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Interactive Learning Media Development Based on Game-Based Learning and Ethnomathematics Using Lumi

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Abstract

This research focuses on development of interactive learning media using the Lumi Education platform based on game-based learning and ethnomathematics on the topic of straight line equations to improve students' learning interest. The study adopted a research and development approach based on the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The developed media integrates game-based learning through a game map feature and ethnomathematics by incorporating cultural contexts into learning activities. The study was conducted with eighth-grade students of SMP Negeri 27 Surakarta. Data were obtained through expert validation sheets, teacher and student response questionnaires, and a learning interest questionnaire. The results of the study indicate that interactive learning media are valid and practical for use in learning activities. In addition, the application of the media effectively increases students' interest in learning. Therefore, interactive learning media based on game-based learning and ethnomathematics using Lumi Education offers an alternative solution to improving students' learning interest in mathematics, particularly on the topic of straight line equations.

1. INTRODUCTION

Mathematics plays an important role in education in developing logical, analytical, systematic, creative, and critical thinking skills to solve problems. In classroom settings, mathematics is frequently viewed as a challenging subject that tends to generate low levels of student interest(Andri et al., 2020; Novanti & Budiman, 2022). Various studies show that some students have a negative view of mathematics, making them less enthusiastic and unable to apply their mathematical academic skills (Diba et al., 2024; Hamid, 2024). One topic in mathematics that students still find difficult is straight line equations. This difficulty arises due to the presence of multiple subtopics, formulas, and problem-solving rules, limited understanding of prerequisite material, insufficient conceptual understanding, and a lack of practice in solving problems (Darwis et al., 2022; Umam et al., 2017). Research by Firmansyah et al. (2023) shows that students' difficulties in this topic include an inability to understand problems, errors in extracting information, errors in calculation, and errors in concluding answers. These difficulties are closely associated wuth students' low interest in learning, as evidenced by a lack of attention, motivation, and involvement in solving problems. These difficulties are closely related to students' low interest in learning, which is demonstrated by their lack of attention, motivation, and involvement in solving problems. This finding is consistent with Hidayat et al. (2022), who reported that students with high interest in learning usually have fewer misconceptions than students with low interest in learning. Students' difficulties in understanding straight line equation material also occurred among eighth-grade students at SMP Negeri 27 Surakarta, who were the subjects of this study, as indicated by the fact that 97% of students did not meet the learning outcome criteria. This condition shows that students' interest in learning is likely to be low or moderate.

Learning interest refers to a strong desire to acquire information or intelligence (Rahim et al., 2021). Learning interest is an important factor in the learning process because it has a strong influence on students' engagement and learning outcomes (Cahyani et al., 2020; Chandra et al., 2023; Ningrum et al., 2024; Setiawan et al., 2022). In addition, a lack of interest in learning causes difficulties for students in their studies (Aprijal et al., 2020). Anggraeni et al. (2021) stated that one of the causes of low student learning interest is that teachers do not utilize learning media that are interesting for students. In addition, another factor that causes low student learning interest is that many teachers have not linked mathematics learning to the real context of students (Lestari et al., 2022). Based on preliminary observations and interviews with mathematics teachers, learning is generally conducted through lectures, question and answer sessions, discussions, and exercises where some students are asked to work on the blackboard. Although this method helps to convey the material clearly, in practice, this approach has not been fully able to engage students in learning and spark their interest in the learning process. With a lack of engaging learning experiences and interactive learning media, students easily become bored and lose interest in participating in learning.

The teacher also explained that the use of learning media was limited to circle and solid figures. In addition, the teacher added that students find it easier to understand and are more interested in the topic if it is linked to concrete examples. Therefore, the teacher sometimes uses real examples in the topics, such as relations and functions and numerical patterns. However, equations of straight lines were often taught using conventional explanations without learning media or contextual support due to time constraints. According to the teacher, students become less interested if they feel unfamiliar with the material without concrete examples, which affects their understanding because students with low levels of interest don't tend to be interested in understanding the topic. The teacher also said that there were about 4-10 students who were active in mathematics learning out of a total of 28-32 students per class. The active students were those with high academic abilities. On the other hand, students with moderate and low academic abilities need more encouragement to try to solve math problems and take notes. During the observation, it was also seen that some students were doing activities outside of learning, such as playing and joking around. Therefore, a strategy is needed to increase students' interest in learning mathematics.

One strategy that can be used to increase students' interest in learning is to provide them with interactive learning media (Amalia et al., 2024). Learning media that can capture students' hearts can make teaching and learning activities more interesting, thereby generating enthusiasm among students for the learning process (Nurhayati & Nur Tanzila, 2020). The enthusiasm shown in learning can foster students' interest in learning. In addition, games can also foster students' enthusiasm because they are considered fun. For this reason, a promising learning medium is game-based learning, which is an innovative learning approach that utilizes fun game elements, can foster understanding and engagement among students, and increase their interest in learning (Ardiana et al., 2024; Khaerunnisa et al., 2022; Wulandari & Safitri, 2024).

In addition to games, Chrissanti (2018) states that mathematics becomes enjoyable learning when taught in the context and culture of the community. Mathematics is also easier when linked to real-world problems because it is an abstract science (Nisa & Faradiba, 2023). The ethnomathematics approach aims to make mathematics more relevant and meaningful to students in order to improve the quality of education (Rosa et al., 2016). Several studies have shown that ethnomathematics-based learning has a positive effect on students' interest in learning mathematics (Aras & Zahrawati, 2021; Ardiyanti et al., 2024).

Along with technological developments and learning demands in the era of the industrial revolution 4.0, the use of digital technology in learning has become a necessity as a means of facilitating the learning process (Putriani & Hudaidah, 2021). In education, the 4.0 industrial revolution focuses on learning using digital-based interactive media by adjusting to students' needs and interests (Kusuma et al., 2023). One platform that teachers can use to develop interactive learning media is the Lumi Education platform. Lumi Education is an application or platform that provides a wide selection of H5P content that can be accessed for free online or offline (Ogris, 2022; Oksaviona et al., 2023).

Several researchers have developed interactive learning media using the Lumi Education platform for the learning process. However, these studies have not integrated game-based learning and ethnomathematics approaches simultaneously and have not specifically examined the increase in students' interest in learning, especially in straight line equation topics. Therefore, this study is aimed at developing interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform as an effort to increase students' interest in learning that meets the criteria for good learning media, which are valid, practical, and effective.

This interactive learning media was created by utilizing the Game Map feature in Lumi Education, which is a free HTML5-based game. The game map presents learning in the form of a tiered map-based game consisting of several interconnected stages (levels). The map points in the game map are arranged with a level locking system, so that students can only proceed to the next stage after completing the challenges and learning activities in the previous stage. These stages contain H5P content in the form of materials, games, sample questions, practice questions, electronic student worksheets, and reflection which must be completed by students.

Game map features support game elements used in game-based learning, namely the goal of the game to reach the final point on the game map, fantasy by connecting each point on the map through a story, leveling up by presenting questions that are more difficult than those at the previous point on the map, interactivity and feedback through right/wrong responses and clues that will appear on the game map feature, player control by giving students the opportunity to answer and re-access map points that have been opened, and uncertainty through map points on the game map that are locked.

The learning media was developed using the Lumi Education platform, which serves as the main framework for media development, enabling the integration of material, learning activities, and practice questions interactively in a single learning flow. This media can be accessed via smartphone, laptop, or computer, either online through a browser or offline by downloading the media in html format, thus supporting learning flexibility.

2. METHOD

The type of research used in the development of interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform is research and development. Research and development is a research method used to create and test the effectiveness of a product (Sugiyono, 2017). The research development model applied in this research is the ADDIE Model developed by Robert Maribe Branch in 2009 in his book entitled "Instructional Design: The ADDIE Approach". The ADDIE model has the following stages: (1) Analyze; (2) Design; (3) Develop; (4) Implement; (5) Evaluate. This research was conducted in the first semester of the 2025/2026 academic year at SMP Negeri 27 Surakarta with the research subjects being class VIII D for the experimental class and class VIII B for the implementation, which were selected through cluster random sampling.

The data collection techniques used in this development research were observation, interviews, documentation, and questionnaires. The validity of the research instruments was tested by instrument validators. Then, the learning interest questionnaire was also tested for internal consistency and reliability.

The criteria for content validation according to Budiyono (2017) are as follows:

1) The suitability of the questionnaire items with the indicators
2) The statements are clearly formulated
3) Statements do not cause multiple interpretations
4) Statements use Indonesian language rules properly and correcly

The internal consistency test of questionnaire items aims to ensure that each questionnaire item supports its construct, namely that each questionnaire item must be positively correlated with its total score (Budiyono, 2017). To calculate the internal consistency index of item-i, Pearson's Product-Moment Correlation is used, as follows:

$$r_{xy} = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{(n\sum X^2 - (\sum X)^2)(n\sum Y^2 - (\sum Y)^2)}}$$

Note:
r_{xy} : internal consistency index for item i-
n : the number of subjects tested
X : score for item i for which the internal consistency index is sought
Y : total score (from test subjects)

An instrument can be said to be reliable if the measurement results using that instrument are the same when performed by the same person at different times. In addition, a reliable instrument is one in which two different people with the same abilities will produce the same results (Budiyono, 2017). In this study, the reliability test was conducted using the Cronbach Alpha formula. An instrument is considered reliable if it shows a Cronbach Alpha > 0,60 (Taherdoost, 2016). The Cronbach Alpha formula is:

$$r_{11} = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum {s_i}^2}{{s_t}^2}\right)$$

Note:
r_{11}: instrument reliability coefficient
n : the number of instrument items
${s_i}^2$: variation of item-i score, i = 1, 2, ..., k ($k \leq n$)
${s_t}^2$: variance of the total score obtained by the test subjects

The validation of interactive learning media was tested using questionnaires with four answer choices, namely very good, good, not so good, and very poor. The practicality and effectiveness of the interactive learning media were also tested using a questionnaire with four answer choices, namely strongly agree, agree, disagree, and strongly disagree. Scoring was done using a Likert scale for each statement item as described by Sugiyono (2017), as listed in Table 1 below.

Table 1. Scoring Categories with Likert Scale

Scoring Categories	Skor
Very Good/Strongly Agree	4
GoodAgree	3
Poor/Disagree	2
Very Poor/Strongly Disagree	1

In this study, the validity analysis used was Aiken's Value, which can be used to determine expert agreement (Pandawa et al. dikutip dalam An Nabil et al., 2022), with the following formula.

$$V = \frac{\sum S}{[N(c-1)]}$$
$$S = R - L_o$$

Note:
V = Aiken Index
S = Score given by validator minus lowest score
R = Score given by validator
L_o = Lowest score
C = Highest score
N = Total validators

The results of these calculations are then converted based on the validity categories by Guilford & Fruchter in (Puspitasari & Febrinita, 2021), as listed in Table 2.

Table 2. Validation Categories

Intervals	Categories
$S - CVI < 0{,}00$	Invalid
$0{,}00 \leq S - CVI < 0{,}20$	Very Low Validity
$0{,}20 \leq S - CVI < 0{,}40$	Low Validity
$0{,}40 \leq S - CVI < 0{,}60$	Medium Validity
$0{,}60 \leq S - CVI < 0{,}80$	High Validity
$0{,}80 \leq S - CVI < 1$	Very High Validity

Based on the scores received from the teacher and student response questionnaires, the percentages of respondents' answers were calculated by using the formula below (Sugiyono, 2017):

$$P = \frac{Total\ score\ obtained}{Maximum\ score} \times 100\%$$

The average validity score from all validators is calculated using the following formula:

$$\bar{x} = \frac{\sum P}{n}$$

The average score obtained will be converted based on the practicality assessment category, as shown in Table 3.

Table 3. Practicality Assessment Categories

Intervals (%)	Categories
$0 \leq \bar{x} < 20$	Not Practical
$20 \leq \bar{x} < 40$	Less Practical
$40 \leq \bar{x} < 60$	Quite Practical
$60 \leq \bar{x} < 80$	Practial
$80 \leq \bar{x} < 100$	Very Practical

(Sukma et al., 2022, hlm. 203)

Based on Table 4, the developed learning media will be considered practical if it achieves a minimum percentage of 60%.

The effectiveness of the learning media was tested using a paired t-test, which aims to determine the difference in the mean of two paired data groups. This test is used on data from the same subjects but subjected to two different treatments, for example, measuring the average before and after a certain treatment (Rahmani et al., 2025). The following is an explanation of the paired t-test according to Budiyono (2016).

For example, μ_1 is the average learning interest questionnaire score of students after treatment and μ_2 is the average learning interest questionnaire score of students before treatment, with the treatment being the use of interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform.

a. Perumusan Hipotesis

H_0: $\mu_1 \leq \mu_2$ (the average learning interest questionnaire score after treatment is not better than the average learning interest questionnaire score before treatmen)

H_1: $\mu_1 > \mu_2$ (the average learning interest questionnaire score after treatment is better than the average learning interest questionnaire score before treatment)

b. Significance Level
$\alpha = 5\% = 0{,}05$

c. Test Statistics

$$t = \frac{\overline{D} - d_0}{\frac{s_d}{\sqrt{n}}}$$

Note:

$s_d = \sqrt{\frac{n\sum D^2 - (\sum D)^2}{n-1}}$

$\overline{D} = X_1 - X_2$

$d_0 = 0$ (because it does not discuss the difference in averages)

Note:

s : standard deviation of D

n : total number of samples

d. Critical Region
$\{t | t > t_{\alpha,n-1}\}$

e. Test Decision
H_0 is accepted if $t_{obs} \notin$ Critical Region
H_0 is rejected if $t_{obs} \in$ Critical Region

However, before conducting the t-test, a normality test was performed to determine whether the data came from a normally distributed population using the Liliefors method because the data was not in a grouped frequency distribution (Budiyono, 2016). The normality test statistics using the Liliefors method as described by Budiyono (2016) are as follows.

$$L_{obs} = Max|F(z_i) - S(z_i)|$$

Note:

$z_i = \frac{x_i - \bar{x}}{s}$

$F(z_i) = P(Z \leq z_i)$

Note:

$S(z_i)$: proportion of $Z \leq z_i$ to all z_i

x_i : i^{th} data

$\bar{x}$: sample mean

s : standard deviation

n : total number of samples

The sample comes from a normally distributed population if $L_{obs} \notin$ critical region, where critical region = $\{L | L > L_{\alpha,n}\}$.

3. RESULTS AND DISCUSSION

At the analysis stage, problem analysis (performance gap) is measured by analyzing actual performance, confirming desired performance, and identifying the causes of the problem (Branch, 2009). Based on observations, some students still do not pay attention to the teacher when explaining the material, are easily distracted, and exhibit behaviors outside of learning activities, such as joking and playing. Two-way interaction between teachers and students was also still limited. These conditions indicated low student interest in learning mathematics. Teachers also emphasized that students were usually more interested when the material was related to real life, but teachers had never used real examples in teaching straight line equations. In addition, the teaching materials for students only come from notes taken during the teacher's lessons. During learning activities, teachers tend to still use lecture and question-and-answer methods, so that learning is still teacher-centered. According to Kurdi et al. (2024) in their book, emphasizes that strengthening cultural identity and locality is important, so this curriculum seeks to create a learning environment that is more relevant to all students. In addition, aims to facilitate student-centered learning and encourage active student participation. The use of technology in learning is also one aspect of the kurikulum merdeka.

In addition to the desired performance in the learning process and students, kurikulum merdeka also encourages teachers to try new approaches that are more suited to the needs and interests of students. Mathematics teachers mentioned that students are actually more interested and enthusiastic when teachers use learning media, but teachers have not used learning media or utilized technology in teaching straight line equations due to time constraints.

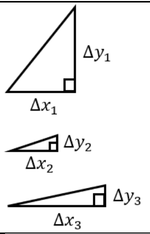
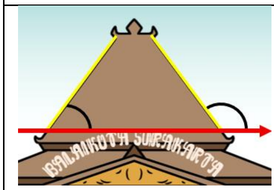
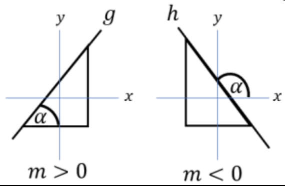
Based on this description of the performance gap, a learning solution is needed that can increase students' interest in learning, present straight line equation material in a way that is relevant to students in accordance with kurikulum merdeka, and provide learning resources that are interesting and easily accessible independently. Therefore, interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform was developed for straight line equation material as an alternative solution to bridge the gap between actual learning conditions and expected learning conditions. The development of this media also took into consideration the technological and human resources available at the school. The school provides Wi-Fi access, LCD projectors, and permission to use smartphones during technology-based learning. Teachers and students also have the skills to use smartphones, so the technological and human resources are considered adequate.

This interactive learning media was developed based on a game-based learning and ethnomathematics approach. The game elements included are rules, clear and challenging objectives, fantasy, level progression, interactivity, player control, uncertainty, feedback, and social elements (Ahmad, 2020). The rules of this learning media are that students in groups discuss each learning activity, with two rounds of play: turns and scramble. The objective of this learning media game is to reach the final point on the locked map. Each point on the map is connected to a fantasy storyline. Level advancement occurs through increased rounds and practice questions with increasing difficulty. Interactivity in this study takes the form of two-way interaction between the teacher as a facilitator who provides scaffolding and the students who actively complete the activities, as well as interaction between the students as media users and the learning media through the Lumi Education platform, which provides feedback on the users' correct and incorrect answers. Player control in this learning media is designed to give students the opportunity to answer and repeat activities, so that students play an active role in the learning process. The element of uncertainty is designed through the use of a game map with locked points, so that students do not know the next activity before completing the previous stage. Students work together in groups to complete activities in order to foster their communication and social skills. Peer discussions are expected to encourage students to express their ideas.

Gambar 1. Front Display

Integrated ethnomathematics is the slope of a joglo roof, which can explain the concept of slope as a comparison between the change in the vertical side and the horizontal side, as well as the properties of a line's slope, which is positive if the line rises from left to right and negative if the line descends from left to right. In addition, Surakarta batik motifs are also used as a visualization of the position of lines as an introduction before the topic of the slope of parallel and perpendicular lines. The integration of ethnomathematics aims to link mathematical concepts with the culture that is close to students' lives, so that learning becomes more meaningful and relevant.

Table 4. The Example of Ethnomathematics Approach in This Research

Culture	Mathematics
	 $m_1 = \frac{\Delta y_1}{\Delta x_1}$ $m_2 = \frac{\Delta y_2}{\Delta x_2}$ $m_3 = \frac{\Delta y_3}{\Delta x_3}$
	

The learning media developed were then handed over to subject matter experts and media experts for validation through a validation questionnaire that had been declared suitable for use by instrument validators. The following are the results of media validity by subject matter experts and media experts.

Table 5. Validity by Subject Matter Experts

Assessment Aspects	Score	Category
Content Suitability	0,969	Very High Validity
Presentability	1	Very High Validity
Language Suitability	0,972	Very High Validity
Average Score	**0,980**	**Very High Validity**

Table 6. Validity by Media Experts

Assessment Aspects	Score	Category
Usefulness	0,944	Very High Validity
Functionality	0,9	Very High Validity
Text, Image, Audio, and Video Quality	0,867	Very High Validity
Design Quality	0,944	Very High Validity
Compatibility	1	Very High Validity
Language	0,833	Very High Validity
Benefit	0,958	Very High Validity
Interactivity	0,967	Very High Validity
Average Score	**0,927**	**Very High Validity**

Based on Tables 5 and 6, the average scores for each assessment aspect have very high validity. Suggestions and input from experts were used as a reference for the formative revision of interactive learning media.

Formative revisions were also carried out through learning media trials to assess internal consistency and reliability in stimulating learning interest in class VIII D, which was selected through cluster random sampling. In this trial, the practicality scores of the learning media according to teachers and students are as follows.

Table 7. Practical Test Results by Teachers in the Trial Phase

Assessment Aspects	Score (%)	Practicality Criteria
Learning Activities	87,5%	Very Practical
Ease of Use	91,667%	Very Practical
Benefit	89,286%	Very Practical
Average Score	**89,5%**	**Very Practical**

Table 8. Practicality Test Results by Grade VIII D Students

Assessment Aspects	Score (%)	Practicality Criteria
Learning Activities	75,893%	Practical
Ease of Use	76,786%	Practical
Benefit	75,781%	Practical
Average Score	**76,153%**	**Practical**

Through this trial, the internal consistency and reliability of the learning interest questionnaire instrument can also be measured. Based on the internal consistency test using product moment correlation, all statements have good internal consistency because the index is equal to or greater than 0.3 (Budiyono, 2017). Furthermore, the reliability test using Cronbach's Alpha obtained a value of 0.907, so the instrument was declared reliable and suitable for use.

After formative revisions were made to the learning media based on input from subject matter experts, media experts, teachers, and conditions during the trial, the interactive learning media developed was implemented in class VIII B, which was selected through cluster random sampling. The results of the practicality test at the implementation stage showed that the teachers' assessment of the interactive learning media was in the very practical category with an average score of 95.8%, which was an increase of 6.3% compared to the trial stage and the practicality assessment by class VIII B students was in the practical category with an average score of 76.895%.

Students were also asked to fill out a learning interest questionnaire before and after using interactive learning media. The data for the students' learning interest questionnaire scores before the treatment had $L_{obs} = 0{,}112$ and the data for the students' learning interest questionnaire scores after the treatment had $L_{obs} = 0{,}142$. Both data sets came from a normally distributed population because $L_{obs} \notin$ critical region, with a critical region is $\{L_{obs} | L_{obs} > L_{\alpha,n} = 0{,}156\}$. After fulfilling the normal assumption, a paired t-test was conducted on the data of the students' learning interest questionnaire scores before and after using interactive learning media to determine the effectiveness of learning media in increasing students' learning interest. The results of the paired t-test are shown in the following table.

Table 9. Paired T-Test Results

t_{obs}	t_{table}	Test Decision
7,562	1,701	H_0 is rejected

Based on the results of the one-tailed paired t-test in Table 9, it can be concluded that the average score of the student learning interest questionnaire after using interactive learning media based on game-based learning and ethnomathematics was better than the average score of the learning interest questionnaire before using the media. This shows that the learning media can increase student learning interest, so that the developed media is considered effective in increasing student learning interest.

4. CONCLUSION

Based on the results of research and discussion on the development of interactive learning media based on game-based learning and ethnomathematics in straight line equation topics to increase student interest in learning, the researchers concluded the following:

1. The development of this interactive learning media was based on the ADDIE development model developed by Branch. In the analyze stage, it was concluded that learning media was needed that could foster feelings of joy, interest, attention, and activity during mathematics learning so that learning would be student-centered. In addition, learning media that presents material relevant to students is needed, one of which is through a cultural approach so that local culture can also be recognized in accordance with the expectations of the kurikulum merdeka. The kurikulum merdeka also encourages learning using technology. This media was also developed with the hope that it could help students learn independently due to the lack of teaching materials available to students. At the design stage, a prototype of learning media was designed based on elements of games and ethnomathematics in accordance with the approach used. In addition, expert media validation questionnaires, material validation questionnaires, teacher and student response questionnaires, and learning interest questionnaires were compiled, accompanied by content validation of each questionnaire by instrument

validators, internal consistency tests, and reliability tests for learning interest questionnaires. All questionnaires were valid and suitable for use, and the learning interest questionnaires were also consistent and reliable. During the development stage, learning media is created based on the previous design. The learning media that has been created will be submitted to subject matter experts and media experts for media validation assessment as well as criticism and suggestions. After the interactive learning media has been validated and revised, it will be tested on one class of students and teachers to assess the practicality of the media and provide feedback if any. In the implementation stage, the revised learning media is used again to teach the sub-material on gradients. At this stage, teachers fill out another questionnaire on the practicality of the media. Meanwhile, students fill out questionnaires on practicality and interest in learning before being given the interactive learning media. Learning with interactive learning media takes place over two meetings, with three hours of lessons and two hours of lessons. At the end of the gradient sub-material, students will fill out a learning interest questionnaire after the treatment. The final stage is evaluation, which is the stage of assessing the products that have been used in the implementation stage and the shortcomings of this interactive learning media.

2. Interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform for straight line equation material is valid and suitable for use based on assessments by subject matter experts and media experts. The average validity score by subject matter experts is 0.980 and the average validity score by media experts is 0.927, which is classified as very good validity.
3. Interactive learning media based on game-based learning and ethnomathematics in straight line equation material was considered very practical by teachers, with an average score of 89.5% in the trial phase and an average score of 95.8% in the implementation phase. Furthermore, based on student assessments, this interactive learning media was considered practical with an average score of 76.153% in the trial phase by students in class VIII D and an average score of 76.895% in the implementation phase by students in class VIII B. Therefore, it can be concluded that interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform is practical for use in teaching straight line equation material to increase student interest in learning.
4. Interactive learning media based on game-based learning and ethnomathematics are considered effective in increasing the learning interest of eighth-grade students at SMP Negeri 27 Surakarta because the results of the paired t-test rejected H_0 with $H_0: \mu_1 \leq \mu_2$ which means that the average score of the learning interest questionnaire after using the learning media was significantly higher than the average score of the learning interest questionnaire before using the learning media. This means that interactive learning media based on game-based learning and ethnomathematics using the Lumi Education platform can increase student learning interest.

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