

INTERACTIVE LEARNING MEDIA DEVELOPMENT MATH CASE BASED ON SCRATCH TRIANGLE AND PARALLELOGRAM GRADE V ELEMENTARY SCHOOL

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ABSTRACT

The development of Scratch-based Math Case interactive learning media uses the Research & Development method which produces an interactive learning media that can be accessed without using an application. The aim of this study was to ascertain the developmental process, validity and practicality of Scratch. This study employs the ADDIE development model, comprising 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. The subjects of this study were students of class V-A at SDN 004 Samarinda Ulu and 1 teacher of class V-A.

The result of this research is Scratch interactive learning media in the form of links that can be used without using the application. This media has been tested for validity and practicality by several experts and responses from research subjects. The validity assessment from linguists scored 86% with a very decent category, the validity assessment from material experts scored 84% with a very decent category, and the validity assessment from media experts scored 86% with a very decent category. Practicality assessment was carried out through small-scale and large-scale trials. The practicality of small-scale trials on students obtained an assessment of 83% with a very feasible category. The practicality of large-scale trials on students obtained an assessment of 87% with a very feasible category and the practicality of large-scale trials on educators obtained an assessment of 96% with a very feasible category. Based on these stages, this Scratch media can be used in the classroom as an interactive learning media.

Keywords: Development, Interactive Media, Scratch

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INTRODUCTION

The development of technology today has a great impact, for example, in the field of education. Advances in science have an impact on technological development, one of which is in the education sector. Technology is a tool that can facilitate human needs in the process of life (Mulyani, 2021). The application of technology has been applied in teaching, one of which is mathematics. The use of technology in learning mathematics in the classroom such as the use of laptops, projectors, mobile phones that can support the learning process is evidence of the application of technology. Mathematics is often considered an abstract subject, so

understanding basic concepts is considered important. Mathematics at the elementary level is the most important thing in students' thinking process. Understanding concepts is a difficult thing for students to do, so teachers have to be more creative in building students' thinking processes. Students' thinking skills can be developed by using interactive media.

Afifah et al (2022) state that interactive learning aids can facilitate the learning process to be clearer and more effective. Another opinion about interactive learning aids was expressed by Yanto (2019) that interactive media is an intermediary tool for delivering information so that interaction between students and the media occurs. A fun learning process can be implemented using interactive media, easy to grab attention and easy to use (Sukriadi et al. 2023) so that by utilizing technology, learning activities can be packaged interestingly to produce a learning atmosphere that is not boring. Some opinions that discuss learning aids are in line with constructivism learning theory. Constructivism theory states that, individuals learn if they get new experiences from the learning they have gone through which means that through this theory, students create their own meaning of learning from their own experiences (Arafah et al., 2023).

Scratch is an interactive learning tool in the form of games, quizzes, and animations (Pratiwi & Bernard, 2021). Scratch was first developed by the Massachusetts Institute of Technology (MIT) to create a variety of projects such as audio, images and text that can be combined (Syaliman et al., 2023). Scratch acts as one of the interactive media, with Scratch the delivery of material will be more fun, this is because Scratch involves students in the learning process. Later learners can access materials and games that have been packaged in accordance with the material area of flat shapes. Interest in the use of Scratch is solving story problems in the form of cases that must be resolved by students. The case-shaped story problem will direct students to form a flat shape that is in accordance with the material that has been discussed. The media used in flat building material during mathematics learning activities in class V-A is in the form of visual learning aids. This makes it difficult for learners to visualize the shape of flat shapes appropriately. Learning activities in class V-A using learning aids make students bored, so they are less than optimal in receiving material in class.

The same problem occurred in class V-A of SDN 004 Samarinda Ulu. Based on the findings from the interview activities with the teacher of class V-A, the researcher found a similar problem, namely the lack of use of interactive learning aids. The results of the interviews conducted by the author at State Primary School 004 Samarinda Ulu, the teachers claimed to still use blackboards, printed books, and student worksheets (LKS) in the classroom. Daniyati et al (2023) stated that the use of appropriate learning aids can improve understanding of the material. This view is in line with the research to be conducted, which shows that the selection of appropriate learning aids can help students to improve their understanding.

Previous research on Scratch interactive learning media using different materials such as research by Research conducted by Ragilla Pratiwi et al (2023) with the research title "Development of Scratch Application-Based Learning Media on Theme 6 Subtheme 1 grade III SDN 105455 Sibatu-batu" and the same research conducted by Nurhalizah and Jayati (2023) in their research both use Scratch in the development of learning media can help students to improve understanding of learning materials so that it can capture the attention of students in studying. Research conducted by Oktiningrum and Putri (2022) in their research, researchers saw an increase in students' interest in learning through interactive learning aids. This study discusses the area of flat flat shapes applied to grade IV elementary school students. In this study, it was proven that there was an increase in interest in learning the mathematics of triangular flat building material using the "LUBADA" media. Based on the above research, researchers will develop learning media using Scratch more innovatively and creatively through the concept of Math Case, namely researchers will present triangle and parallelogram material where each material will have several cases in the form of story problems that need to be solved

by students. These cases will lead learners to solve the case of each case called "Solved Case". The purpose of this development research is to develop Scratch-based interactive learning media by studying the development process of Scratch media, the validity of Scratch media, and the practicality of Scratch media as an interactive learning media.

METHOD

Research on the development of Scratch-based Interactive Learning Media Flat Buildings Material: Triangle and parallelogram in grade V elementary school students is a type of Research and Development research. The subjects of this study were 29 students and 1 educator. This Research and Development research uses the ADDIE model. ADDIE stages have 5 stages, namely;

- 1) *Analysis*, researchers conducted interviews to identify problems experienced by educators in the use of learning media.
- 2) *Design*, the researcher designs the concept and content of the product to be developed.
- 3) *Development*, the researcher realizes the product to be developed according to the design made before.
- 4) *Implementation*, in the implementation stage, the researcher conducts a trial of the developed product to the research subject
- 5) *Evaluation*. this stage is the stage of providing feedback to the developed product.

The data collection instruments used were in the form of observation sheets, interview sheets, questionnaires (material expert questionnaires, media expert questionnaires, linguist questionnaires, learner response questionnaires, educator response questionnaires, and learner needs analysis questionnaires), test guidelines (pretest and posttest).

The validity value of the use of Scratch media is obtained from the results of tests conducted by experts. Some of the experts involved in this validity testing are linguists, materials experts, and media experts. The validity of the Scratch media will be evaluated after the Scratch media have been used by experts and validated through a questionnaire containing evaluation indicators from both linguistic, media and material aspects. The results of the questionnaire are analyzed using the validity formula, which compares the total score of the validators divided by the maximum score multiplied by 100% to obtain the percentage score. After obtaining the percentage, it is analyzed through the validation criteria to see the validity level of the scratch media. Scratch media is considered valid if the percentage score is $\geq 61\%$ and $\geq 80\%$. The practicality value of using Scratch media is determined by the response to the use of Scratch media by educators and students.

The response to the use of Scratch media is obtained after the Scratch media has been used and evaluated for practicality through an educator response questionnaire and a student response questionnaire that includes evaluation indicators. The results of the questionnaire will be analyzed through a practicality formula that compares the total score of the response score divided by the maximum score multiplied by 100% so that the percentage of Scratch media practicality score is obtained. After obtaining the percentage, it will be analyzed through the practicality criteria to see the level of practicality of Scratch media Scratch media is said to be practical if the percentage score is $\geq 61\%$ and $\geq 80\%$.

RESULTS AND DISCUSSION

The process of developing Scratch as an interactive learning tool uses the ADDIE model, which has 5 stages, namely Analysis, Design, Development, Implementation and Evaluation. The first stage in the ADDIE process is Analysis. The analysis stage is conducted in the form of a need analysis, namely researchers conduct pre-research interviews with educators related to the curriculum used in the school. The purpose of conducting a needs analysis is to determine the students' needs for the media to be developed (Tambunan 2021).

Based on the interviews conducted, the curriculum used is the independent curriculum that has been used since 2023 to be precise in June. The second analysis is related to the use of learning media used during the teaching and learning process. Based on the results of the interviews conducted, the educator admitted that he used conventional learning media such as textbooks and blackboards during the learning activities in the classroom. The use of learning aids is important to support the learning process of students. This statement is in line with the opinion of Daniyati et al (2023) who stated that the use of appropriate learning aids can help educators during learning activities and make it easier for students to understand learning materials in order to improve the quality of education in accordance with the objectives of education. Interviews were conducted with educators to find the problems to be studied (Sugiyono, 2019).



Figure 1. Start View



Figure 2. Menu Utama

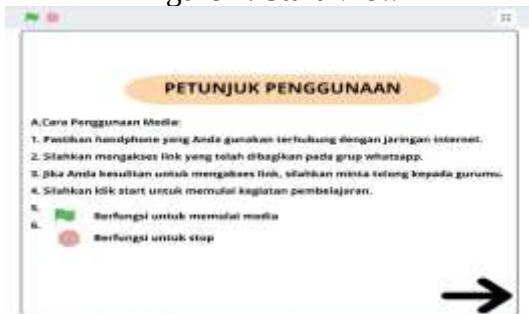


Figure 3. User Guide



Figure 4. Backdrop



Figure 5. Triangle Material

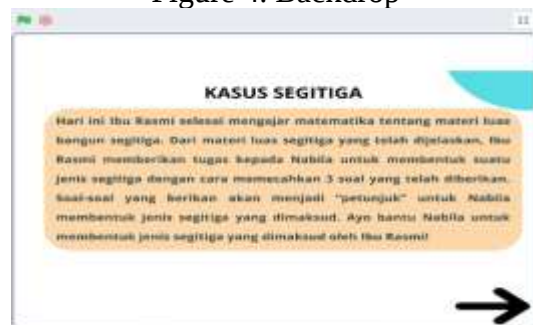


Figure 6. Triangle Case



Figure 7. Parallelogram Material

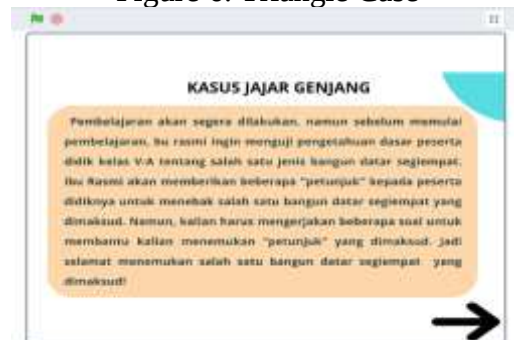


Figure 8. Parallelogram Case

The use of interactive learning media is rarely or never used by her during learning. The third analysis was conducted with students. This analysis is an analysis of the needs of students with the aim to see how much the need for Scratch interactive learning media developed by researchers. Based on the results of questionnaires distributed by researchers to students, it was found that 27% of the use of interactive learning media was less used for learning in class, 89% of students preferred to learn using mobile phones, 58% had difficulty learning mathematics and 100% of students needed technology in the learning process in class. Apart from these problems, the presence of interactive learning tools in the classroom can help make learning activities fun, especially in learning math. The interest in using Scratch lies in solving story problems in the form of cases that need to be solved by the students. The case-based story problem instructs students to create a flat shape that matches the material. This Scratch media is accessed through a link so that users do not have to download other applications.

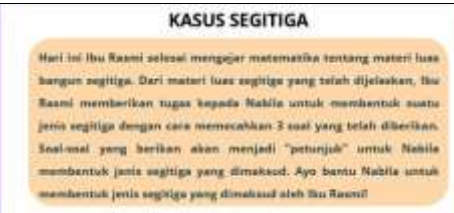
The second phase of this development process is design. At this stage, the researchers began to design some of the things needed in the development of Scratch media, namely designing flowcharts and storyboards. The purpose of designing flowcharts and storyboards is to guide the researchers in designing the appearance of the learning media being developed. Once the flowchart and storyboard are designed, researchers collect various media components. These components are materials, cases, picture responses, audio, and buttons on Scratch. The interactive location on Scratch media is in the form of interesting buttons that have been coded that can be pressed by students, besides that the participation of students in using is a form of interactive between media and students. Researchers use Canva as a supporting medium to design materials and cases that are placed on Scratch. The materials and cases designed on Canva are imported as jpg files that are later arranged on the Scratch background. Once the materials and cases were placed on the Scratch backdrop according to the storyboard, the researchers also added some additional components that only exist in Scratch, namely media support buttons and audio recorded directly on the media. Once all the components needed in the media are complete and arranged, the researcher moves the process to the development stage (Figure 1 to Figure 8).

The next stage is development. This stage is the implementation of the previously prepared product design. Scratch development begins with media compilation and design, followed by media validation by validators, and finally the revision stage. The designed product is shown in the following figure.

Table 1. Revisions from Validators

No	Advice	Before Revision	After Revision
Media Expert			
1.	Same font on opening page, page 1		

No	Advice	Before Revision	After Revision
2.	There should be no empty display on the left triangle side	SEGITIGA  Segitiga adalah bangun datar yang terbentuk dari tiga garis lurus. Segitiga dibagi menjadi 2 jenis yakni, segitiga berdasarkan panjang sisinya dan segitiga berdasarkan besar sudutnya. (Ruqoyyah, 2021). Rumus Luas Segitiga: $L = \frac{1}{2} \times a \times t$	SEGITIGA  Segitiga adalah bangun datar yang terbentuk dari tiga garis lurus. Segitiga dibagi menjadi 2 jenis yakni, segitiga berdasarkan panjang sisinya dan segitiga berdasarkan besar sudutnya. (Ruqoyyah, 2021). Rumus Luas Segitiga: $L = \frac{1}{2} \times a \times t$ Keterangan: L = Luas Segitiga (cm²) / (m²) a = Alas Segitiga (cm) / (m) t = Tinggi Segitiga (cm) / (m)
3.	Answers will be multiple choice	KASUS 1 Nabila akan berjalan-jalan mengelilingi beberapa kota. Nabila memulai perjalanan dari Kota A yang terletak di arah Timur. Dalam perjalanannya, Nabila beristirahat di taman bermain. Setelah dari taman bermain di kota A, Nabila kembali melanjutkan perjalanan ke Kota B menuju arah Barat. Saat ia telah sampai di Kota B, ia melihat sebuah bangunan yang berbentuk onigiri. Bentuk onigiri memiliki panjang alas 12 m dan tinggi 8 m. Maka berapa luas dari bangunan yang berbentuk onigiri tersebut!	KASUS 1 Nabila akan berjalan-jalan mengelilingi beberapa kota. Nabila memulai perjalanan dari Kota A yang terletak di arah Timur. Dalam perjalanannya, Nabila beristirahat di taman bermain. Setelah dari taman bermain di kota A, Nabila kembali melanjutkan perjalanan ke Kota B menuju arah Barat. Saat ia telah sampai di Kota B, ia melihat sebuah bangunan yang berbentuk onigiri. Bentuk onigiri memiliki panjang alas 12 m dan tinggi 8 m. Maka berapa luas dari bangunan yang berbentuk onigiri tersebut! A. 48 cm² C. 48 cm B. 48 m D. 48 m²
Material Expert			
1.	Note the phrasing used in the question	KASUS 1 Nabila akan berjalan-jalan mengelilingi kota disore hari. Nabila memulai perjalanan dari Kota A yang terletak di arah Timur. Dalam perjalanannya, Nabila beristirahat di taman bermain. Setelah dari taman bermain di kota A, Nabila kembali melanjutkan perjalanan ke Kota B menuju arah Barat. Saat ia telah sampai di Kota B, ia melihat sebuah bangunan yang berbentuk onigiri. Bentuk onigiri memiliki panjang alas 12 m dan tinggi 8 m. Hitunglah luas dari bangunan yang berbentuk onigiri tersebut! A. 48 cm² C. 48 cm B. 48 m D. 48 m² KASUS 2 Setelah dari kota B Nabila melanjutkan perjalanan ke kota C menuju arah Utara. Di kota C ia melewati sebuah area kemah, ia bertanya kepada salah satu peserta kemah mengenai panjang dan tinggi tenda yang digunakan. Ternyata tenda yang digunakan memiliki panjang 6 m dan tinggi 4 m. Hitunglah luas dari tenda yang ditanya oleh Nabila! A. 12 m² C. 22 cm² B. 22 cm D. 12 cm KASUS 3 Dari kota C Nabila menuju arah tenggara untuk kembali ke kota A. Dalam perjalanannya, Nabila melihat bangunan berbentuk piramida. Didepan piramida tersebut terdapat informasi yang menyatakan luas bangunan piramida tersebut. Dimana informasi tersebut menyatakan panjang alas 16 m dan luas bangunan 80 m. Hitunglah tinggi bangunan piramida tersebut. A. 10 m² C. 100 cm² B. 10 cm D. 100 m	KASUS 1 Nabila akan berjalan-jalan mengelilingi beberapa kota. Nabila memulai perjalanan dari Kota A yang terletak di arah Timur. Dalam perjalanannya, Nabila beristirahat di taman bermain. Setelah dari taman bermain di kota A, Nabila kembali melanjutkan perjalanan ke Kota B menuju arah Barat. Saat ia telah sampai di Kota B, ia melihat sebuah bangunan yang berbentuk onigiri. Bentuk onigiri memiliki panjang alas 12 m dan tinggi 8 m. Maka berapa luas dari bangunan yang berbentuk onigiri tersebut! A. 48 cm² C. 48 cm B. 48 m D. 48 m² KASUS 2 Dari kota B Nabila melanjutkan perjalanan ke arah utara menuju kota C. Di kota C ia melewati sebuah area kemah, ia bertanya kepada salah satu peserta kemah mengenai panjang dan tinggi tenda yang digunakan. Ternyata tenda yang digunakan memiliki panjang 6 m dan tinggi 4 m. Hitunglah luas dari tenda yang ditanya oleh Nabila! A. 12 m² C. 22 cm² B. 22 cm D. 12 cm KASUS 3 Dari kota C Nabila menuju arah tenggara untuk kembali ke kota A. Dalam perjalanannya, Nabila melihat bangunan berbentuk piramida. Didepan piramida tersebut terdapat informasi yang menyatakan luas bangunan piramida tersebut. Dimana informasi tersebut menyatakan panjang alas 16 m dan luas bangunan 80 m. Hitunglah tinggi bangunan piramida tersebut. A. 10 m² C. 100 cm² B. 10 cm D. 100 m
Linguist			
1.	Consistency in using audio noted	Some voices are less audible because they are far from the speakers.	Voice becomes clearer and more audible

No	Advice	Before Revision	After Revision
2.	Using fonts that are not too tight and small		
3.	Non-ambiguous use of the considered name	Changing what was originally called Bila	Name change to Nabila

Once all the components on Scratch have been arranged according to the storyboard, the next stage is the expert test on Scratch. This stage is the stage to measure the validity of the Scratch media itself. Validity functions as the accuracy of evaluation according to its function (Hutabri, 2022: 297). The calculation of the validity of Scratch uses a Likert scale, which is calculated by the formula of the number of validator scores divided by the maximum number of scores multiplied by 100%. The result of the percentage determines the validity category of the medium. The number of validator scores is obtained from the number of indicators created by the researchers, while the maximum score is obtained from the number of Likert scales multiplied by the number of indicators. For example, the indicators used in the questionnaire amounted to 10, while the largest Likert scale is 5, the maximum score is 50.

The validity of Scratch involved 3 experts. The experts involved are instructors who are experienced and competent in their fields. The experts are linguists who will validate the language in the Scratch media so that the language used is easy for students to understand. Linguists also validate the questionnaire given by the researchers during the media trials. The validity of Scratch media given by linguists gets a percentage of 86% with a very valid category. There are some scores from indicators that are less than the maximum, such as the 8th indicator about the writing on the media can be read clearly get a score of 3 with the maximum score of 5 and the 9th indicator about the font size get a score of 4 with the maximum score of 5. The score is given because the type on the media is very large and dense, making the type on the media look small. The advice and input from linguists is to improve the font size on Scratch media so that the fonts used do not look too tight and small. Fitria and Virgian Darmanto (2023) on the media pay attention to the use of fonts so that they are not too small so that the writing can be read clearly. The 6th indicator regarding the use of the right tone when delivering material through audio gets a score of 4 out of a maximum score of 5. The score is due to the fact that when the sound is recorded on the media, the researcher's voice is a little far from the speaker, which makes the sound inconsistent and less clear. Suggestions and input given by linguists in the form of using audio consistency, when recording sound on the media between the sound source and the recording device is not too far away so that the use of audio becomes clearer. The placement of the microphone with the sound source needs to be considered so that the sound does not become small and does not give a distant effect so that the sound can be clearly captured by the listener (Angkoso & Karna 2023).

The second expert who validated the Scratch media was the materials expert. Material experts help validate the material used by researchers on the media so that the use of the material is in accordance with the desired goal. The validity of the Scratch media based on the material receives a percentage score of 84% with a very valid category. The score is due to less discussion explained by the researcher. Suggestions and input given by material experts on

these indicators are that students need to be explained the formula contained in the media so that students understand the triangle and parallelogram formulas. The 10th indicator receives a score of 4 out of a maximum of 5. The score is due to the editorial sentence on the question is less precise, so the advice and input given by the expert is to improve the editorial questions contained in the media. Anti et al (2020) stated that writing must be in accordance with standardized sentences or language so that it is easy to understand. Errors in writing lead to misunderstanding by the reader.

The third expert is media experts, media experts help validate the media used by researchers, so that the use of media developed in accordance with the needs of research subjects. Scratch validity based on the media aspect gets a percentage score of 88% with a very feasible category. The score was obtained because the 7th indicator received 4 points with a maximum score of 5. The score is because there are several revisions related to the appearance in Scratch media. Some revisions contained in the media such as the font size on the opening page is equalized, the appearance on the left triangle page is filled in, and the answers are made into multiple choices. Ariyanti and Bhakti (2020) argue that multiple-choice answers are better, stating that the information in multiple-choice answers is richer, so it can provide students with more information about the problem. The results of the validity test for the use of scratch media are shown in Table 2.

Table 2. Validity Test Scratch Media Use

No	Scratch Media Validity	Percent	Description
1.	Linguists	86%	Very Valid
2.	Media Expert	88%	Very Valid
3.	Material Expert	84%	Very Valid

The fourth stage of development is implementation. This stage is the trial stage conducted with the research subjects. The implementation stage determines the practicality of Scratch as an interactive learning tool developed by the researchers through the results of the evaluation responses of the teachers and students after using Scratch. This stage goes through 2 testing stages, namely small scale and large scale, before conducting a small-scale test, researchers conducted a pre-test to measure the cognitive abilities of students before using the media. This pre-test was conducted by distributing question papers to each student. The post-test was conducted using Scratch media, the purpose of the post-test was to measure the cognitive abilities of students after using Scratch media.

Tabel 3. Pre-Post Result of Students

No	Pre-Post Result	Value
1.	Pre-Test	52,7
2.	Post-Test	84,1

Based on Table 3 about the results of the pre-post-test above, the pretest results before using Scratch media get a value of 52.7 while the posttest results get a value of 84.1. The n-gain results of the pretest and posttest on the students are:

$$\begin{aligned}
 g &= \frac{\bar{X}_{posttest} - \bar{X}_{pretest}}{100 - \text{Pretest Score}} \\
 &= \frac{84,1 - 52,7}{100 - 52,7} \\
 &= \frac{31,4}{47,3} \\
 &= 0,66
 \end{aligned}$$

The pre-test and post-test results were measured by n-gain. The n-gain results above show a value of 0.66 where the results are in the range of $0,3 \leq g \leq 0,7$ with a moderate category. These results indicate an increase in learning before and after using Scratch media.

Table 4. Results of the Scratch Media Usability Test

No	User Response	Percent	Description
1.	Students Small Scale Test	83%	Very Valid
2.	Students Large Scale Test	87%	Very Valid
3.	Educator Large Scale Test	86%	Very Valid

Based on Table 4 is a table of user response results from small scale student tests and large-scale student and educator tests. These results are obtained by dividing the number of student scores by the maximum number multiplied by 100%. At the implementation stage, it starts with a pre-test conducted to all students, after the pre-test, the researchers conducted a small-scale test of the research, which was conducted on May 4, 2024 in class V-A involving 7 students. In this small-scale test, researchers provide access links to students to use Scratch learning media. The Student Response Questionnaire was given to the students after they completed a small-scale trial. The results of this learner response questionnaire sheet amounted to 83% with the category of Very Practical.

Large-scale trials were conducted with educators and students. Researchers conducted trials with educators as homeroom teachers V-A to get a response from educators about the use of Scratch media. Researchers explained the general use of the media so that educators could easily use the media. Researchers distributed media links to classroom teachers so they could access and use Scratch media independently on their cell phones. Once the Scratch media has been used by the classroom teachers, the researchers will provide the educators with a survey to determine the practicality of using the Scratch media. The results of the educator response questionnaire on the use of Scratch media was 86% with the category of Very Practical.

Large scale trials were conducted on May 6, 2024 in class V-A with a total of 29 students. In this large-scale trial, the researcher shared the access link in the WhatsApp group created by the researcher, which all students had joined 3 days before the research was conducted. When students finished using the Scratch media, they completed a learner response sheet to measure the practicality of the Scratch media. The results of the learner response questionnaire on the use of Scratch media were 87% with a very feasible category. The score from the large-scale trial was less than optimal due to several factors from the indicator. This is because when the scratch media is repositioned to landscape, the screen is cut off. The position of the learner's phone when using the scratch media must be in the portrait position, which makes the text on the media appear small. The difference between landscape and portrait reading positions affects the size of the font on the media. Based on the results of student and teacher responses, both small and large-scale studies can also demonstrate the use of assistive technology that can help meet the learning needs of students (Arifannisa et al., 2023).

This large-scale study also included a post-test. In the Scratch media, after students understand the material, there is a case that they must solve so that the score is recorded on the introductory page sheet.

The final stage in the development process is evaluation. This evaluation stage is an obstacle that occurred during the research. The obstacles that occurred were 2 students who did not have access to smartphones, inconsistent internet connections, variations in students' abilities, and lack of reading instructions for use.

CONCLUSION AND SUGGESTIONS

Scratch media can be accessed offline or online. In this study, researchers developed Scratch media to be used online, i.e., subjects can access it using the link provided by the

researcher when the research was conducted. This media has been validated by linguists to get a percentage of 86% Very Valid category, material experts get a percentage of 84% Very Valid category and media experts get a percentage of 88% Very Valid category. This media has also been tested for practicality with 2 studies, in a small-scale test of students obtained a percentage of 83% Very Practical category. Students received a rating of 87% with a Very Practical category during a large-scale test and educators received a rating of 86% with a Very Practical category during a large-scale test. The n-gain results were used to determine student learning before and after using Scratch media. The n-gain value of using Scratch media obtained an n-gain value of 0.66 in the medium category. Scratch media has gone through 3 stages, namely development process, validity test and practicality test. Based on these stages, Scratch media can be used in the classroom as an interactive learning media.

Suggestions from the research that has been done are that further researchers Scratch media is a new media used for several schools, there is still much that can be developed from this Scratch media, so further researchers can further develop this Scratch media to be better by adding other features that are more interactive and can develop Scratch media with other materials or adding more sub-materials.

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