



Development of Interactive Media Flipbook to Improve Students' Critical Thinking Skills on Earth Rotation and Revolution Material in Grade VI Elementary School

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Abstract: This research is based on the need for learning media that can improve students' critical thinking skills in understanding the material of Earth's Rotation and Revolution. Interactive Flipbook media was chosen as a solution because of its ability to present learning content in an interesting and interactive way, which is in accordance with the demands of 21st century education. The research was conducted at SDN Al-Amin Probolinggo by involving grade VI students as research subjects. This research uses the Research & Development (R&D) method with the ADDIE model which includes five stages: Analysis - identifying learning media needs through observation; Design - designing interesting and interactive Flipbook content; Development - developing and validating learning media; Implementation - testing the media on grade VI students; and Evaluation - analyzing the effectiveness of the media. This research aims to produce the validity, practicality and effectiveness of the Interactive Flipbook Media. The results of the study showed a validity level of 92.42%, practicality of 93.75%, and effectiveness of 100% with all students achieving KKM, proving that Interactive Flipbook media is effective in improving students' critical thinking skills.

Keywords: Critical thinking; Elementary school; Interactive flipbook media

Introduction

21st century education is known as the era of the Industrial Revolution 4.0 and the use of digital technology (Kahar et al., 2021). 21st century learning skills or learning skills include creative thinking skills, critical thinking and include problem solving. The acquisition of 21st century skills is supported by the ability of educators to create lesson plans that include 4C activities (Tarihoran, 2019; Jannah & Atmojo, 2022).

Critical thinking in the 21st century is a continuous and dynamic process. We need to keep learning, adapting, and developing our critical skills to face the challenges and opportunities in this information age.

Through the development of critical thinking skills, we can become smarter, more knowledgeable and more responsible citizens (Munawwarah et al., 2020).

Critical thinking is an integral part of the Pancasila Learner Profile Dimension. One of the dimensions in the independent curriculum is the skill of critical reasoning or critical thinking (Khasanah & Muthali'in, 2023). This dimension is very important to be applied at the elementary school unit level. In implementing the independent curriculum, it is very an ability to think critically is needed (Octaviani, 2024). Critical thinking is a mental process that involves analyzing, evaluating, and synthesizing information to reach valid and reasoned conclusions (Halim, 2022). It is an important

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skill in various aspects of life, from personal decision making to solving professional problems.

According to Rahayu & Alyani (2020) critical thinking indicators are: (Curiosity, namely strong curiosity and a desire to understand information in depth, Ability to ask questions that challenge assumptions and seek clarification, Objectivity by assessing information objectively, without bias or prejudice, Logic by using logical reasoning to connect information and draw valid conclusions, Ability to Assess Sources by evaluating the credibility of information sources and identifying potential biases, Adaptability can change thoughts and adjust conclusions based on new information (Damayanti & Raharjo, 2020; Damayanti et al., 2022; Lintang et al., 2024).

Critical thinking skills have important aspects, including: Analysis by involving the disassembly of information into smaller parts to understand its internal relationships and structure, Evaluation by providing an assessment of the quality of information based on certain criteria, such as accuracy, relevance, and source credibility, Synthesis by combining analyzed and evaluated information to form new conclusions or coherent solutions (Butterworth & Thwaites, 2005; Behar-Horenstein & Niu, 2011; Alsaleh, 2020).

According to Rineksiane (2022) the benefits of Critical Thinking can help in making more informed and informed decisions, make an increase in the ability to identify and solve problems more effectively, improve the ability to convey ideas and arguments clearly and persuasively, improve the ability to adapt to changes and new challenges (Mughtar & Suryani, 2019). Examples of Critical Thinking such as being able to read and understand the contents of reading books, making decisions in measuring the benefits of a choice, solving problems by evaluating effective solutions. So critical thinking is a skill that can be learned and improved through practice and self-awareness (Irawati et al., 2022). Through the development of critical thinking skills, we can become more effective thinkers, better decision makers, and more active members of society.

Critical thinking is the ability to analyze information and build new understanding. So it involves self-awareness of assumptions, allowing individuals to assess alternative points of view and test effectively (Zetriuslita et al., 2016; Sarwanto et al., 2021). Critical thinking is essential in a variety of disciplines, encouraging informed decision-making and important problem-solving skills in both academic and real-world contexts. It encourages a reflective approach to knowledge, promoting deeper understanding and engagement with complex issues.

Based on the results of the researcher's observations at the school on Thursday, October 10, 2024 in the

implementation of learning at Al-Amin Elementary School, Probolinggo Regency, teachers have included the six dimensions of the Pancasila Student Profile in the implementation of learning. However, there are still obstacles in the implementation of the critical reasoning dimension, such as students who are still not fluent in developing their thinking into an idea. This is evidenced by only 1 learner out of 8 students who can develop their knowledge into a new idea. The implementation of learning at Al-Amin Elementary School for grade VI students, teachers are still lacking in varying learning media that can focus students in developing critical thinking skills, especially in science subjects. So far, learning is only one-way from the teacher so that students do not have the opportunity to be able to develop their knowledge independently.

So, it requires a treatment in an effort to develop students' critical thinking skills by applying a medium. In implementing learning using a scientific approach, a medium is needed to support the learning process. Media in learning activities is used by the teacher as a conveying material so that it can be more easily digested by students. Therefore, the use of media in learning activities can arouse interest and motivation to learn for students and can also have a psychological effect on the learning process. In this case, Flipbook Interactive Media is suitable for use as a treatment in overcoming these problems. Flipbook Interactive Media can be used to improve students' critical thinking skills.

Flipbook Interactive Media is a small book that contains a series of slightly different images on each page (Syafitri et al., 2021). When the pages are flipped quickly, the images create the illusion of movement, like a simple animation. Flipbook Interactive Media is an early form of animation and is a fun way to create moving stories or scenes. According to Syafitri et al. (2021), Flipbook Interactive Media has many benefits, both for entertainment and learning. Here are some of the benefits: Creating the illusion of movement: makes it possible to see moving images, which is a fun and entertaining experience, Creating stories: to tell simple stories, with each page illustrating part of the story, Creating simple animations: an easy and inexpensive way to create simple animations, which can be used for various purposes, such as presentations or entertainment, Increase creativity: encourages creativity and imagination, because we have to think of ways to make moving images, Presentation: to create interesting and interactive presentations, Advertising: to create unique and attention-grabbing advertisements; and Art: Flipbook Interactive Media can be a unique and interesting form of art (Endaryati, 2021; Roemintoyo & Budiarto, 2021).

Interactive flipbook media is used in presenting learning materials in the form of words combined with

images or videos and equipped with diverse colors and various animations that attract students' interest (Najuah et al., 2020). This allows learning media to create a learning atmosphere that is interesting, interactive, and helps students understand what they are learning.

This Flipbook Interactive Media is very effective for educators to use in improving students' critical thinking skills because it contains teaching materials which are also equipped with quiz games and learning videos. This media is an alternative for teachers to increase students' motivation to learn science. At Al-Amin Elementary School, teachers are still less skilled and creative in innovating learning so that students only learn through the LKS book media. This causes students to feel bored if learning science that only reads.

Interactive Media Flipbook is a digital book that contains a series of materials that will create the illusion of continuous movement or animation. It usually consists of a series of images or photos arranged sequentially in a booklet format. If the page is turned quickly, the image will appear to move, thus creating an animation-like effect (Setiadi et al., 2021).

Online Flipbook Interactive Media uses HTML5 technology to mimic physical page turning, often including sound and visual effects. Flipbook Interactive Media allows users to navigate content interactively, by adding elements such as videos, links and advertisements (Agustini et al., 2022). The concept dates back to the late 19th century, with an early version patented as the "Kineograph." Over time, variations emerged, such as Mutoscopes and Filoscopes, which facilitated rapid page turning for entertainment purposes.

Flipbook Interactive Media can be used for educational purposes by providing an interactive way to present complex information, thereby increasing learner engagement and understanding (Aulia et al., 2024). Flipbook Interactive Media makes learning flexible. Overall, the main characteristic of flipbook Interactive Media remains its ability to simulate movement through quick page flipping. The function of Flipbook Interactive Media is based on the principle of vision, namely the ability of our eyes to retain images for a short time.

Based on the opinions of the experts above, it can be concluded that the benefits of digital Flipbook Interactive Media are that digital flipbooks have several advantages compared to books, such as flexibility, interactivity, ease of sharing, efficiency, and the ability of Flipbook Interactive Media to be accessed anytime and anywhere via devices, has interactive features, can be easily shared, is efficient in terms of storage, and can be equipped with search features (Andini & Qomariyah, 2022).

Science is one of the subjects in the Merdeka Curriculum. This science is a subject that studies Natural

Sciences. However, in the Merdeka Curriculum, science lessons become IPAS, which comes from science lessons that are combined with social studies lessons. This IPAS learns about Natural and Social Sciences (Pujiastuti, 2023). In the implementation of science learning, it requires students' critical thinking skills to be able to develop their knowledge. Efforts to improve these critical thinking skills, teachers must be able to provoke students' emotions in developing their curiosity. So that students can easily be provoked in processing their thoughts critically (Ashton, 2000; Fahmi et al., 2019; Masrifah et al., 2023).

Based on the background above, the researchers conducted research by utilizing Flipbook Interactive Media media in science learning to improve critical thinking skills with the title "Development of Flipbook Interactive Media to Improve Critical Thinking Skills of Grade VI Learners at Al-Amin Elementary School, Probolinggo Regency".

Method

This research uses the Research & Development (R&D) method with the ADDIE development model (Analyze, Design, Development, Implementation, Evaluation) to produce Flipbook Interactive Media products. The research was conducted at Al-Amin Elementary School, Probolinggo Regency in semester 2 of the 2024/2025 school year, with the research subject class VI is 10 students.

The development procedure starts from the analysis stage by conducting observations and identifying needs in the field. The results of observations show the need for the development of learning media that can improve students' critical thinking skills. The design stage includes designing products and preparing Flipbook components, including making research instruments. At the development stage, Flipbook Interactive Media is made and validated by media experts and material experts, then revisions are made based on the input received.

Product implementation is carried out through trials on grade VI students by collecting student and teacher response data. The evaluation stage includes analyzing the trial results and refining the final product. In this development process, it involved several research subjects, namely learning media experts, material experts, grade VI teachers, and students class VI.

Data collection used three main instruments: interview sheets to obtain initial information and feedback, questionnaire sheets for validation and user response, and tests to measure the effectiveness of the product in improving students' critical thinking skills. The data obtained were analyzed using two approaches: qualitative analysis through the stages of data reduction,

data presentation, and verification; and quantitative analysis which includes analysis of product validation, practicality, and effectiveness (Eren & Öztuğ, 2020; Sabitri et al., 2024; Pigai & Yulianto, 2024; Salzabila & Fathurrahman, 2024; Hasni et al., 2024).

The success criteria for product development are determined based on three main aspects. First, the validity of the product reached at least 81% based on expert assessment. Second, the practicality of the product at least reached the Practical category based on user responses. Third, the effectiveness of the product is measured by the achievement of individual KKM of 75 and classical completeness of at least 85%. Through systematic development stages and measurable success criteria, it is hoped that the resulting Flipbook Interactive Media can help improve the critical thinking skills of grade VI students on Earth Rotation and Revolution material.

Table 1. Validation criteria

Achievement Level (%)	Quality
81 – 100	Very valid
61 – 80	Valid
41 – 60	Fairly valid
21 – 40	Invalid
< 21	Very invalid

Table 2. Practicality criteria

Achievement Level (%)	Quality
81 – 100	Very good
61 – 80	Good
41 – 60	Enough
21 – 40	Not enough
< 21	Very less

Result and Discussion

Presentation of Trial Data

This research and development produce a product, namely Flipbook Interactive Media on Human Organ material for grade VI students of Al-Amin Elementary School, Probolinggo Regency. The trial was conducted on test subjects including material or content experts, media experts, grade VI teachers and grade VI students of Al-Amin Elementary School, Probolinggo Regency. The trial data is presented as follows.

Analysis

Before the research was carried out at SD Al-Amin Probolinggo Regency, the results of the analysis were used for the first step in developing Flipbook Interactive Media. Material Selection, based on the results of

interviews with grade VI homeroom teachers, students are easily bored in science subjects. Students are easily bored because the material studied is far from the students' environment, such as the material on Earth Rotation and Revolution. Teachers only rely on LKS books in the learning process.

School Selection, the school where this research was conducted was Al-Amin Elementary School, Probolinggo Regency. And needs Analysis in the analysis, researchers determine the appropriate media used for learning science for Grade VI students. Researchers chose Flipbook Interactive Media as a solution. This Flipbook Interactive Media is expected to improve students' critical thinking skills.

Design

At this design stage, it is an initial step in designing the media to be used, the researcher makes a Flipbook Interactive Media concept from the selection of materials, fonts and various colors. The goal is that the design made attracts the attention of students and does not cause boredom during learning.

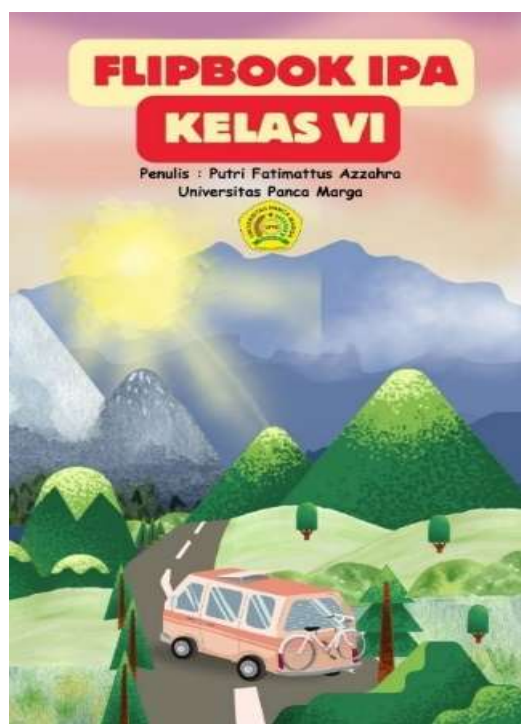


Figure 1. Flipbook interactive media cover

Development

The development stage is carried out by testing product validation in the form of Flipbook Interactive Media. This validation will be carried out by material experts and media experts. After the product is validated, further revisions are made to the product

according to the validator’s suggestions until the media can be used and applied.

After the product has been designed, the researcher will ask the validator for validation. Product validation is carried out through the submission of Flipbook Interactive Media to material expert validators and media experts. In order to determine the level of validity and effectiveness of the media.

The first validation of researchers on the validation of this Flipbook Interactive Media development material expert is Mrs. Faridahtul Jannah, S.Pd., M.Pd. Mrs. Faridahtul Jannah, S.Pd., M.Pd. is a lecturer at PGSD FKIP Panca Marga University. This validation process is with researchers providing Interactive Media Flipbook and lesson plans.

The second validation is the validation of the media expert for the development of Flipbook Interactive Media, namely Mrs. Shofia Hattarina, S.Pd., M.Pd who is a lecturer in PGSD FKIP at Panca Marga University. This validation process is carried out by researchers providing Interactive Media Flipbook and lesson plans. After the product is validated, the product will be revised according to the product revision from the validator.

Implementation
Small Group Trial

In this case, the trial was carried out only by a few people, this stage was carried out to determine the level of effectiveness and validity of the product. The level of effectiveness and validity of the product is a questionnaire given to the class teacher. This trial was conducted on Wednesday, January 15, 2024. Before its application, the researcher validated it with the homeroom teacher, Mr. Wildan Firdaus, S.Pd.

Large Group Trial

This trial was carried out on a large group. The implementation is Friday, January 17, 2024, a large scale is used to determine the level of effectiveness and practicality of the product. This trial was conducted on 8 student participants consisting of 4 siwi and 4 students.

Evaluation

This evaluation stage is carried out by evaluating and revising the Flipbook Interactive Media that has been evaluated by material experts and media experts. So that the media becomes more valid and effective when used in learning IPA material on Earth Rotation and Revolution.

Based on the data above, it can be analyzed the level of validity, effectiveness and practicality of Flipbook Interactive Media.

Expert Trial Data

Flipbook Interactive Media after being compiled by researchers, the next step is to validate it to experts. Expert trials were conducted by material experts and media experts. The results of the expert trial were in the form of an assessment and response to the Flipbook Interactive Media product. The purpose of the expert trial was to improve the Flipbook Interactive Media device. The results of the expert trial were used to revise the resulting product.

Material Expert Trial Data

Mrs. Faridahtul Jannah, S.Pd., M.Pd as a material expert validator. She is a lecturer at the Faculty of Education, Panca Marga University. The validation process carried out submitted in the form of a Flipbook Interactive Media device and a validation questionnaire. The results of the material expert validation are attached as follows.

Table 3. Material expert trial data

Assessment Aspect	Mark			
	4	3	2	1
Media can be used for small group learning in class	✓			
Use of interesting titles and make students motivated in learning	✓			
Media relevant to the material that student must learn	✓			
The media is accordance with the applicable curriculum		✓		
The objectives and benefits of learning have been clearly conveyed	✓			
Content of material is in accordance with basic competencies		✓		
The content of the material is accordance with the learning objectives	✓			
The content of the material presented uses language that complies with the enhanced spelling (EYD)	✓			
The Media is easy for students	✓			
Users can work on question after using	✓			

Percentage of Material Experts (P)

$$P = \frac{\sum x}{\sum t} \times 100\% = \frac{41}{44} \times 100\% = 93.18\%$$

The level of validity based on the material expert validator on this Flipbook Interactive Media reached 93.18%. meaning that the material on this Flipbook Interactive Media is valid.

Media Expert Trial Data

Mrs. Sofia, S.Pd., M.Pd as a media expert validator is a lecturer at the Faculty of Education, Panca Marga University. The validation process carried out submitted

in the form of Flipbook Interactive Media products and validation questionnaires. The results of media expert validation are presented as follows.

Table 4. Media expert trial data

Assessment Aspect	Mark			
	4	3	2	1
Simplicity components	✓			
Easy to understand images in Flipbook	✓			
The ability of interactive media flipbooks to attract students' attention	✓			
Interactive Media Flipbook's ability to understand and remember information		✓		
The ability of interactive media flipbooks to create a sense of enjoyment in students	✓			
Suitability of font selection in Flipbook		✓		
Interactive Media				
Suitability of layout and images on Flipbook Interactive Media		✓		
Color matching on the cover of Interactive Media Flipbook	✓			
Image color matching with the background of Interactive Flipbook Media	✓			

Percentage of Material Experts (P)

$$P = \frac{\sum x}{\sum t} \times 100\% = \frac{33}{36} \times 100\% = 91.66\%$$

The level of validity based on the media expert validator on this Flipbook Interactive Media reached 91.66%. however, researchers obtained Criticism and Suggestions, namely "The picture is enlarged and enriched again". Meaning that the material on this Flipbook Interactive Media is valid but needs to add images and enlarge the image so that it is easy to see.

$$\begin{aligned} \text{Result} &= \frac{P \text{ Media Expert} + P \text{ Material Expert}}{2} \\ &= \frac{93.18\% + 91.66\%}{2} \\ &= 92.42\% \end{aligned}$$

Based on the results of the above calculations, the level of validity of Flipbook Interactive Media is 92.42% with very valid criteria. However, based on the media expert's suggestion, the researcher still carries out the revision according to the validator's suggestion.

The validation results from the experts were analyzed and improved before the device was tested in the field trial. The test subjects were Wildan Firdaus S.Pd as the VI grade teacher and all VI grade students of Al-Amin Elementary School, Probolinggo Regency. The field trial was conducted on January 2, 2024. Learning was conducted for 2 meetings. To test the validity, practicality and effectiveness of using a questionnaire given to teachers and grade VI students of SD Al-Amin, Probolinggo Regency. The Flipbook Interactive Media

device for students given to teachers is the result of revisions from the expert test.

Flipbook Interactive Media contains learning content from Learning Content 1 to Learning Content 3, Chapter 6: Earth Rotation and Revolution. The following is a description of the implementation of learning in Meeting 1 on Wednesday, January 15, 2025. The researcher started by welcoming the learners. The homeroom teacher said a prayer before taking attendance. Then continued with apperception. This occurred through asking and answering questions about the human circulatory system. The teachers held a question and answer session to find out how much the learners knew about the earth's rotation and revolution. In the sensory activity, some learners were active but some were confused by the teacher's questions. The next step is to communicate the skills. In this first day's lesson, the researcher explained to the learners that they needed to complete the task responsibly, honestly, and proactively. Each learner will be given a Flipbook Interactive Media to save the results of learner activities.

Teacher Questionnaire Data

Mr. Wildan, S.Pd. as a validator in the field is a VI grade teacher at SD Al-Amin, Probolinggo Regency. The validation process was carried out by submitting a Flipbook Interactive Media product and a Practicality questionnaire. The results of teacher validation are presented as follows.

Table 5. Teacher practicality questionnaire data

Valuation Statements	Mark			
	4	3	2	1
Learning media can be used to explain the material	✓			
Learning media can improve students' critical thinking skills	✓			
Learning media design attracts students' attention	✓			
The information displayed is easy to read	✓			
The images used are appropriate to the material	✓			
Learning media can be used and carried anywhere	✓			
Clarity in the use of media instructions	✓			
Layout settings	✓			

Practicality Percentage (P)

$$P = \frac{\sum x}{\sum t} \times 100\% = \frac{30}{32} \times 100\% = 93.75\%$$

Based on the results of the above calculations, the level of practicality of Flipbook Interactive Media is

93.75% with very good practicality criteria. This means that Flipbook Interactive Media is already practical to use in learning IPA Chapter 6 "Earth Rotation and Revolution".

Student Score Data

Student questionnaire data contains 10 aspects of questions that are used to be able to consider the validity and effectiveness of Flipbook Interactive Media. Questionnaire data for class VI SD Al-Amin Probolinggo Regency as many as 8 students. This data was obtained at the end of the 2nd meeting. This data is obtained based on the post-test results as follows.

Table 6. Score test

Name	Score
Alfiatul Faizah	88
Ahmad Fahim	90
Dieva Calista	88
Muhammad Sodikin	84
Muhammad Jakfar	84
Muhammad Rizki	82
Nadia	80
Alfia	86
Total	682

Post-Test Average (X)

$$X = \frac{\sum x}{\sum n} = \frac{682}{8} = 85.25$$

Percentage of Completion (P)

$$\begin{aligned}
 P &= \frac{\text{Many Learners Complete KKM}}{\text{Number of Learners in One Class}} \times 100\% \\
 &= \frac{8}{8} \times 100\% \\
 &= 100\%
 \end{aligned}$$

Based on the results of the above calculations, the percentage of completeness of Flipbook Interactive Media is 100%, an average of 85.25 with very good effectiveness criteria. This means that Flipbook Interactive Media is effective for use in learning IPA Chapter 6 "Earth Rotation and Revolution".

Product Revision

After conducting an analysis based on the data obtained from the research, the researchers then made improvements to the Flipbook Interactive Media to obtain the practicality and validity of the Media. This revision was carried out by taking into account the criticisms and suggestions from the Material Expert, Media Expert and Wan Wali Class VI SD Al-Amin

Probolinggo Regency. The following are product revisions made by researchers.

Critical thinking is the ability to analyze information, but it is also about how we navigate a world of complex, fast-changing and often confusing information. This critical thinking is an integral part of the Pancasila Learner Profile Dimension. One of the dimensions of the independent curriculum is skills in critical reasoning or critical thinking (Khasanah & Muthali'in, 2023). Indicators of critical thinking include: interpretation, analysis, synthesis and evaluation (Rahayu & Alyani, 2020).

Table 7. Product revision

	Material Expert Trial Data	Media Expert Trial Data
Advice	Learning objectives in the lesson plan must be clear in accordance with the KD (Mrs. Faridahtul Jannah, S.Pd., M.Pd.)	The picture must be large and in accordance with the material (Mrs. Shofia Hattarina, S.Pd., M.Pd.)

This research and development produced a Flipbook Interactive Media. This media is prepared in accordance with product specifications, namely: Cover, Book Details, Foreword, Usage Guidelines, Table of Contents, Basic Competencies, Indicators, Learning Objectives, Description of Science Material, Science Questions, Bibliography, and Author Biography. This research is in line with the research of Prasasti & Anas (2023) regarding the development of Flipbook Media into an alternative IPAS learning media that can improve critical thinking skills. This was also stated by Aprilia (2021) that Flipbook media is very effective in developing Science critical thinking skills.

This study used qualitative and quantitative data analysis. Qualitative is used to describe the results of interviews with class teachers. While quantitative data analysis to obtain the results of questionnaire calculations that have been given to validators in order to obtain results and values. This value is a benchmark for researchers on the validity, effectiveness and practicality of using Flipbook Interactive Media (Aprilia, 2021).

Flipbook Interactive Media was developed with the validation stage of experts, namely material experts and media experts. The validator provides an assessment of the Interactive Media Flipbook that has been developed in the questionnaire that has been given, as well as providing suggestions for improvement for researchers. The results of the assessment from material experts and media experts on this Interactive Media Flipbook obtained a percentage of validity, practicality and effectiveness values.

This level of validity is measured from the results of the validation questionnaire of material experts and media experts. The validity level of material experts obtained 93.18% and media experts 91.66%. So that if the average gets a percentage of 92.42% with very good validation criteria. However, there are suggestions from media expert validation, namely "the image is enlarged and enriched again". Product revision suggestions have been corrected. So, it can be concluded that Flipbook Interactive Media is very well used to improve critical thinking skills in learning science material on Earth Rotation and Revolution in grade VI students of Al-Amin Elementary School, Probolinggo Regency. In line with Prasasti & Anas (2023) and Agustina & Fitrihidajati (2020) that the results of the validation test of the development of Interactive Media Flipbook obtained a very good category to improve students' critical thinking skills.

This level of practicality is measured based on the acquisition of field test results by the Classroom Teacher, namely Mr. Wildan Firdaus, S.Pd. The class teacher's questionnaire measures the level of practicality of Flipbook Interactive Media, which is 93.75% with very good practicality criteria. In line with research by Sari et al. (2024) that Flipbook Interactive Media is practically used by students to improve critical thinking skills with good practicality criteria. In the practicality questionnaire by this class teacher, there are no suggestions because Flipbook Interactive Media is very practical to use to improve the critical thinking skills of science learning on Earth Rotation and Revolution material for VI grade students of Al-Amin Elementary School, Probolinggo Regency.

This level of effectiveness is measured through the post-test assessment of students obtaining an average of 85.25% with a percentage of 100% completeness. Thus, obtaining very good effectiveness criteria. This means that Flipbook Interactive Media is effective for use in learning Chapter 6 "Earth Rotation and Revolution". Based on research by Sari et al. (2024) Flipbook Interactive Media as an alternative in improving critical thinking skills because it is effectively used in learning.

Conclusion

Interactive Flipbook Media was developed with a validation stage by experts, namely material experts and media experts. The validator provided an assessment of the Interactive Flipbook Media that had been developed on the questionnaire that had been given, and provided suggestions for improvement for researchers. The results of the assessment by material experts and media experts on this Interactive Flipbook Media obtained a percentage of validity, practicality and effectiveness values in good category. This level of validity is

measured from the results of the validation questionnaire of material experts and media experts. The validity level of material experts obtained a result of 93.18% and media experts 91.66%. So that if on average it obtained a percentage of 92.42% with very good validation criteria. This level of practicality is measured based on the results of the field test by the Class Teacher, Mr. Wildan Firdaus, S.Pd. The class teacher questionnaire measured the level of practicality of the Interactive Flipbook Media, namely 93.75% with very good practicality criteria. In line with the previous research that the Interactive Flipbook Media is practically used by students to improve critical thinking skills with good practicality criteria. This level of effectiveness is measured through the post-test assessment of students obtaining an average of 85.25% with a completion percentage of 100%. So that it obtains very good effectiveness criteria. This means that this Interactive Flipbook Media is effective for use in learning Science Chapter 6 "Earth's Rotation and Revolution". It can be concluded that this Interactive Flipbook Media is suitable for use to improve the Critical Thinking skills of Class VI students in the Science subject of the material "Earth's Rotation and Revolution" at Al-Amin Elementary School, Probolinggo Regency.

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Conflicts of Interest

The authors declare no conflict of interest.

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