

# Effectiveness of Geo Fun Thinkers Digital Learning Media on Student Understanding

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## ABSTRAK

This study aims to develop and test the effectiveness of Digital Geo Fun Thinkers learning media on student understanding of the material on the utilization of natural resources and their problems. The research used the Research and Development (R&D) method with the ADDIE model (Analysis-Design-Development-Implementation-Evaluation) which was carried out at Almaarif Singosari Islamic High School with the subject of 27 students in class XI IPS 1. Digital Geo Fun Thinkers media was developed based on digital technology by raising the contextual phenomenon of natural resources at the foot of Mount Arjuno, especially in Sumber Brantas and Toyomarto villages. This media consists of four levels, namely Level 1 classification of Natural Resources, Level 2 Natural Resources around students, Level 3 Effect of Natural Resource Utilization on Social, economic, and environmental conditions, Level 4 Solutions that students must choose to solve the problem. The validation results show that the media is very feasible to use. The effectiveness test using a one group pretest-posttest design showed significant results and was categorized as "Moderately Effective" in improving student understanding. Digital Geo Fun Thinkers learning media is proven to improve student understanding and create a fun learning atmosphere through a contextual approach by utilizing digital technology.

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## INTRODUCTION

In the 21st century, technological development has been increasingly rapid, characterized by the use of digital technology. 21st century learning focuses on student-centered learning with the expectation that students are able to collaborate through contextual learning and even engage with the social environment (Rahayu et al., 2022). In Indonesia, efforts made to implement the principles of 21st century learning are realized in the form of implementing the Merdeka Curriculum. Implementation of Merdeka Curriculum focuses on subject matter, character development, and student abilities (Lestari et al., 2023). In addition, Merdeka Curriculum has an integrated concept with literacy, knowledge, skills, attitudes, and mastery of technology (Nasution et al., 2023). However, to fully implement the concept of Merdeka Curriculum is quite difficult. Because the use of technology requires direction and guidance from the teacher. The freedom given to students actually creates problems for teachers in improving understanding of the material.

The problem of students' difficulties in understanding the material also occurs in high school Geography learning, especially in the F-phase Natural Resources material. One of the sub-materials is natural resources regarding the sustainable use of natural resources and its problems. One of the sub-materials is natural resources regarding the sustainable use of natural resources and its problems. This is because learning Geography encourages students to research, analyze, explain, and describe the interaction between humans and the surrounding nature (Soekamto & Handoyo, 2022). The presentation of concrete and contextual problems can make it easier for students to understand the material (SyaiKHu, 2024; Cahdriyana & Richardo, 2016). The implementation of contextual learning is also supported by the use of effective learning media.

Learning media plays an important role in achieving learning objectives. In the learning process, the teacher acts as a facilitator rather than the main source of learning (Nurfadilah et al., 2019; Sulistriani et al., 2021). Teachers need to pay attention to the selection of effective learning media. This is because the selection of effective media can facilitate students' understanding of the material, foster interest and motivation to learn, and facilitate students' learning styles (Chandra et al., 2019; Shabrina et al., 2025). According to Kusumaningrum & Masruro (2022) There are seven criteria for selecting learning media: (1) instructional

objectives, (2) student characteristics, (3) type of learning stimuli (audio or visual), (4) environmental conditions, (5) media availability, (6) media practicality and durability, and (7) long-term cost-effectiveness. In addition to the selection of effective learning media, it is also necessary to consider the suitability of the media to the needs of students, teachers, and schools.

Based on the needs analysis that has been conducted, it is known that 51.5% of students still have difficulty in understanding geography material. One of the influencing factors is the incompatibility of students' learning styles with the learning media used. Of all 33 students in class XI F, 30.3% of students have a visual learning style, 30.3% Kinesthetic, 27.3% audio visual, and 12.1% audio. This is caused by teachers who have difficulty in developing learning media so that the variety of media used is small, namely, PPT, Kahoot, and videos, and pictures. The video and picture media used in learning only utilize sources on the internet that have not raised problems in the environment around students. The media used focuses on visual and audiovisual media, so students with kinesthetic learning styles are still not facilitated. Therefore, it is necessary to develop learning media that can facilitate the learning styles of the majority of students, namely visual and kinesthetic. Learning media that is suitable for visual and kinesthetic learning styles is digital Geo Fun Thinker.

Digital Geo Fun Thinker is one of the learning media that can facilitate visual and kinesthetic learning styles. Digital geo fun thinkers present a visual display of contextual problems that can be solved by students. In addition, digital geo fun thinkers also facilitate students' kinesthetics by stimulating students' brain power and curiosity about human interaction with their environment. Digital Geo Fun Thinker is an innovative learning media that takes into account the different characteristics of high school students and elementary school students. The characteristics of high school students have the ability to think abstractly, logically, and use hypothesis-deductive reasoning. They can understand abstract concepts, think scientifically, and solve complex problems with higher critical and analytical thinking skills (Addzaky, 2024).

This Digital Geo Fun Thinker learning media presents a contextual phenomenon in the form of potential natural resources at the foot of Mount Arjuno. Administratively, Mount Arjuno is located between Batu City, Malang Regency, and Pasuruan Regency. Mount Arjuno has a variety of potential natural resources that are influenced by geographical conditions. One of the diverse natural resources is agriculture and plantations in Sumber Brantas Village, Batu City (Pramuwidia, 2021). Sumber Brantas Village has great potential to be used as one of the geography learning resources. Because, agricultural and plantation activities in the region also affect social, economic, and environmental aspects.

At the foot of Mount Arjuno, there is a very famous plantation tour, namely Wonosari Tea Garden, which is located in Toyomarto Village, Singosari District. In addition to agriculture and plantations, the area at the foot of Mount Arjuno also holds the potential for sand and stone mining located in Petung Wulung Hamlet, Toyomarto Village. The sand and stone quarry in this area has been utilized for a long time. Therefore, this mine has become one of the community's sources of income. In addition to being traded as building materials, the community also seeks to increase the selling price of the stones they obtain by making them into cobek. However, this activity also has a negative impact, especially on the environment. Ex-mining land that is not properly reclaimed is misused as a waste disposal site (TPS). The condition of the land will become worse because in addition to land degradation, soil, water and air pollution can also add to the bad effects of this activity. Therefore, the utilization and problems of natural resources in the surrounding environment can be used as a contextual learning resource.

Previous research explains that the application of digital media in geography learning has a good impact on student understanding. Research conducted by Salsabila & Putra (2024) shows that the use of VULK-AR digital learning media can improve student understanding of volcanism material. Other research conducted by Fadlan (2023) shows that InGeo digitan learning media can increase student understanding so that it can be used in studying biosphere dynamics material. Media development is based on previous research conducted by Yani (2023) showing that Fun Thinker Book is a learning media that has the potential to increase students' understanding and interest in Civics subjects. The same research also showed that Fun Thinker Book as a learning media in teaching cultural diversity material in grade IV SD was able to improve students' understanding (Putri et al., 2025). Research conducted by Putri et al., (2022) shows that fun thinkers learning media can improve student understanding which will also affect learning outcomes. Some previous research is used as a reference for researchers in developing Digital Geo Fun Thinker learning media.

Digital Geo Fun Thinker learning media is the result of the development of the previous Fun Thinker media in the form of books transferred in digital form. In addition, Fun Thinkers media previously developed for PAUD and SD levels are now applied at the high school level. The development of this media has been adjusted to the breadth, depth, and complexity of high school student material. The product produced in this research is a game-based learning media with the presentation of geospheric phenomena and potential natural resources at the foot of Mount Arjuno.

The development of Digital Geo Fun Thinker as learning media is needed to determine its effect on student understanding. The use of Digital Geo Fun Thinker is expected to affect the understanding of the material on the utilization of natural resources and its problems. Based on this, a study entitled "The Effectiveness of Digital Geo Fun Thinkers Learning Media on Student Understanding" was formulated.

### METHOD

This research uses a research and development (R&D) model that aims to utilize innovation in creating products and developing existing products. This research includes Research and Development (R&D) research by applying the ADDIE model. The ADDIE (Analysis-Design-Development-Implement-Evaluate) development model was developed by Reiser and Mollenda which began to be used in the 1990s (Soekamto & Handoyo, 2022). This model has a pattern that can make it easier to complete the stages in each phase, namely Input-Process-Output (IPO) (Sweller, 2021). The following are the stages of research and development.

**Table 1. ADDIE Stages of Development (IPO)**

| <b>Tahapan</b>               | <b>Input</b>                                                                                                                                                                                                                       | <b>Proses</b>                                                                                                                                                                                                                                          | <b>Output</b>                                                                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Analysis</i></b>       | <ul style="list-style-type: none"> <li>Curriculum analysis</li> <li>Teacher Needs Analysis</li> <li>Student Needs Analysis</li> </ul>                                                                                              | <ul style="list-style-type: none"> <li>Doing literacy</li> <li>Giving an open-ended questionnaire</li> <li>Interview</li> <li>Giving a closed questionnaire</li> <li>Observation</li> </ul>                                                            | There is a need for innovative technology-based learning media that raises contextual problems that can improve understanding and facilitate students' kinesthetic and visual learning styles.                     |
| <b><i>Design</i></b>         | Media requirements                                                                                                                                                                                                                 | Creating Digital Geo Fun Thinkers learning media design                                                                                                                                                                                                | Geo Fun Thinkers digital learning media design                                                                                                                                                                     |
| <b><i>Development</i></b>    | Digital Geo Fun Thinkers media design                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Designing content</li> <li>Taking field data</li> <li>Compiling content on media design</li> <li>Conducting media validation</li> </ul>                                                                         | The validated Geo Fun Thinkers digital learning media                                                                                                                                                              |
| <b><i>Implementation</i></b> | Media ready for use                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Giving pretest questions</li> <li>Media trials to students and teachers</li> <li>Giving media response questionnaires</li> <li>Giving posttest questions</li> </ul>                                             | <ul style="list-style-type: none"> <li>Pretest and posttest scores</li> <li>Results of student and teacher responses to learning media</li> </ul>                                                                  |
| <b><i>Evaluation</i></b>     | <ul style="list-style-type: none"> <li>Evaluation at Each Stage</li> <li>Evaluation Results from Material Experts and Media Experts</li> <li>Test Questionnaire Results Data</li> <li>Pretest and Posttest Results Data</li> </ul> | <ul style="list-style-type: none"> <li>Improved in accordance with Suggestions and Feedback from Media Experts and Material Experts</li> <li>Classification of Media Feasibility</li> <li>Classification of Increased Student Understanding</li> </ul> | Research is more organized and efficient and becomes a reference in order to produce products that are suitable for use. In addition, the products developed are known to have an effect on student understanding. |

To determine the feasibility of the learning media developed, the following is the calculation formula:

$$H = \frac{F}{N} \times 100$$

Description:

H : Results

F : Total score obtained

N : Your maximum score

Based on the formula above, the following are the media feasibility classification criteria.

**Table 2. Media Feasibility Criteria**

| No | Score in percent (%) | Feasibility Category |
|----|----------------------|----------------------|
| 1. | 81-100               | Very worthy          |
| 2. | 61-80                | Worthy               |
| 3. | 41 – 60              | Fairly worthy        |
| 4. | 21-40                | Less worthy          |
| 5. | 0-20                 | Not worthy           |

The effectiveness test of learning media is carried out at the implementation stage by giving questions that have been tested for validity. The questions were given to 27 students of Almaarif Singosari Islamic High School, before (Pretest) and after (Posttest) learning to measure student understanding. The questions given were developed based on indicators of student understanding according to Anderson & Krathwohl (2001) which can be seen in the following table.

**Table 3. Indicators of Student Understanding**

| Understanding indicators | Description                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Interpreting</i>      | Students are able to interpret ideas or knowledge that has been obtained into a different form.                                                |
| <i>Exemplifying</i>      | Exemplifying is the ability of students to illustrate or provide examples of concepts that have been learned.                                  |
| <i>Classifying</i>       | The ability to classify arises when students try to explore knowledge that is a member of a certain category of knowledge.                     |
| <i>Summarizing</i>       | Summarizing can be done by students by making a brief summary, namely making the main points by generalizing the material that has been given. |
| <i>Inferring</i>         | Inferring is the ability of students to make deductions from the material presented in learning.                                               |
| <i>Comparing</i>         | Students are able to compare knowing the similarities and differences between two ideas, two objects, a particular problem or situation.       |
| <i>Explaining</i>        | The ability to explain can be achieved when students can create or build a model that contains the cause and effect of an event.               |

The results of the pretest and posttest scores were then processed using SPSS 16 to test for normality, homogeneity test, hypothesis test, and effectiveness test using the N Gain Score. The conclusion of the effectiveness of the media can be seen from the following table.

**Table 4. N-Gain Effectiveness Interpretation Categories**

| No. | Level of Achievement (%) | Description          |
|-----|--------------------------|----------------------|
| 1   | <40                      | Not effective        |
| 2   | 40-55                    | Less effective       |
| 3   | 56-75                    | Moderately effective |
| 4   | >76                      | Effective            |

## RESULTS

This research produces digital learning media Geo Fun Thinker which can be accessed at the link <https://draganddropgames.vercel.app/>. Digital Geo Fun Thinker contains material about the Utilization and Problems of Natural Resources at the foot of Mount Arjuno. This media is used to determine the effectiveness of student understanding, especially in class XI IPS 1 SMA Almaarif Singosari. Media development through the stages of Analysis, Design, Development, Implementation, and Evaluation. Based on these stages, the development of Digital Geo Fun Thinkers learning media is carried out as follows:

### *Analysis*

The first stage is analysis to find out the problems that occur and formulate the objectives of development research. The analysis includes curriculum analysis, teacher needs analysis, and student needs analysis. The analysis stage is carried out through literature study interviews, questionnaires, and observations. Based on the results of interviews and questionnaires, it is known that the learning process requires innovative learning media. This media is based on technology that raises contextual problems so that it can improve understanding and facilitate the learning styles of kinesthetic and visual students.

The Geography learning process also requires media that can improve student understanding. Based on the results of the questionnaire, it is known that 51.5% of students have difficulty in understanding the material presented. In addition, the questionnaire results show differences in student learning styles including 30.3% of students with visual learning styles, 30.3% kinesthetic, 27.3% audiovisual, and 12.1% auditory. Previously, this problem had been overcome through the use of power point media, kahoot, YouTube videos, and pictures. However, it has not shown significant results on the level of student understanding. Teachers also have difficulty in developing learning media so that the media used is less varied.

Analysis was also conducted on learning outcomes related to material that is difficult to understand. The very complex Natural Resources material requires visualization to make it easy for students to understand. The questionnaire results show that the media that has been applied only facilitates students with visual and audiovisual learning styles. Whereas the largest percentage of students with kinesthetic learning styles have not been facilitated properly. Therefore, this development research produces learning media that can facilitate students with visual and kinesthetic learning styles so as to improve student understanding.

### Design

The second stage of the ADDIE development model is the design stage. The design stage contains the design of technology-based innovative learning media in the form of Digital Geo Fun Thinker. This media is based on contextual problems that can improve student understanding and facilitate students with visual kinesthetic learning styles. This stage includes preparing the media design framework, collecting data sources and materials, and preparing research instruments. At the stage of preparing the media design framework, it has been adjusted to the results of the analysis in the previous stage. The media design can be seen in the following figure:

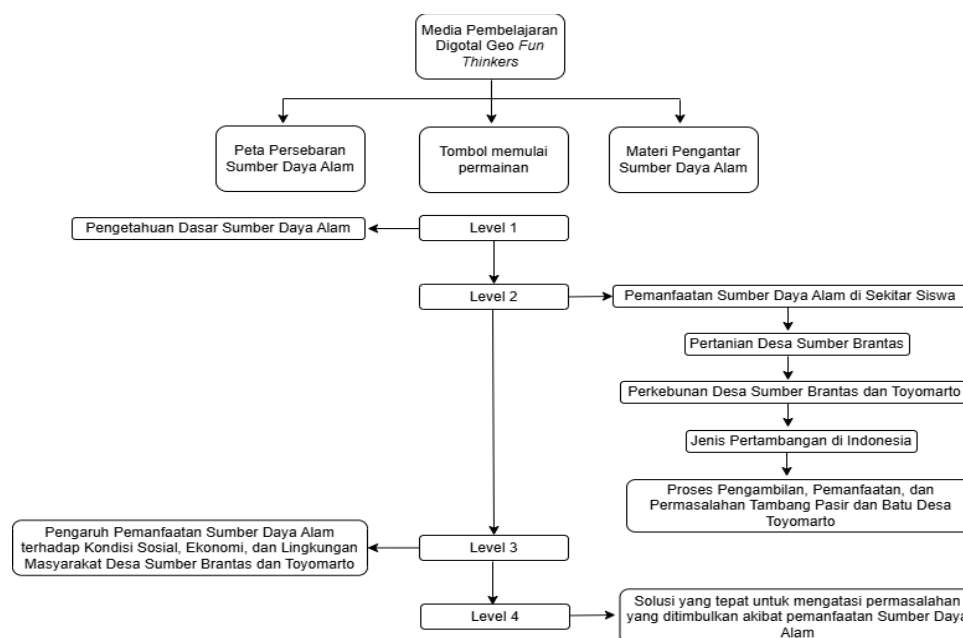


Figure 1. Media Design Framework

The next stage is the collection of data sources and materials. Data sources were obtained from direct observation and documentation in Sumber Brantas and Toyomarto Villages. In addition, data was also obtained from the results of literature studies through the latest and accurate sources. Various data were obtained from geospatial data sources, original documentation, and supporting documentation. In addition to data, materials that focus on natural resources and their distribution are also needed.

In the Merdeka Curriculum, this material is contained in the XI grade F phase Geography subject, namely the Potential of Indonesia's Natural Resources and Their Impact on Life. This material has been adapted to the implementation of the Merdeka Curriculum in phase F grade 11 which contains learning outcomes, namely students being able to identify, understand, process, analyze, evaluate spatially about Strategic Position, Patterns of Biodiversity in Indonesia and the World, Disaster and the Environment. In addition, this media also adjusts the flow of learning objectives 11.1.7, namely students are able to analyze natural resource management, its impacts and problems.

Based on the ATP, the material is adjusted to the conceptual example of natural resource problems at the foot of Mount Arjuno. This material will be divided into two consisting of: 1) the southwestern foot of the mountain, namely Sumber Brantas Village, Bumiaji Subdistrict, which has a variety of plantations and agriculture; and 2) the southern foot of Mount Arjuno, namely Toyomarto Village, Singosari Subdistrict, which has natural resources of sand and stone mining and plantations. Students are

expected to be able to distinguish the potential of natural resources and problems in the two locations even though they are both at the foot of Mount Arjuno. In addition to presenting conceptual examples for students with visual kinesthetic learning styles, this media is also designed to determine the level of student understanding.

Each student certainly has a different level of understanding. The understanding between one student and another student is not necessarily the same when the teacher delivers the material at one time. Based on these problems, the Digital Geo Fun Thinker media was developed with four different levels. Levels developed in the media are; Level 1 classification of Natural Resources, Level 2 Natural Resources around students, Level 3 Effect of Natural Resource Utilization on Social, economic, and environmental conditions, Level 4 Solutions that students must choose to solve the problem.

### Development

The third stage of the ADDIE development model is development. The stages carried out in product development consist of product description, product validation, and product revision. On the initial page there is a title, namely "Sustainable Management of Natural Resources (SDA) and its Problems". Then, under the title there are three icons connected to the material, distribution map, and Geo Fun Thinker.

Digital Geo Fun Thinker learning media can be accessed through the following link <https://draganddropgames.vercel.app/>. On the main icon of Geo Fun Thinker, four different game levels will appear. If we click on one of the levels, the 'How to Play' task will appear. After students understand the game instructions, they can click the 'Start Playing' icon. On the playing page, at the top there are questions according to the level of the game. Then, at the bottom there are two different tables. The left table contains picture choices, while the right table contains answer choices. If students are still confused, they can click on the information icon that contains game instructions. Students can complete the game starting from level 1 to level 4. Each level has questions with different levels of difficulty.

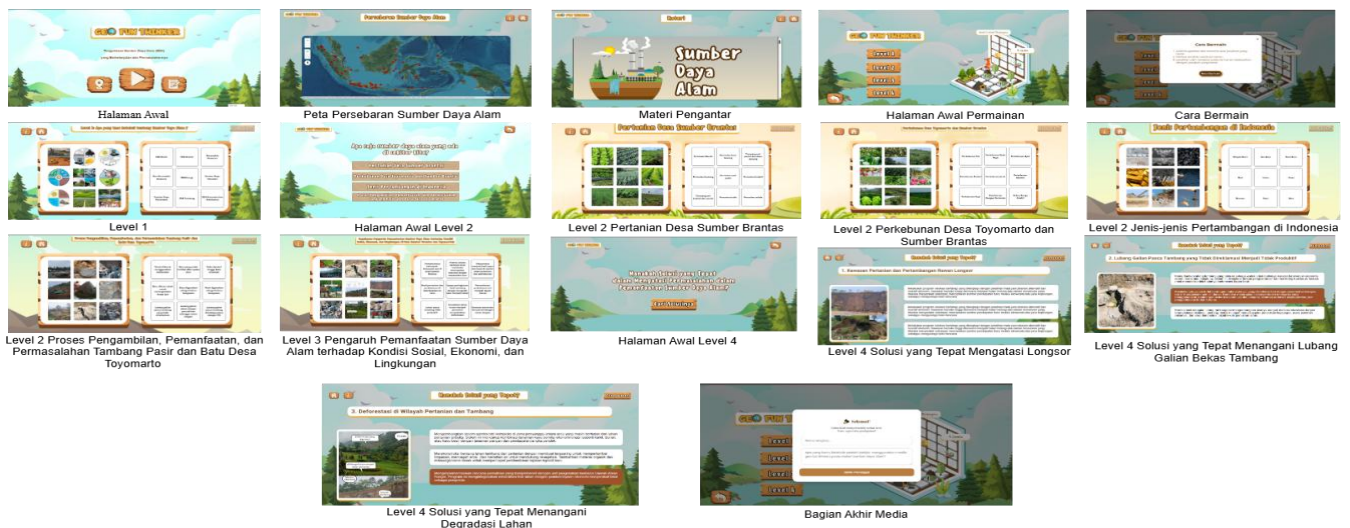


Figure 2. Display of Geo Fun Thinkers Digital Learning Media

The products that have been developed are then tested for validity. The product validation stage consists of media validation and material validation. Media validation is carried out by media expert validators with knowledge in the field of learning media development. Material validation is carried out by validators who have expertise in the field of natural resources. The validation results are in the form of quantitative data obtained from the accumulation of Likert scale values based on assessment indicators. In addition, there is qualitative data derived from recommendations and input from validators. The following are the results of the validation test by experts.

Table 5. Validity Test Results

| No | Experts          | Presentation (%) | Qualification |
|----|------------------|------------------|---------------|
| 1  | Material Experts | 99%              | Very Feasible |
| 2  | Media Experts    | 90%              | Very Feasible |

Based on the table above, it is known that Geo Fun Thinkers digital learning media is very feasible to use with a percentage of 99% from material experts and 90% from media experts. The following are the results of the development of learning media that have been validated by experts.

### Implementation

Digital Geo Fun Thinker learning media that has been validated then conducted product trials on the research subject, namely 27 students of Class XI IPS SMA Islam Almaarif Singosari. At the implementation stage, it is carried out using the one group pretest-posttest design method. Before testing the product, students were directed to fill out pretest questions.

Geo Fun Thinker digital development products are implemented in the geography learning process. Then students gave a review of the Geo Fun Thinker digital product and filled out a student practicability questionnaire. However, the product trial stage for teachers was only carried out by reviewing the product and filling out the teacher's practicality questionnaire. The following is a table of trial results and student responses.

**Table 6. Product Trial Results**

| No | Test Subject      | Presentation (%) | Qualification |
|----|-------------------|------------------|---------------|
| 1  | Geography Teacher | 92%              | Very Feasible |
| 2  | Students          | 91%              | Very Feasible |

At the end of the lesson, students are directed to fill out posttest questions. The results of the pretest and posttest assessments were used to test the effectiveness of the use of learning media on students. The effectiveness test was conducted to see the effectiveness of Geo Fun Thinker digital learning media in influencing student understanding. The effectiveness test was conducted by comparing the results of the Pretest and Posttest scores with previously tested questions. The questions given to students were developed according to the indicators of student understanding according to (Anderson & Krathwohl, 2001). The following are the results of student test scores that have been processed using SPSS 16.

**Table 7. Effectiveness Test Results**

| No | Indicator                               | Significance | Qualification                 |
|----|-----------------------------------------|--------------|-------------------------------|
| 1  | Normality test pretest                  | 0,865        | Normally distributed data     |
| 2  | Normality test posttest                 | 0,517        | Normally distributed data     |
| 3  | Homogeneity test                        | 0,860        | Homogeneous data              |
| 4  | Hypothesis test (paired sample t- test) | 0,000        | There is a significant effect |
| 5  | N-Gain score test                       | 75,200       | Moderately Effective          |

### Evaluation

The final stage in the ADDIE development model is evaluation. Evaluation aims to correct deficiencies during media development. The evaluation stage is carried out based on teacher and student practicality questionnaire data. Most students showed enthusiasm for the use of Digital Geo Fun Thinker as a learning media on natural resources material. During the product trial, students were very interested in the Digital Geo Fun Thinker media because the learning atmosphere was more fun. This media is also easily accessible to students because it is based on a website link without having to download the application first. Learning media in digital form also makes it easy for students to access it anytime and anywhere via smartphone or PC.

The responses from teachers stated that Digital Geo Fun Thinker can be an innovative learning media. The presentation of natural resources material that is packaged in an interesting way can increase student understanding. However, some of the images are not specific enough to cause multiple interpretations for students. In addition, this media does not fully support students to learn independently. This is because there are levels in the process. Students with slow thinking skills still need assistance from the teacher.

## DISCUSSION

This research produces a final product in the form of Digital Geo Fun Thinkers learning media. This product has 4 levels, namely; Level 1 classification of Natural Resources, Level 2 Natural Resources around students, Level 3 Effect of Natural Resource Utilization on Social, economic, and environmental conditions, Level 4 Solutions that students must choose to solve the problem. This media can improve students' understanding because they are invited to determine the most appropriate answer among several answers that have been presented (Putri et al., 2022). To answer the questions presented, students must also have the ability to interpret, exemplify, classify, abstract, compare, explain and conclude so that students can have good student understanding (Kamaliyah & Alrianingrum, 2022). This media presents contextual problems that exist around students. This media presents the utilization of Natural Resources and its problems in Sumber Brantas and Toyomarto Villages. By using this contextual approach, students can construct their own knowledge and thoughts. Content that is closely related to students' daily experiences tends to be more meaningful and memorable to them.

Digital Geo Fun Thinkers learning media is effective in improving students' understanding of natural resource utilization and its problems. This ability has been measured through the results of pretest and posttest scores. Digital Geo Fun Thinkers also makes students able to convert information from writing to images, namely interpreting, then they are asked to provide examples of positive and negative impacts of natural resource utilization. In addition, this media also directs students to be able to classify several aspects in the image that match the statement. The students' ability to compare some of the best solutions offered has also existed at level 4, where students are asked to choose which solution is most suitable to overcome landslides, land degradation, and land change. At the end of the media, students will be asked to collect and provide statements that represent all the information obtained in the media. Through several indicators of student understanding according to Anderson & Krathwohl (2001) which are then measured again through pretests and posttests, it shows that this media is quite effective in increasing student understanding.

The effectiveness of Geo Fun Thinker digital media can be seen from the results of the effectiveness test showing a result of 0.000 in the paired sample t-test which means there is a significant effect. This means that giving treatment after the pretest affects the posttest results. In addition, the N-Gain result is 75.200 where the value includes  $0.3 \leq g \leq 0.7$  so that it is categorized as "Quite Effective". Therefore, it can be concluded that the development of Digital Geo Fun Thinker media is suitable for use in the learning process on natural resources and their distribution.

Most students showed enthusiasm for the use of Digital Geo Fun Thinker as a learning media on natural resources. Students who are interested and excited make the learning atmosphere more enjoyable. In line with research conducted by Rahmah & Hidayat (2022) which shows that Fun Thinkers Book can increase student enthusiasm and learning outcomes. This is the key to easily remembering and understanding complex geography material (Yanti et al., 2023). In addition, this media is also easily accessible to students because it is based on a website link without having to download the application first. Learning media in digital form also makes it easy for students to access it anytime and anywhere via smartphone or PC.

The responses from teachers revealed that Digital Geo Fun Thinker media is practical to use as an innovative learning media on natural resources and their distribution. This is because Digital Geo Fun Thinker combines the concept of learning while playing so as to create a pleasant learning atmosphere (Agustina & Purwanti, 2022). The presentation of natural resources material that is packaged in an interesting way can increase students' understanding of natural resources and their distribution which was previously considered very complex and difficult to understand. However, some images are not specific enough to cause multiple interpretations for students. In addition, this media does not fully support students to learn independently. This is because there are levels in the process. Students with slow thinking skills still need assistance from the teacher. The weakness of Digital Geo Fun Thinker is that the images are less clear and slow if used on gadgets that are less supportive. This is an obstacle for researchers at the implementation stage so that there needs to be an increase in image resolution and management of website settings.

Apart from the research results that have been described, this research also has limitations. This media can only be used on the subject of Sustainable Utilization of Natural Resources and its Problems. Based on the results of the media implementation, it is known that if the gadget used by students lacks support, it will be difficult to use, some images are too complex so that there are multiple interpretations, and some images are not HD so they break when zoomed. Therefore, some of these limitations can be reviewed and improved by future researchers.

## **CONCLUSION AND SUGGESTION**

This research produces Digital Geo Fun Thinkers learning media that is suitable for use. Digital Geo Fun Thinkers has four levels, namely, Level 1 classification of Natural Resources, Level 2 Natural Resources around students, Level 3 Effect of Natural Resource Utilization on Social, economic, and environmental conditions, Level 4 Solutions that students must choose to solve the problem. This ability is facilitated through the activities of interpreting, exemplifying, classifying, abstracting, comparing, explaining and concluding phenomena related to the utilization of Natural Resources and the problems that occur in Sumber Brantas and Toyomarto Villages. The effectiveness of the media was tested using questions that were developed based on indicators of student understanding and have been tested for validity. The teacher assessed that this media is an innovative media. This is also supported by the statements of students who are very happy and enthusiastic in using the media. For future researchers, it is expected to develop media with different themes. In addition, the use of images on the media must be more HD and clear so that it does not make it difficult for students to learn

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# REFERENCES

- Addzaky, K. U. (2024). Perkembangan Peserta didik SMA (Sekolah Menengah Atas). *Jurnal Ilmiah Nusantara (JINU)*, 1(3), vii+18.
- Agustina, D. M., & Purwanti, K. Y. (2022). Keefektifan PBL Berbantuan Fun Thinkers Book Terhadap Kemampuan Berpikir Kreatif Siswa 3 Sekolah Dasar. *Journal of Primary and Children's Education*, 5(1), 47-55. <http://jurnal.unw.ac.id/index.php/janacitta>
- Anderson, L. W., & Krathwohl, D. R. (2001) *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
- Cahdriyana, R. A., & Richardo, R. (2016). Karakteristik Media Pembelajaran Berbasis Komputer. *AlphaMath Journal of Mathematics Education*, 2(2), 1-11.
- Chandra, D., Wilis, R., Frananda, H., Rahmi, L., Arif, D. A., Wijayanto, B., & Putra, A. (2019). Pembuatan Peta Timbul Sebagai Media Pembelajaran Geografi. *Pedagogia : Jurnal Pendidikan*, 8(2), 211-221. <https://doi.org/10.21070/pedagogia.v8i2.2139>
- Fadlan, M. S. (2023). Pengembangan Media Pembelajaran Digital Geografi Berbasis WebGIS pada Materi Sebaran Flora Fauna di Indonesia dan Dunia. *Jurnal Swarnabhumi*, 8(1), 43-57.
- Kamaliyah, R. N., & Alrianingrum, S. (2022). Pengaruh model project based learning terhadap tingkat pemahaman siswa pada pembelajaran sejarah kelas X IPS SMA Negeri 20 Surabaya. *Journal Pendidikan Sejarah*, 12(4).
- Kusumaningrum, D., & Masruro, A. (2022). Development of Learning Media Flipbook Digital Comic Based on Local Wisdom to Increase Learning Interest. *EduLine: Journal of Education and Learning Innovation*, 2(2), 117-122. <https://doi.org/10.35877/454ri.eduline814>.
- Lestari, D., Asbari, M., & Yani, E. E. (2023). Kurikulum Merdeka: Hakikat kurikulum dalam pendidikan. *Journal of Information Systems and Management (JISMA)*, 2(6), 85-88.
- Nasution, A. F., Ningsih, S., Silva, M. F., Suharti, L., & Harahap, J. P. (2023). Konsep Dan Implementasi Kurikulum Merdeka. *COMPETITIVE: Journal of Education*, 2(3), 201-211. <https://doi.org/10.58355/competitive.v2i3.37>.
- Nurfadilah, N., Ishafit, I., Herawati, R., & Nurulia, E. (2019). Pengembangan Panduan Eksperimen Fisika Menggunakan Smartphone dengan Aplikasi Phythox Pada Materi Tumbukan. *Jurnal Penelitian Pembelajaran Fisika*, 10(2), 101-107. <https://doi.org/10.26877/jp2f.v10i2.4019>.
- Pramuwidia, D. (2021). Dampak pengembangan wisata alam Brakseng terhadap aspek lingkungan, sosial, dan ekonomi masyarakat di Desa Sumber Brantas, Kecamatan Bumiaji, Kota Batu. <https://repository.ub.ac.id/id/eprint/189391>.
- Putri, A., Wulandari, S., & Astuti, T. (2025). Pengembangan Media Pembelajaran Fun Thinkers Book Pada Mata Pelajaran Pendidikan Pancasila Materi Keragaman Budaya Indonesiaku Untuk Siswa Kelas V SD Negeri 3 Petir. *Journal of Classroom Action Research*, 7(1).
- Putri, N. P. I., Agustiana, I. G. A. T., & Simamora, A. H. (2022) Model pembelajaran aktif berbantuan media Fun Thinkers terhadap hasil belajar siswa sekolah dasar. *Mimbar PGSD Undiksha*, 10(3), 541-549. <https://doi.org/10.23887/jipgsd.v10i3.52287>.
- Rahayu, R., Iskandar, S., & Abidin, Y. (2022). Inovasi Pembelajaran Abad 21 dan Penerapannya di Indonesia. *Jurnal Basicedu*, 6(2), 2099-2104. <https://doi.org/10.31004/basicedu.v6i2.2082>.
- Salsabila, A., & Putra, A. K. (2024). Visualisasi proses vulkanisme melalui media pembelajaran animasi berbasis augmented reality sebagai media digital geografi. *Cetta: Jurnal Ilmu Pendidikan*, 7, 234-248. <https://jayapanguspress.penerbit.org/index.php/cetta/article/view/3296>.
- Shabrina, A., Putri, R., & Khairi, A.(2025). *Pentingnya Pemilihan Media Pembelajaran Yang Tepat Untuk Meningkatkan Hasil Belajar Siswa*.120-131.
- Soekamto, H., & Handoyo, B. (2022). *Perencanaan pembelajaran geografi (Dilengkapi Kurikulum Merdeka)*.
- Sulistriani, S., Santoso, J., & Oktaviani, S. (2021). Peran guru sebagai fasilitator dalam pembelajaran IPA di sekolah dasar. *Journal of Elementary School Education (JOuESE)*, 1(2), 57-68. <https://doi.org/10.52657/jouese.v1i2.1517>.
- Sweller, J. (2021). Instructional design. In *Encyclopedia of evolutionary psychological science*. Springer. [https://doi.org/10.1007/978-3-319-19650-3\\_2438](https://doi.org/10.1007/978-3-319-19650-3_2438).
- Syaikhu, A. (2024). Implementasi pendekatan pembelajaran kontekstual dalam upaya peningkatan partisipasi belajar siswa sekolah menengah pertama. *As Sunniah Jurnal Ilmiah Mahasiswa*, 1–14.
- Yani, L. (2023). Pengembangan media Fun Thinkers Book pada tema 1 mata pelajaran PKN menggunakan pembelajaran interaktif dan menyenangkan untuk siswa kelas 3 SD Negeri 3 Lendang Nangka. *Buletin Ilmiah Pendidikan*, 2(2). <https://doi.org/10.56916/bip.v2i2.541>.