsyah, T. P., & Pamungkas, A. S. (2022). Pengembangan media pembelajaran matematika berbasis Smart Apps Creator untuk meningkatkan kemampuan pemahaman konsep matematis peserta didik di sekolah dasar. *Autentik: Jurnal Pengembangan Pendidikan Dasar*, 6(2), 265–275. <https://doi.org/10.36379/autentik.v6i2.238>
- Arikunto, S. (2014). *Prosedur Penelitian : suatu pendelatan praktik*. Jakarta: Rineka Cipta.
- Audina, L., Rostikawati, T., & Gani, R. A. (2022). Pengembangan media game interaktif elektronik berbasis Quizwhizzer pada subtema usaha pelestarian lingkungan. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 11(6), 1996. <https://doi.org/10.33578/jpfkip.v11i6.9212>
- Az-Zahroh, S. F., At Thariq, Z. Z., Surahman, E., Widyasari, C. M., Qolbi, M. S., & Risma Chulashotud, R. C. (2019). Developing ethic game (ethnomathematics game): the instructional media of culture mathematics with Tringo by Ki Hadjar Dewantara. *JPP (Jurnal Pendidikan Dan Pembelajaran)*, 26(2), 43–50. <https://doi.org/10.17977/um047v26i22019p043>
- Fajjah, N., Nuryadi, N., & Marhaeni, N. H. (2022). Students' responses to QuizWhizzer educational game to strengthen mathematical concept understanding ability. *Journal Of Education And Teaching Learning (JETL)*, 4(2), 94–104. <https://doi.org/10.51178/jetl.v4i2.503>
- Handayani, R., & Wandini, R. R. (2020). Pengaruh penggunaan multimedia interaktif terhadap pemahaman konsep dalam pembelajaran matematika di SDS Yapsi Medan Johor. *Intersections*, 5(2), 30. <https://doi.org/10.31004/jptam.v7i3.12194>
- Husnul Aidah, D., & Sobarningsih dan Yayu Nurhayati Rahayu, N. (2020). Pemahaman matematis melalui metaphorical thinking berbantuan aplikasi powtoon. *JurnalAnalisa*, 6(1), 91–99. Retrieved from <http://journal.uinsgd.ac.id/index.php/analisa/index>
- Jabali, S. G., Supriyono, S., & Nugraheni, P. (2020). Pengembangan media game visual novel berbasis etnomatematika untuk meningkatkan pemahaman konsep pada materi aljabar. *Alifmatika: Jurnal Pendidikan Dan Pembelajaran Matematika*, 2(2), 185–198. <https://doi.org/10.35316/alifmatika.2020.v2i2.185-198>
- Kumalasani, M. P. (2018). Kepraktisan Penggunaan multimedia interaktif pada pembelajaran tematik kelas IV SD. *Jurnal Bidang Pendidikan Dasar*, 2(1A), 1–11. <https://doi.org/10.21067/jbpd.v2i1a.2345>
- Ningsih, A. K., Kariadinata, R., & Nuraida, I. (2021). Peningkatan kemampuan komunikasi matematis siswa dengan pembelajaran berbasis etnomatematika. *LENERA: Jurnal Ilmiah Kependidikan*, 16(1), 20–35. Retrieved from <https://jurnal.stkipbjm.ac.id/index.php/jpl/article/view/1368/673>
- Novita, L., Sundari, F. S., & Rabani, K. R. (2020). Penerapan media game ular tangga digital untuk meningkatkan hasil belajar tematik. *Jurnal Pemikiran Dan Pengembangan Sekolah Dasar (JP2SD)*, 8(2), 126–137. <https://doi.org/10.22219/jp2sd.v8i2.12329>
- Putri Khairani, B., Roza, Y., & Maimunah. (2021). Analisis kemampuan pemahaman konsep matematis siswa kelas XI SMA/MA pada materi barisan dan deret. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 05(02), 1578–1587. <https://doi.org/10.31004/cendekia.v5i2.623>

- Risanjani, A. (2023). Efektivitas model pembelajaran matematika Knisley berbantuan media Quizwhizzer terhadap kemampuan berpikir kritis siswa. *DEWANTECH: Jurnal Teknologi Pendidikan*, 1(1), 1–7.
- Riyani, P., & Hadi, M. S. (2023). Upaya meningkatkan kemampuan pemecahan masalah siswa dalam pembelajaran matematika dengan pendekatan keterampilan proses. *Jurnal Riset Pembelajaran Matematika Sekolah*, 7, 16–27. <https://doi.org/10.21009/jrpms.071.02>
- Riza, F. Y., Antosa, Z., & Witri, G. (2020). Pengembangan lembar kerja peserta didik berbasis multikultural pada pembelajaran seni budaya dan prakarya kelas V Sekolah Dasar. *Jurnal Inovasi Pendidikan Dan Pembelajaran Sekolah Dasar*, 4(2), 21. <https://doi.org/10.24036/jippsd.v4i2.112327>
- Rusmana, I., & Isna, I. (2020). Efektivitas penggunaan media ICT dalam peningkatan pemahaman konsep matematika. *Jurnal Formatif*, 2(3), 3. <http://dx.doi.org/10.30998/formatif.v2i3.102>
- Simbolon, N. T. (2019). Pemahaman konsep matematis dan representasi dalam pengajaran matematika. *Jurnal Curere*, 3(2). <https://doi.org/10.36764/jc.v3i2.247>
- Sugiyono. (2013). *Metode penelitian kuantitatif, kualitatif, dan R&D*. BANDUNG: ALFABETA.
- Susanto, D. A., & Ismaya, E. A. (2022). Pemanfaatan aplikasi Quizwhizzer pada PTM terbatas muatan pelajaran IPS bagi siswa kelas VI SDN 2 Tuko. *Cokroaminoto Journal of Primary Education*, 5(1), 104–110. <https://doi.org/10.30605/cjpe.512022.1583>
- Utami, R. E., Nugroho, A. A., Dwijayanti, I., & Sukarno, A. (2018). Pengembangan e-modul berbasis etnomatematika untuk meningkatkan kemampuan pemecahan masalah. *JNPM (Jurnal Nasional Pendidikan Matematika)*, 2(2), 268. <https://doi.org/10.33603/jnpm.v2i2.1458>