

**DEVELOPMENT OF TELINGGO LEARNING MEDIA (INTERACTIVE EGG BOARD GAME)
IN MATHEMATICS SUBJECTS**

Adelia Puspita¹, Winda Amelia²

¹²Program Studi Pendidikan Guru Sekolah Dasar, Fakultas Ekonomi Bisnis Humaniora.

Universitas Trilogi, Jakarta Selatan, Indonesia

Correspondence Email: adeliapspt120@gmail.com

ABSTRACT

This study was motivated by the low level of student engagement in learning at SDN Tebet Barat 08 South Jakarta, as teachers only used textbooks and rarely utilized interactive media. The study aims to develop the Telinggo (Interactive Egg Board game) learning medium for two-dimensional shapes, which is suitable for use based on the results of validity and effectiveness tests. The study employs a research and development method using the Borg and Gall model adapted by Sugiyono, limited to nine stages until the final product revision. The trial was conducted using a one-group pretest-posttest design. The results showed that the Telinggo media had very high validity, with 92% for media experts with very valid criteria, 91.6% for language experts with very valid criteria, and 98% for subject matter experts with very valid criteria. This media is effective in improving learning outcomes with a completion rate of 68% and an N-Gain value of 0.58, categorized as moderate. Therefore, Telinggo is suitable for use as a learning media for two-dimensional shapes in fourth-grade elementary school classrooms.

Keywords: Media development; educational board game; flat shapes; elementary school.

INTRODUCTION

Education has a significant influence on a person's outlook on life in society. This is because education can influence, change, and develop a person's perspective, attitude, and life skills, while also being a determining factor in a country's progress (Aggraini, 2021). In order to achieve better human quality, teachers who also have good capabilities are needed. Teachers play a role in determining the quality of student learning, which includes student participation, the learning process, and the ability to provide facilities that support the achievement of learning success (Jumrawarsi & Suhaili, 2021). Teachers play a vital role in improving the quality of human resources. They are not only responsible for delivering lesson material, but also act as motivators and facilitators who can create a supportive learning environment.

Mathematics, as an integral part of education, has a strong connection with various aspects of daily life. Learning mathematics is a process where students actively construct mathematical knowledge. In line with the opinion of Fajar Rizqi et al., (2023), mathematics is the “main vehicle” for developing logical thinking abilities and higher cognitive skills in children. However, mathematics is often perceived as one of the most challenging subjects. This perception can lead to a decline in students' interest in mathematics. Therefore, it is important to present mathematics in an interesting way that is tailored to the level of development of elementary school students' thinking. Therefore, according to (Juardi, 2023) By combining learning according to age group and level of thinking, mathematics learning is conveyed effectively, thereby minimizing the perception that mathematics is difficult.

Based on observations conducted over a month in class IVA at SDN Tebet Barat 08 Pagi Jakarta Selatan, it was found that most students had not achieved the learning objectives for flat shapes. Of the 22 students, only 12 met the minimum passing criteria (KKM), while the other 10 scored below the standard. This finding indicates challenges in understanding mathematical concepts, necessitating strategic measures to enhance the effectiveness of instruction, making it easier for students to comprehend and more engaging for them.

The problem of low student achievement in flat shape material is exacerbated by the dominance of conventional learning methods that minimize the use of real media, thereby inhibiting teacher creativity and reducing student motivation. In fact, learning media plays an important role in bridging abstract concepts to concrete ones and creating an interesting and meaningful learning atmosphere. Learning media are supportive tools used to convey messages from a source in a planned and effective manner, thereby helping to focus students' thoughts, feelings, actions, interests, and attention. (Mhd. Iqbal Nasution, Mardianto, 2021). The interview results also showed that students preferred interactive and enjoyable learning, especially those that contained game elements. Therefore, the development of interactive game-based learning media is needed as a strategy to improve concept understanding, motivation, and the overall quality of mathematics learning.

Board game learning media is a form of game-based learning media designed with equipment in the form of game boards, question cards, answer cards, reward cards, dice, pawns, and guidelines for playing rules (Ela Nur Izza & Nur Hayati, 2023). Board games are an engaging and effective interactive medium that can develop social skills among group members and promote honesty. (Nursirwan et al., 2023). This shows that the game is not only entertaining, but also has strong educational potential in shaping the 21st century skills that students need, such as communication and collaboration. The interactivity in the game is an effective way to attract the attention of students, even those who are less motivated, and keep them engaged in the learning process, thereby encouraging children to think more focused and enthusiastically. (Saleh et al., 2023). The presence of board game media is expected to be a solution for teachers in presenting more interesting and innovative materials and exercises as part of the learning process. (Prihandoko & Yunianta, 2021). This means that teachers still play an important role as facilitators who guide students in the process of critical thinking and problem solving, both independently and collaboratively.

This media will be packaged in the form of an interactive board game (Telinggo) that focuses on flat shapes for elementary school students. Telinggo is an interactive learning media based on board games where students learn in groups by exploring the game board and searching for “treasure eggs” containing questions and material on flat shapes. The Telinggo (Interactive Egg Board Game) learning medium was developed for two-dimensional shape material for fourth-grade students at SDN Tebet Barat 08 in South Jakarta. This medium takes the form of an interactive adventure game where students learn in groups while exploring the board and finding “treasure eggs” containing questions

and material. This study aims to test the effectiveness of Telinggo and its contribution to increasing student engagement, facilitating the understanding of geometric concepts, and making mathematics learning more interesting and aligned with the needs of students in the classroom.

This study is supported by various previous studies that demonstrate the effectiveness of board game-based learning media in increasing student interest and learning outcomes. Stefvany & Athira Hadma, (2022) found that board games with the Vakansia concept were able to foster students' interest in learning about the provincial capitals of Indonesia. Further research also reported an improvement in the learning outcomes of fourth-grade elementary school students through the implementation of educational board games (Usamah et al., 2024). Meanwhile, the board game "Labyrinth in the Forest" was found to be valid, practical, and effective in mathematics education (Prihandoko & Yunianta, 2021). Based on these studies, it can be concluded that the use of board games as a learning medium has great potential in supporting the teaching and learning process, particularly in the subject of two-dimensional shapes in elementary schools.

RESEARCH METHODS

In this Telinggo (Interactive Egg Board Game) learning media, the presentation of flat shape material is delivered through a fun and interactive play-based approach. This media is designed to suit the ability level and characteristics of fourth-grade students, integrating game elements such as an adventure board, eggs containing questions, tangrams, and visual cues to support students' understanding of the characteristics, composition, and decomposition of two-dimensional shapes. The developed product is an educational board game that encourages group interaction and critical thinking through egg hunting and direct problem-solving. Telinggo aims to improve students' learning outcomes in flat shapes by providing an active, contextual, and meaningful learning environment.

This research uses the Research and Development (R&D) method by adapting the Borg and Gall development model with the flow shown in Figure 1. This model essentially consists of ten stages: 1) potential and issues, 2) data collection, 3) product design, 4) product validation, 5) product revision, 6) product testing, 7) product revision, 8) usage testing, 9) product revision, 10) mass production. However, in the implementation of research and development

of the Telinggo media, the researcher only completed nine of the ten stages, while the mass production stage was not carried out. The stages that were carried out covered the entire important process of media development and were considered sufficient to assess the feasibility of the media in terms of validity, practicality, and effectiveness.

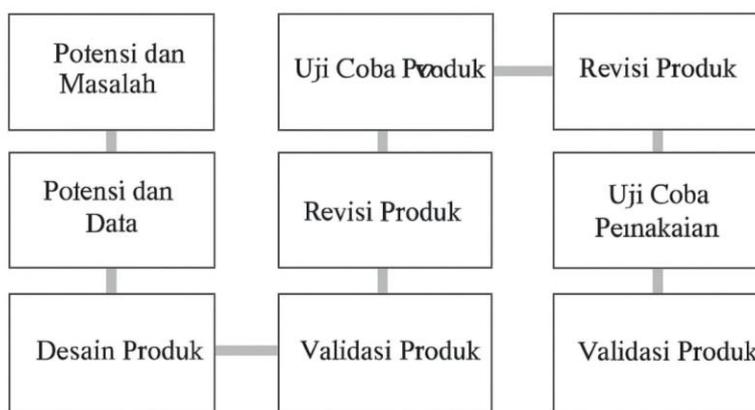


Figure 1. Borg and Gall Development Model

The research subjects were fourth-grade students in the second semester. For the small group study, eight fourth-grade students from SDN Tebet Barat 08 Jakarta Selatan were selected based on varying ability levels (2 high-ability students, 4 moderate-ability students, and 2 low-ability students). The field trial was conducted with 22 fourth-grade students from SDN Tebet Barat 08 Jakarta Selatan. The data collection techniques used in this study included observation, interviews, documentation, and learning outcome tests in the form of pre-tests and post-tests. Observation was used to monitor student engagement and the effectiveness of media use in learning. Interviews were conducted to obtain in-depth information from teachers and students, while documentation was used to supplement data in the form of learning notes, photos, and other supporting documents. Pretests and posttests were administered to measure improvements in student learning outcomes after the

use of learning media. Data analysis was conducted using quantitative and qualitative approaches. Qualitative analysis focused on processing input and observation results from teachers, experts, and students to assess aspects of feasibility and provide guidance for product improvement. Meanwhile, quantitative analysis consists of two types: (1) analysis using feasibility criteria formulas to assess the validity of learning media based on expert evaluations, and (2) analysis using simple descriptive statistics to process pretest, posttest, and student questionnaire data, thereby enabling the effectiveness of the media to be evaluated empirically.

RESULTS AND DISCUSSION

Results

The research on the development of Telinggo media for mathematics lessons on flat shapes for fourth grade elementary school students used the R&D method with the Borg and Gall research model procedure in (Sugiyono, 2020). The following is a discussion of the results of the research development stages.

The first stage of the research involved a preliminary study through observation and interviews with teachers and students of Grade 4A at SDN Tebet Barat 08 on January 12, 2025. The results showed that learning about two-dimensional shapes was still teacher-centered, relying solely on the 2022 Merdeka Curriculum book and occasionally YouTube videos, resulting in students being less active, feeling bored, and having difficulty understanding the characteristics, composition, and decomposition of two-dimensional shapes. This finding served as the basis for developing the Telinggo media (Interactive Egg Board Game) as an interactive and enjoyable alternative learning method.

The second stage involved data collection through literature review using student and teacher textbooks, interviews, and observations of learning activities in fourth-grade elementary school classrooms. The results showed that flat shape learning remains monotonous because teachers only use the 2022 Merdeka Curriculum textbook, leading to students being less active and struggling to understand the material. Analysis of textbooks and other references also showed that the presentation of flat shape material was insufficiently detailed, necessitating innovative learning media to help students achieve learning objectives, namely describing characteristics, constructing, and decomposing flat shapes.

The third stage of the design process uses the data obtained as a basis for designing the storyboard, which serves as a guideline for creating the Telinggo media for the two-dimensional shapes material. This includes the design of the game board, the layout of the interactive eggs, the instruction manual, visual elements, and questions tailored to the fourth-grade two-dimensional shapes material. The Telinggo media is designed to be interactive and support students' understanding of the human circulatory system material. An example of the media display can be seen in the following table.

Table 1. Telinggo Media Display

No	Media Display	Description
1.		Telinggo Media Container which is customized like a treasure chest in order to display the concept carried by researchers, namely treasure hunting. This container is made of synthetic leather with a size of 30 cm long, 20 cm wide, and 13.5 cm high.
2.		Telinggo board is an adventure board containing a game path that directs students to special points to pick up eggs and answer questions. This board has a size of 30 x 30 cm.
3.		Treasure Egg/Interactive Egg is a plastic egg that functions as a container for questions that can be opened. This treasure egg has 2 types, the first is Combi eggs (goldcolored eggs containing tangram pieces and instruction questions on the composition and decomposition of flat shapes), the second is sibi eggs (colorful eggs containing

	<p>questions about the characteristics of flat shapes).</p>
<p>4.</p> 	<p>The question paper and tangram pieces will be inside the treasure egg, which has been adjusted to the color concept. For the combi egg, the question paper is gold, and the sibi egg is colorful.</p>
<p>5.</p> 	<p>The Guidebook contains instructions for using the media, the flow of the game, and a barcode/QR code that can be accessed by teachers to download question templates.</p>
<p>6.</p> 	<p>Gold Card is a point card that players get when they answer the questions correctly.</p>

Base on table 3 shows the components of the Telinggo learning media, which was designed with a treasure hunt concept to attract students' interest in learning. This media consists of a treasure chest-shaped container to attract students' interest in learning. This media consists of a treasure chest-shaped container measuring 30 x 20 x 13.5 cm made of synthetic leather, an adventure board measuring 30 x 30 cm that guides the game path, and an interactive treasure egg as a container for questions that can be opened. The eggs are divided into golden-colored combo eggs containing tangram pieces and questions on the composition and decomposition of two-dimensional shapes, and colorful sibi eggs containing questions on the characteristics of two-dimensional shapes. Inside, there are question papers and tangram pieces whose colors match the type of egg. Additionally, this media is accompanied by a guidebook providing usage instructions, game flow, and a QR code for downloading question templates, as well as a Gold Card as points earned by students when they correctly answer questions.

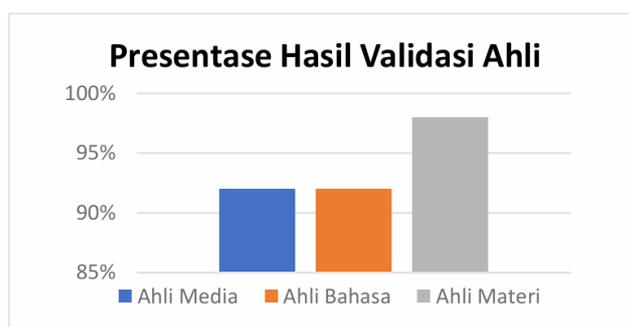


Figure 2. Graph of Expert Validation Results

Figure 2 shows the percentage of expert validation results for the Telinggo learning media involving three aspects, namely media, language, and material. This visualization is presented to provide an overview of the media's suitability based on expert assessments before being described in more detail in the following paragraph. A more detailed explanation of each validation result will be explained in the next stage as follows:

In the fourth stage, after the Telinggo media (Interactive Egg Board Game) was developed, the researchers conducted an initial assessment through a validation process by media experts, content experts, and language experts. The validation instrument was designed using a Likert scale and filled out by the validators by checking the appropriate answers. The validation results for the Telinggo

media were then calculated using a percentage formula to obtain the average suitability score. Based on the calculation results, the Telinggo media for flat shapes obtained a score of 92%, and the media was categorized as highly valid. The percentage formula used in the media suitability assessment is as follows:

$$\text{Presentation} = \frac{\text{Skor Total}}{\text{Skor Max}} \times 100$$

Answer :

$$P = \frac{69}{75} \times 100$$

$$P = 92\%$$

Furthermore, the results of linguist validation on Telinggo media obtained a total score of 91.6% which was calculated using the average percentage score formula, with very valid criteria, with the following formula:

$$\text{Presentation} = \frac{\text{Skor Total}}{\text{Skor Max}} \times 100$$

Answer :

$$P = \frac{55}{60} \times 100$$

$$P = 91,6 \%$$

Further validation was carried out by material experts on flat buildings obtained a score of 98% which was calculated using the average percentage score formula, and included in the criteria is very valid.

$$\text{Presentasi} = \frac{\text{Skor Total}}{\text{Skor Max}} \times 100$$

Jawab :

$$P = \frac{49}{50} \times 100$$

$$P = 98\%$$

The fifth stage is a product revision from the previous product validation stage, where researchers obtained assessments, comments, and suggestions from validators on Telinggo learning media on flat shapes. Based on the results of the assessment, comments, and input provided, the validator expressed his support for the Telinggo learning media that had been developed.

Table 2. Media Display Before Revision and After Revision

No	Comments	Before Revision	After Revision
1.	Media expert: Improve some design elements in the guidebook such as the design of trees and grass should adjust the theme, namely adventure and pay attention to composition.		
2.	Linguists: Pay attention to the readability of the writing, so that the message to be conveyed through the guidebook is not maximized because the reader's focus is on the design.		

3. Material experts: add questions in the form of audio to support the effectiveness of the media.



Table 4 presents a comparison of the appearance of Telinggo media before and after revision based on input from the experts, including aspects of media, language, and material. Revisions were made to improve the quality of the media, where media experts emphasized the improvement of guidebook design elements and a more harmonious color composition. The linguist gave input so that the readability of the writing was considered so that the message in the guidebook was not disturbed by the visual design. Meanwhile, the material expert suggested adding audio questions to increase the effectiveness of the media. This comparison became the basis for improving the media before it was used in the trial stage.

The sixth stage is the product trial to find out students' responses to the use of Telinggo learning media on flat building material. At this stage, researchers conducted a limited trial with a small group scale on May 28, 2025 involving 8 students of grade IVA SDN Tebet Barat 08 South Jakarta as respondents. This trial aims to obtain initial data regarding the effectiveness, acceptability, and user response to the developed media. Previously, researchers distributed pretest sheets to students, after which researchers demonstrated Telinggo media and guided students in its use. Furthermore, students were asked to fill out a posttest sheet and a questionnaire. The data is the result of calculations using the formula, as follows:

$$\text{Presentation} = \frac{\text{Skor Total}}{\text{Skor Max}} \times 100$$

Answer :

$$P = \frac{267}{288} \times 100$$

$$P = 92,7\%$$

Based on the results of the student response score of the product trial with 8 students of class IVA SDN Tebet Barat 08 South Jakarta, the average score percentage is 92.7% with very valid qualifications.

The pretetst and posttets data that have been collected are then analyzed using the following formula calculations:

$$\text{N-Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretst}}$$

Answer :

$$\text{N-Gain} = \frac{79,75 - 58,75}{100 - 58,75}$$

$$\text{N-Gain} = 0,51$$

Based on the results of the analysis, the pretetst average value was 58.75, while the posttets average value increased to 79.75. Furthermore, the calculation results using the N-Gain formula show a value of 0.51 with a moderate interpretation.

The seventh stage is product revision where the small group trial stage has been carried out to obtain assessments, comments, and suggestions from eight students on Telinggo learning media on flat building material. The results of the trial showed positive responses in general, indicating that this media was well received by students. However, one student provided input related to Mr. Plow's icon, which is a game element that makes the player stop one round, with a complaint that it is too often stuck at that point. Following up on this suggestion, the researcher made adjustments to the game mechanism so that Telinggo became more balanced, feasible to use, and able to optimally facilitate the student learning process in the classroom.

The eighth stage is the usage trial, researchers conducted a usage test of Telinggo media to obtain student responses regarding its feasibility and effectiveness. The documentation is shown in figure 3. The usage test was carried out on a large scale involving 22 students of class IVA SDN Tebet

Barat 08 South Jakarta, aiming to evaluate the effectiveness of the media in learning flat shapes. This activity took place for four days, namely June 3-4, 2025 and June 16-17, 2025, adjusting to the allocation of learning time. In the initial stage In the initial stage, researchers introduced Telinggo media to students as an introduction before the usage test activities were carried out.



Figure 3. Documentation of the Large Scale Usage Trial Stage

After students use and observe Telinggo learning media, they fill out an assessment questionnaire to obtain large-scale product usage test data. The analysis results show an average value of 91% with a very valid category, so that Telinggo learning media is declared feasible to use in flat building learning in the classroom. The complete results of the large-scale product usage test are presented as follows:

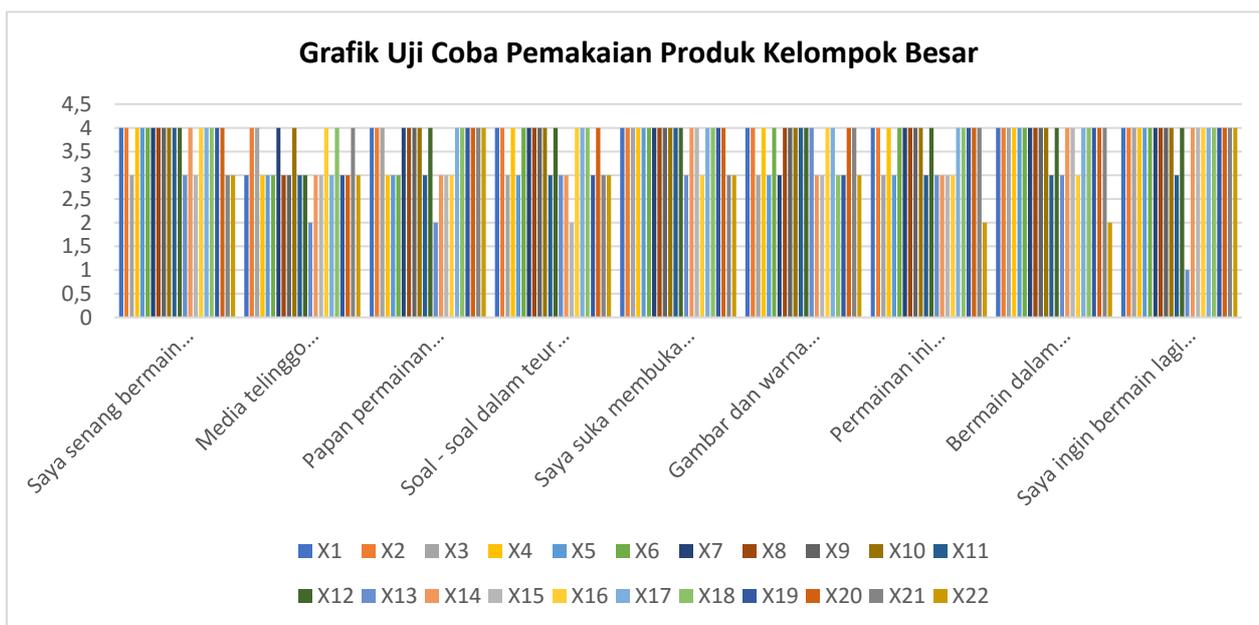


Figure 4. Graph of the results of the Large Scale Product Trial

The data is the result of calculations using the formula, as follows:

$$\text{Presentation} = \frac{\text{Skor Total}}{\text{Skor Max}} \times 100$$

Answer :

$$P = \frac{722}{792} \times 100$$

$$P = 91\%$$

The research trial phase was carried out on June 3-17, 2025 at SDN Tebet Barat 08 South Jakarta. The effectiveness of Telinggo learning media was tested through multiple choice tests, consisting of 10 pre-test questions and 15 post-test questions with higher difficulty levels. This test aims to obtain data on student learning outcomes before and after the use of media, so that the increase in achievement can be analyzed. The results of the calculation of the pre-test and post-test values show a difference in learning achievement, which is further described in the following section:

$$N\text{-Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretest}}$$

Answer :

$$N\text{-Gain} = \frac{81,43 - 55,45}{100 - 55,45}$$

$$N\text{-Gain} = 0,58$$

Based on the results of the analysis of the average pre-test and post-test scores of student learning motivation, the pre-test average score was 55.45 and the post-test increased to 81.43. This increase shows a positive change in student learning motivation after the application of Telinggo learning media on flat building material. The N-Gain calculation resulted in a value of 0.58 or 58%, which based on the interpretation criteria is included in the effective enough category so that Telinggo media is suitable for use in classroom learning.

The ninth stage after conducting a large-scale product usage test on grade IVA students of SDN Tebet Barat 08 South Jakarta, Telinggo learning media was declared to meet very valid and effective qualifications so that no retest was needed. The assessment results from 22 students showed a positive response to the media, with 21 students giving positive comments without suggestions for improvement, and one student made a suggestion regarding the size of the game board that was too small. The feedback has been followed up in the final revision stage so that Telinggo is declared feasible to use as a flat building learning media that is able to support the learning process of students optimally.

Discussion

Based on research conducted at SDN Tebet Barat 08 South Jakarta involving 22 students of class IVA, the learning media developed is declared feasible and effective to use. The feasibility of Telinggo media on flat shapes can be seen from three main aspects, namely:

1. Media validity, which is assessed by media experts, linguists, and material experts.
2. The practicality of the media, which is obtained from student responses to the use of the media
3. The effectiveness of the media, which is measured through the analysis of students' pretest and posttest scores.

The results of the analysis showed that the average validity of the media reached 92,5%, including in the very valid category according to the percentage criteria (Riduwan & Akdon, 2010). Validators also provide input for improvement, especially on some design elements and selection of color composition to make the media more optimal.

Based on the results of data analysis of Telinggo learning media validation on flat building material, the results show that this media meets very valid qualifications and is suitable for use in learning in grade IV SD. The validation results from linguists showed a percentage of 91.6%, with very valid criteria. This indicates that the language used in Telinggo media is appropriate, clear, and can be understood by students. However, based on qualitative data, linguists provided several suggestions for improvement, including improving the readability of letters so that the message is not disturbed by visual design, adding a glossary for foreign terms, and providing numbering on the game board design to make it easier for students when using it.

Validation results from material experts obtained a percentage of 98%, with very valid qualifications. Qualitatively, the material expert stated that the content on Telinggo media was in accordance with the basic competencies and characteristics of flat building material, but it was suggested to add questions in audio form to increase the effectiveness and attractiveness of the media.

The practicality of the media was also tested through small and large scale feasibility tests. In the small-scale test with 8 students of class IVA SDN Tebet Barat 08, the percentage of practicality was 92.7%, which is included in the very valid category. Furthermore, the large-scale test involving 22 students obtained a percentage of 91%, with the same qualification. These results prove that Telinggo media is easy to use by students, able to involve them actively in learning, and facilitate understanding of flat building concepts through game-based learning experiences.

Based on the overall results of validation and testing, Telinggo learning media is declared very valid and very feasible to use as a flat building learning media. This success can be seen from the consistency of expert validation scores (media 92%, language 91.6%, material 98%) and student responses in the feasibility test (small scale 92.7% and large scale 91%). In addition, the learning results showed an increase in student understanding after using the media, which indicated the

effectiveness of Telinggo in supporting the achievement of mathematics learning objectives in elementary schools. Meanwhile, previous research also shows that board games are effective in improving students' abilities. The first research by Agni Nabilah & Widiati, (2025) on the educational Board Game Math Snake Challenge obtained feasibility and improved students' problem solving skills. Meanwhile, research by Widiyanto & Yunianta, (2021) on the TITUNGAN Board Game showed that the media was feasible and interesting to use, with 92.67% expert validation, 80.9% practicality, and an increase in post-test scores.

Based on the explanation above, it can be concluded that the Telinggo (Egg Interactive Board Game) learning media has proven to be very valid and feasible to use in learning flat building material in class IVA SDN Tebet Barat 08 South Jakarta. The success of this media is not only shown through the results of expert validation and small and large scale trials, but also seen from the increase in student learning outcomes before and after using the media. Data on learning outcomes showed a significant increase in students' average scores after the application of Telinggo media in the learning process. This indicates that Telinggo media is able to improve the understanding of the concept of flat shapes effectively.

The effectiveness of Telinggo learning media on flat shapes material can be known through the analysis of students' pretest and posttest results using the calculation of the percentage of completeness and N-Gain. This media effectiveness test was conducted at the summative evaluation stage in class IVA SDN Tebet Barat 08 South Jakarta. In the small-scale trial involving 8 students, the average pretest score was 58.75 and the average posttest score was 79.75. The N-Gain calculation results showed a value of 0.51 with moderate effectiveness criteria.

Furthermore, the large-scale trial was conducted on 22 students of class IVA. The average pretest score obtained was 55.45, while the average posttest score increased to 81.43. Based on the N-Gain calculation, a value of 0.58 was obtained which is included in the criteria for moderate effectiveness. These results indicate an increase in understanding and mastery of the concept of flat shapes after students use Telinggo media in the learning process.

This improvement in learning outcomes is in line with the expected learning objectives, namely students are able to describe the characteristics of various flat shapes (quadrilateral, triangle, and triangle), compose flat shapes, and understand the process of decomposition of flat shapes. Thus, Telinggo learning media is declared effective to help students understand the material of flat shapes, although the level of effectiveness is in the medium category.

Based on these findings, Telinggo media is suitable for use in learning mathematics in elementary schools and has the potential to continue to be developed to be more innovative and interactive, so as to increase the effectiveness of learning optimally.

CONCLUSIONS

Based on the results of research and development of Telinggo (Egg Interactive Board game) learning media on flat building material in class IVA SDN Tebet Barat 08 South Jakarta, it can be concluded that this media has fulfilled three aspects of learning media feasibility, namely validity, practicality, and effectiveness. The validation results showed that media experts obtained a percentage of 92%, linguists 91.6%, and material experts 98%, all of which were in very valid qualifications. The feasibility test conducted through small scale and large scale also resulted in a percentage of 92.7% and 91% which showed that Telinggo media was very feasible to use in learning. From the practicality aspect, this media proved to be easy to use by students and able to motivate them to be active during the learning process. This can be seen from the positive responses of students when conducting product trials, both on a small and large scale, which shows that the media can increase engagement and a pleasant learning experience. Meanwhile, the effectiveness aspect is shown through an increase in student learning outcomes. In the small-scale test, the average pretest score of 58.75 increased to 79.75 in the posttest, with an N-Gain value of 0.51 which is included in the moderate category. While in the large-scale test, the average pretest score of 55.45 increased to 81.43 in the posttest, with an N-Gain value of 0.58 which is also in the moderate category. This increase proves that the use of Telinggo media can help students understand the concept of flat shapes more effectively. Thus, Telinggo learning media is declared valid, practical, and effective, so it is feasible to use as an alternative interactive learning media in elementary schools.

ACKNOWLEDGEMENTS

With the completion of this Scientific Paper, the author expresses his deepest gratitude to :

1. Allah SWT, for the abundance of grace and guidance so that the author can carry out and complete this Scientific Paper.
 2. Trilogy University for providing support and facilities during this research process.
 3. SDN Tebet Barat 08 South Jakarta for allowing and supporting the implementation of this research.
 4. Mrs. Octafia Nur Cahyani, S.Pd. and students of class IVA SDN Tebet Barat 08 South Jakarta for their participation and cooperation during the trial of learning media.
 5. Ms. Winda Amelia, S.Pd., M.Pd. as the supervisor who has provided direction, input, and motivation during the preparation of this article.
 6. Mr. Abdul Hakim Santoso, S.Sn., M.Ds. as a media expert, Dr. Robiatul Munajah, S.Pd., M.Pd. as a linguist, and Octafia Nurcahayani, S.Pd. as a material expert who have taken the time to validate this learning media.
 7. Family who always pray for the success of this research.
 8. Dear friends Rawr Bella, Nurul, Dian, Dewi, Firda who always provide moral support and motivation during the research process until this article is published.
 9. Jupiter Nur Faiz who was always ready to help and accompany all the processes of this research.
- Not to forget, the author gives appreciation to himself for the dedication, consistency, and enthusiasm that has been exerted on this research.

BIBLIOGRAPHY

- Aggraini, Y. (2021). Analysis of Teacher Preparation in Learning Mathematics in Elementary Schools. *Jurnal Basicedu*, 5(1), 2415–2422. <https://journal.uui.ac.id/ajie/article/view/971>
- Agni Nabilah, A.-Z. N., & Widiati, I. S. (2025). Development of Educational Board Game Math Snake Challenge to Improve Problem Solving Ability of 6th Grade Students. *Journal of Data Analytics, Information, and Computer Science*, 2(1), 132–145. <https://doi.org/10.70248/jdaics.v2i1.1894>
- Ela Nur Izza, & Nur Hayati. (2023). Board Game on Ipa Learning: Development of Media for Substance Pressure Materials. *Nukleo Sains: Jurnal Pendidikan Ipa*, 1(2), 61–68. <https://doi.org/10.33752/ns.v1i2.3437>
- Fajar Rizqi, A., Adilla, B. L., Sulistiyawati, E., & Taufiqurrohman. (2023). Analysis of Mathematics Learning Difficulties in Elementary School Students and Alternative Solutions. *Journal of Basic Education Flobamorata*, 4(1), 481–488. <https://doi.org/10.51494/jpdf.v4i1.588>
- Juardi, F. (2023). The Concept of Learning Primary School Mathematics Based on Jean Piaget's Cognitive Theory 1Indri. *06(01)*, 2179–2187.
- Jumrawarsi, J., & Suhaili, N. (2021). The Role of a Teacher in Creating a Conducive Learning Environment. *Encyclopedia Education Review*, 2(3), 50–54. <https://doi.org/10.33559/eer.v2i3.628>
- Mhd. Iqbal Nasution, Mardianto, S. M. (2021). DEVELOPMENT OF MACROMEDIA FLASH-BASED MATH LEARNING MEDIA. *ALGEBRA: JOURNAL OF EDUCATION, SOCIAL AND SCIENCE*, 1(September).
- Nursirwan, H., Arief, Z. A., & Hartono, R. (2023). Development of Zakuma Board Game Learning Media Based on Wordwall at Cendekia Baznas Cibungbulang Junior High School, Bogor Regency. *Journal of Educational Technology*, 12(3), 51.
- Prihandoko, G. K., & Yuniarta, T. N. H. (2021). Development of the Board Game “Labyrinth in the Forest” for Junior High School Students Learning Numbers. *Cendekia Journal: Journal of Mathematics Education*, 5(1), 578–590. <https://doi.org/10.31004/cendekia.v5i1.548>
- Riduwan, & Akdon, P. D. M. P. (2010). *Formulas and Data in Statistical Analysis: For Research (Administration, Business, Government, Social, Policy, Economics, Law, Management, Health)*. viii + 303. <https://inlislite.uin-suska.ac.id/opac/detail-opac?id=14715&utm>
- Saleh, S. S., Nasution, A. F., & Fitriah, D. L. (2023). Teams Games Tournament (TGT) Learning with Mathematics Monopoly (Moka) Media Using a Collaborative Learning Model. *Algebra: Journal of Education, Social Sciences, and Science*, 3(2), 106–112. <https://doi.org/10.58432/algebra.v3i2.778>

- Stefvany, S., & Athira Hadma, O. (2022). Educational Board Game About Indonesian Provincial Capitals for Elementary School Children. *Judikatif: Journal of Creative Communication Design*, 4(1), 26–31. <https://doi.org/10.35134/judikatif.v4i1.49>
- Sugiyono. (2020). *Quantitative, Qualitative, and R&D Research Methodology*.
- Usamah, A., Lia Yulianengsih, N., Fitriyani, Y., & Fauziyah, A. (2024). Implementation of Educational Board Games in Islamic Religious Education in Elementary Schools. *Attadib: Journal of Elementary Education*, 8(1), 2614–1752.
- Widiyanto, J., & Yunianta, T. N. H. (2021). Development of the TITUNGAN Board Game to Train Students' Creative Mathematical Thinking Skills. *Mosharafa: Journal of Mathematics Education*, 10(3), 425–436. <https://doi.org/10.31980/mosharafa.v10i3.997>