



## Development of Jumanji-Based Board Game Media to Improve Critical Reasoning in Fourth Grade Elementary School Students

Ratna Dewi Lestyorini<sup>1\*</sup>, Apip Syafi'i<sup>2</sup>

<sup>1</sup>Institut Pangeran Dharma Kusuma, Jawa Barat, Indonesia.

<sup>2</sup>Institut Pangeran Dharma Kusuma, Jawa Barat, Indonesia

Corresponding Author: [ratna.dewilestyorini@gmail.com](mailto:ratna.dewilestyorini@gmail.com)

**Abstract:** The independent curriculum requires students to be more advanced in critical reasoning skills, and one of the subjects that requires critical reasoning skills is mathematics. However, mathematics is one of the subjects that students are less interested in, therefore researchers developed a Jumanji-based board game media to improve the critical reasoning abilities of fourth grade elementary school students. This research uses the Research and Development (R&D) method with the ADDIE development model type, namely Analyze, Design, Development, Implementation and Evaluation. The ADDIE development model was chosen because the research steps are more effective so the time required is shorter. Based on the research that has been carried out, the Jumanji-based board game media is a learning medium that is suitable for application because it has gone through a validation stage by media experts and material experts. The results of the feasibility analysis by media experts obtained an average percentage of 88.5% with very feasible criteria. Meanwhile, the feasibility results by material experts obtained an average percentage of 92% with very feasible criteria. Research also proves that Jumanji-based board game media can increase students' interest in learning and critical reasoning abilities. In the recapitulation of the student interest in learning questionnaire, an average score of 89.98 was obtained with a percentage of 80.3% and was in the very interested criteria. Meanwhile, in the pre-test recap, students obtained an average score of 80.2 with very high criteria and the average score in the post-test recap was 85.2 with very high criteria. It is hoped that the results of the development of this Jumanji-based board game media can become an effective medium in supporting the learning process, so that learning objectives are more easily achieved.

**Keywords:** independent curriculum, mathematics, learning interest, critical reasoning, Jumanji-based board game

## INTRODUCTION

The change from the 2013 Curriculum to the Independent Curriculum is one of the efforts undertaken by the Minister of Education, Culture, Research, and Technology, Nadiem Anwar Makarim, as an effort to address various educational problems and challenges in Indonesia. This is in line with the World Bank report entitled "World Development Report 2018: Learning to Realize Education's Promise" (2018), which states that there are four factors that cause students in many developing countries to fail to learn. First, the lack of student readiness to participate in learning, whether due to malnutrition since childhood, poor family welfare conditions, or a lack of basic literacy skills. Second, the lack of competence and interest of educators in teaching. Third, a lack of learning resources. Fourth, the management and governance of education are not yet well developed (Hadiansah 2022).

The independent curriculum is defined as a learning design that provides students with the opportunity to learn in a calm, relaxed, enjoyable, stress-free, and pressure-free manner, allowing them to showcase their natural talents. Independent learning focuses on freedom and creative thinking. One of the programs presented by the Ministry of Education and Culture at the launch of independent learning was the Pancasila Student Profile Strengthening Program (P5) (R. Rahayu 2022). Quoted from (Mery dkk., 2022) the Pancasila Student Profile aims to strengthen students with the noble values of Pancasila. This is in line with the vision of Indonesian Education, namely "to realize a sovereign, independent, and individualized advanced Indonesia through the creation of Pancasila Students." In the Pancasila Student Profile, the competencies and characters to be explored are outlined in six key dimensions, namely (1) faith, devotion to God Almighty, and noble character; (2) global diversity; (3) mutual cooperation; (4) independence; (5) critical reasoning and; (6) creativity.

Each key in the Pancasila Student Profile has its own role, one of which is the dimension of the Pancasila Student Profile "critical reasoning" which aims to enable students to objectively interpret quantitative and qualitative information, create relationships between various types of information, conduct information analysis, conduct evaluations and draw conclusions. Students' critical reasoning skills must be developed so that they can easily solve life problems that cannot be separated from the environment (Khasanah 2023). Before going far towards life problems in the wider environment, students are

trained to solve problems that exist in the school environment, including subject issues that must be resolved, one of which is mathematics. Mathematics education is a universal science that underlies the development of modern technology, has an important role in various disciplines and advances human reasoning (Lestyorini 2019).

One of the problems that arise for students is a lack of mastery of mathematics, due to students' lack of interest in mathematics. Mathematics is considered the most difficult subject by students, because of the many formulas to remember and weaknesses in calculations. Of the many materials contained in mathematics, almost all of them are considered difficult by students. Among these materials, the material on whole number operations is usually quite easy for students to master. At first glance, whole number operations may seem easy, however, based on observations conducted in grades 4 of elementary school, it was found that there are many errors made by students in the pronunciation and writing of whole numbers. For example, the number 45 which should be read as "forty five" is instead read as "four five." This problem seems to have become a habit, so few are aware that this is incorrect.

Based on this, there is a need for learning media that can increase students' interest in learning and increase their level of understanding of the material on whole number operations. A possible solution is a Jumanji-based board game. Board games are part of tabletop games or games played on a table, which cover all aspects of children's learning. According to one of the board game publisher companies in Indonesia, Manikmaya, a board game is a game that has rules for how to play equipped with several components such as tokens, pawns, or pieces that can be moved on a special board. Types of board games are very diverse and continue to develop, ranging from those with no specific theme to those with a special theme. The rules of the game also vary from simple to detailed and complex. Currently, several popular and timeless games on computers and gadgets (mobile devices) are also created based on the concept of a good board game and

are interesting for all students. Playing is an experimental learning process, where the participants experience and feel directly.

Jumanji board game media has been used by several researchers including Putri & Setyadi, 2022 (Development of Jumanji Mathematics Board Game Media on Number Material for Class VII Junior High School), Prasetyo & Wijaya, 2019 (Development of Board Game-Based Learning Media "Jumanji Physics" on the Topic of Momentum Impulse to Improve Learning Outcomes of Class X Students of SMA 17 Agustus 1945 Surabaya), and Zuhriyah, 2019 (Development of Imitation Jumanji Game as PPKn Learning Media on the Material of Authority of State Institutions according to the 1945 Constitution of the Republic of Indonesia for Class X Students at MA Al Falah Bangilan Tuban). The results of the three studies have several similarities, namely the appearance of the Jumanji game which is designed with an attractive appearance, is able to increase interest in learning in the critical reasoning aspect and students can answer questions in a short time. The differences in each study can be seen from various innovations that apply different concepts, some use the concepts of Mathematics, Physics, and Civics. From these conceptual differences, the board game designs used are also different to suit the objectives of each study. Likewise, the Jumanji-based board game that researchers will develop has a different design concept from previous researchers, namely being designed as similar as possible to the board game in the Jumanji film, such as being made of a board that can be opened and closed and has an adventure theme. However, the adventure theme that researchers will develop is four young archaeologists who go on an adventure researching numbers to collect stars to reach the center point, while the adventure theme in the Jumanji film is about forests and animals.

Board games are a medium that will continue to develop and encompass all aspects of children's learning, in line with the purpose of creating a Jumanji-based board game to increase students' interest in learning and critical reasoning skills. In this study, we examined whether the development of this Jumanji-based board game can be implemented in fourth-grade elementary school students. And how can this Jumanji-based board game improve learning interest and critical reasoning skills?

Students have low learning interest in mathematics because they have to remember and memorize many formulas and require critical reasoning, therefore mathematics is considered a difficult and unpleasant learning. Based on these problems, the product to

be developed is a Jumanji-based board game media whose aim is to increase students' interest in learning and critical reasoning skills. The use of this Jumanji-based board game media was chosen because it is considered appropriate to be one of the supports for students' learning enthusiasm and to be a benchmark for whether the learning carried out can be successful and in accordance with expectations. In addition, the appearance of this media is made as attractive as possible to attract students' attention so that it can increase their interest in learning and reasoning skills. These considerations make researchers want to apply Jumanji-based board game media in mathematics learning activities for whole number operations which will later help increase students' interest in learning and reasoning skills.

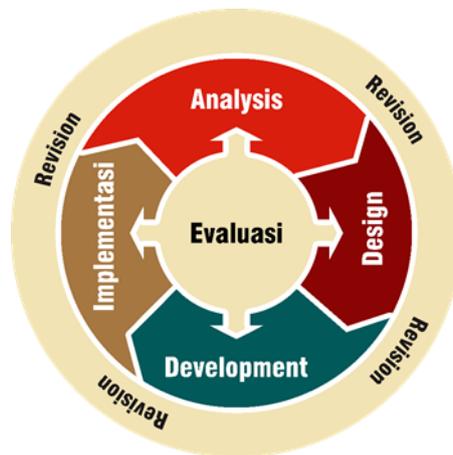
## **METHOD**

This study uses a research and development (R&D) method with the ADDIE development model type. According to Branch in his book entitled "Instructional Design: The ADDIE Approach" states that the ADDIE development model is an acronym of several words in its stages, namely analyze, design, development, implementation, and evaluation. In addition, Branch said that the ADDIE model can be used by adjusting all forms and contexts of development, which means ADDIE can be used for various forms of product development such as media, models, strategies, methods, and teaching materials. The product produced in this research and development is a Jumanji-based board game media to increase interest in learning and critical reasoning in grade IV Elementary School by applying the stages in the ADDIE development model as follows.

The first stage is the analysis stage, this stage is carried out to analyze the media used according to the needs and competencies of students. Second, the design stage is designing a learning media product in the form of a Jumanji-based board game media. The third stage is development, carried out by printing the Jumanji-based board game media and then validating it by a validator. Next, the fourth stage is implementation where

the Jumanji-based board game media will be tested on students. The final stage is evaluation which aims to measure the impact of using Jumanji-based board game media on increasing students' learning interest and critical reasoning abilities by using a learning interest questionnaire as well as pretests and posttests.

**Figure 1.** Research and Development Stage



This research will be conducted at the UPTD SDN 1 Jatibarang, located in Jatibarang Village, Jatibarang District, Indramayu Regency. The research instruments used are validation sheets, questionnaires, and tests.

## RESULT AND DISCUSSION

The game board is the most crucial element in the Jumanji-based board game. It serves as the arena for the game. There are 68 squares on the board, with each color consisting of 17 squares. The board measures 18.5 cm long and 30 cm wide. The board is made of wood for the sides and plywood for the center, all covered with a matte vinyl sticker for a more attractive appearance. The resulting design can be seen in the following image.

**Figure 2.** Back View of the Board Game Design and Print Results



**Figure 3.** Back View of the Board Game Design and Print Results



**Figure 4.** Design and Print Results of the Display in the Board Game



Pawns are a crucial element in the mathematical board game Jumanji. Pawns move players from the start to the finish line, located in the center of the game board. Rewards are awarded to students who correctly answer challenge cards (questions), while bombs are awarded to students who fail to answer the challenge cards (questions).

**Figure 5.** Pawn Design and Print Results



**Figure 6.** Reward Points and X



The challenge cards consist of 68 questions, each with a different topic and tailored to the learning objectives for fourth-grade elementary school whole numbers. These challenge cards are printed on black and white paper. They measure nine centimeters long and six centimeters wide.

**Figure 7.** Challenge Card



The answer key is divided into four parts: the first key contains questions 1-17, the second key contains questions 18-34, the third key contains questions 35-51, and the last key contains questions 52-68. These answer keys are used to check students' answers. The answer cards are made of black and white paper measuring nine centimeters long and six centimeters wide.

**Figure 8.** Answer key



The Jumanji-based board game is played in teams of three students. The goal of this Jumanji board game is to ensure effective implementation and provide opportunities for students to interact with their peers. The guide card (game rules) contains information about the role of the answer key keeper and the gameplay of the Jumanji-based board game.

**Figure 9.** Rules of the Game



The hourglass serves as a time marker for students to complete each question on the challenge card. It's made of plastic for safety.

**Figure 10.** Hourglass



The guidebook contains an explanation of the Jumanji-based board game, the components of the Jumanji-based board game, as well as the rules and steps of the game.

**Figure 11.** Front, Inside, and Back Views of the Game Guide



**Media Expert Assessment of the Feasibility of a Jumanji-Based Board Game**

The validation of the Jumanji-based board game media was carried out by two experts, namely Mr. Andi, S.Kom., a Multimedia Productive teacher at SMK Pelita Jatibarang, and Mr. Kasmuri, S.Ds., a graphic designer at GoodEprint. The results of the feasibility assessment by the media experts on the Jumanji-based board game media are as follows:

**Table 1.** Results of the Feasibility Analysis of Board Game Media from Experts

No	Media Validator	Total Score	Percentage	Criteria
1.	Validator I	58	82,9%	Very Appropriate
2.	Validator II	66	94%	Very Appropriate

**Table 2.** Recapitulation Results of Board Game Media Feasibility by Media Experts

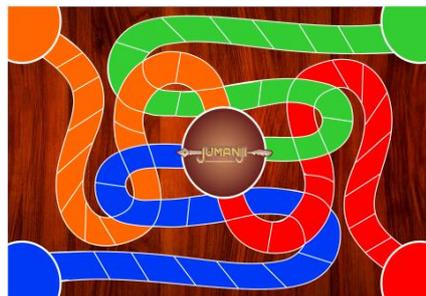
No	Aspect	Maximum Score	Valid ator 1	Valid ator 2	Total Score for Each Aspect	Percentage
1.	Media Construction	20	18	17	17,5	85%
2.	Media Display Design	30	25	29	27	90%
3.	Media Components	20	15	20	17,5	85%
<b>Average Percentage</b>						<b>88,5 %</b>

Table 1 shows that the media construction aspect has a percentage of 85%, the media display design aspect has a percentage of 90%, and the media component aspect has a percentage of 85%. Therefore, the average of all aspects is 88.5% which meets the criteria of very good. Suggestions or recommendations from the validator regarding the Jumanji-based board game media include the design of the game flow which should be added to the forward and backward boxes several steps so that the time is used more effectively and the game is not monotonous, and the bomb image is replaced with an X mark.

### Jumanji-based Media Board Game Revision

The product revision aimed to improve the Jumanji-based board game media based on suggestions from media and content experts. After validating the product with media and content experts, the researchers revised the developed product. The following is a summary of the revisions made by the researchers to the Jumanji-based board game media, as shown in the image below.

**Figure 12.** Before Revision



**Figure 13.** After Revision



**Figure 14.** Bomb Before Revision



**Figure 15.** Bomb After Revision



### **Results of Student Learning Interest Assessment**

The questionnaire regarding students' learning interest consists of ten statements. The tool used to assess students' learning interest is a questionnaire sheet. Data regarding learning interest were obtained after students studied mathematics about whole numbers through a playing method using a board game media based on Jumanji. The assessment was carried out by choosing one of S = always, SR = often, KK = sometimes, TP = never. The scoring criteria were 1 for "never" on the statement in the questionnaire, 2 for "sometimes", 3 for "often", and 4 for "always".

**Table 3.** Recapitulation of student learning interest questionnaire based on statement scores

No	Statement	Total Score Statement	Percentage	No	Statement	Total Score Statement	Percentage
1.	I am interested in mathematics lessons.	86	77%	6.	I feel happy when there are repeat activities.	81,6	72,9%
2.	I understand the lessons delivered by the teacher.	95,6	85,4%	7.	I immediately completed the assigned task without delay.	88,5	79%
3.	I get excited when the teacher teaches math lessons.	98	87,5%	8.	I do practice questions at home even though there is no assignment from the teacher.	70	62,5%
4.	I feel happy when the teacher gives assignments.	88,5	79%	9.	I took notes on the material presented by the teacher.	105	93,75%
5.	I feel happy when there are group learning activities.	105	93,75%	10.	I study every day without force.	81,6	72,9%
<b>Total Average Score</b>						89,98	
<b>Maximum Score</b>						112	
<b>Percentage Criteria</b>						80,3%	
						Very interested	

Based on table 3, the highest percentage results were 93.75% in statements 5 and 9, namely "I feel happy when there are group learning activities" and "I take notes on the material presented by the teacher". From this, it can be concluded that students have a high interest in learning in groups, because by studying in groups, students can communicate and exchange opinions with their friends freely, so that students are active in taking notes on important things and are not afraid to ask questions. The results of the percentage with a medium level of 85.4% and 87.5% in statements 2 and 3, namely "I

understand the lessons delivered by the teacher" and "I am enthusiastic when the teacher teaches mathematics". This is clearly seen when researchers observe students learning using Jumanji-based board game media, students are very enthusiastic about participating in learning and quite easily understand the material that the researcher conveys during the learning process. While the lowest percentage results were 62.5% in statement number 8, namely "I do practice questions at home even though there is no assignment from the teacher" which means that only a few students are willing to do the exercises independently.

### **Implementation of Jumanji-Based Board Game Media for Fourth Grade Elementary School Students**

During the trial, students were asked to complete five pretest questions to determine their knowledge of whole numbers before learning using the board game. Furthermore, students engaged in mathematics learning activities on whole numbers using the Jumanji-based board game. During the learning activities, the researcher acted as a facilitator who explained the rules of the board game while also supervising and observing how students responded to playing the Jumanji-based board game. After completion, students were again asked to complete five posttest questions to determine whether their knowledge and reasoning skills had increased after learning using the Jumanji-based board game. In addition, the researcher also distributed a learning interest questionnaire to students to determine whether their learning interests had changed before and after learning using the board game.

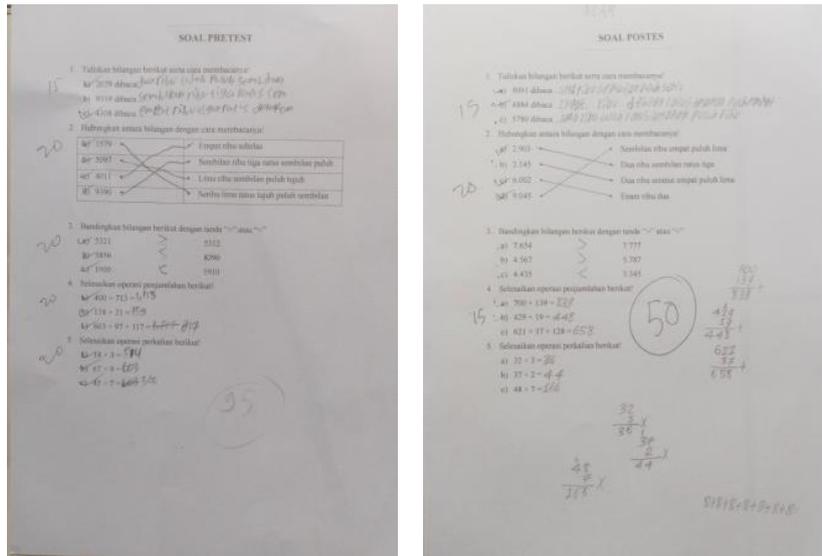
Based on the research conducted, almost all students were enthusiastic and actively participated in the learning process using the Jumanji-based board game. Students quickly grasped the game's flow and took turns playing the game in an orderly manner. When given a challenge card (question), student reactions varied. Some were enthusiastic and confident in answering the question, others immediately discussed it with their group, and still others were confused about how to answer.

**Figure 16.** Jumanji-based Board Game Activities



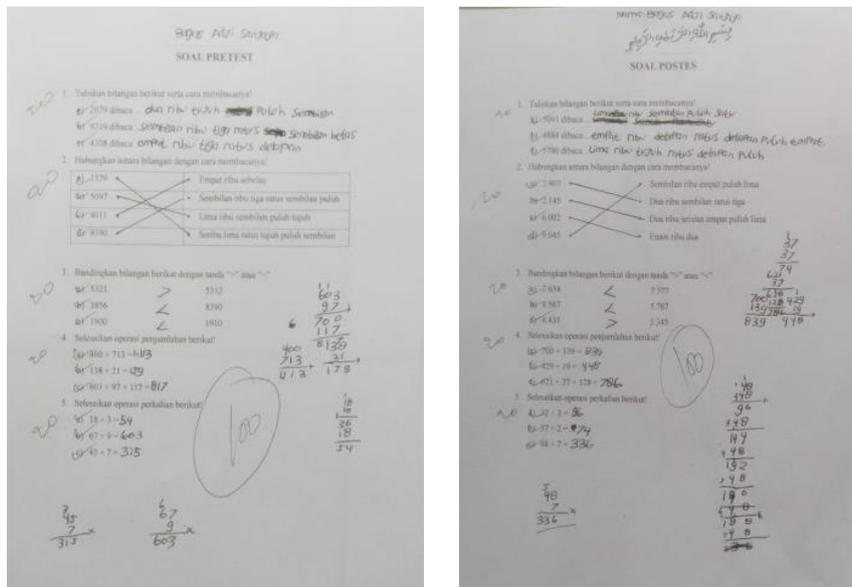
Students' critical reasoning skills were evident when learning using a Jumanji-based board game, particularly when answering challenge cards in the form of story problems. Some groups appeared to easily understand the problems in the questions and correctly determine the known and required information in the questions. Others quickly developed problem-solving plans through discussions with their groupmates. Upon receiving the challenge cards, several students were seen immediately grabbing books and pens to find formulas and calculate carefully, as they were seen checking their answers several times. In addition to the game, students' critical reasoning skills were also evident when working on the pre- and post-test questions. Initially, students were hesitant to record calculations on the question sheets provided by the researcher for fear of compromising the neatness of their answers. Consequently, some students erased their calculations.

**Figure 17.** Pretest and Posttest Results: Students with the Lowest Scores



However, after the researcher explained that they were allowed to record their calculations on the test sheet, many students readily recorded their calculations. The way the students completed the pre- and post-test questions demonstrated a high level of critical reasoning, as they were able to easily understand the problems posed and identify the steps or strategies for solving them in an orderly and skillful manner to answer the questions correctly.

**Figure 18.** Pretest and Posttest Results: Highest Scores for Students



In addition, there are also students who always collect their pre-test and post-test results last because they always check their test results again to see whether the calculations are

correct or not, and consider alternative solutions to find a more efficient problem-solving strategy.

## DICSUSSION

Jumanji-based board game media is one of the media that can be used in the learning process, especially for whole number mathematics. So far, mathematics has been a subject that is less popular with students, but by using the right media such as Jumanji-based board games, students are more active and enthusiastic when participating in the mathematics learning process. Jumanji-based board game media has gone through a validation process by media experts with a percentage of 85% in the media construction aspect, 90% in the media display design aspect, and 85% in the media component aspect. So the average value of all these aspects is 88.5% with very feasible criteria. The assessment from material experts is 95% for the objective quality aspect, 92.5% for the content quality aspect, and 90% for the learning quality aspect. So the average value of all these aspects is 92% with very feasible criteria.

One way that teachers can increase students' interest in learning is by using appropriate and fun learning media. Jumanji-based board games can be an option to be used as learning media that can increase students' interest in learning. This is proven by the results of research on student learning interest questionnaires after learning using Jumanji-based board game media which are in the very interest category. This is based on percentage data from each statement, namely the first statement has a percentage of 77%, the second statement has a percentage of 85.4%, the third statement has a percentage of 87.5%, the fourth statement has a percentage of 79%, the fifth statement has a percentage of 93.75%, the sixth statement has a percentage of 72.9%, the seventh statement has a percentage of 79%, the eighth statement has a percentage of 62.5%, the ninth statement has a percentage of 93.75%, and the last statement has a percentage of 72.9%. So the average of all statements is 80.4% with a very interest category.

In the context of learning, mathematics is one of the subjects that greatly requires critical reasoning skills. Therefore, researchers developed a Jumanji-based board game media that can be applied to learning whole number mathematics. During the implementation process, students were very enthusiastic and actively played the board game. When receiving the challenge card (question), student reactions varied. Some were enthusiastic and confident in answering the question, some immediately discussed it with their group, and others were confused about how to answer. The increase in students' critical reasoning skills was also evident in the pre-test results, which obtained an average score of 80.2 with the criteria for very high critical reasoning skills and an average score from the post-test results of 85.2 with the criteria for very high critical reasoning skills. In addition, researchers also noted that during the process of working on the pre-test and post-test questions, students could easily understand the problems in the questions and knew the steps or strategies for solving them in an orderly and skillful manner to answer the questions correctly. This was evidenced by the presence of calculation notes on the question sheets that researchers distributed to students.

Before the game began, students were divided into 4 groups. Then, representatives from each group came forward to determine the group name and playing order by using hompimpa. Each group was given a name according to the character they chose. The first group chose the character Rara, the second group chose the character Jojo, the third group chose the character Nana, and the last group chose the character Dodo. The first group started the game by rolling the dice, then took a challenge card and so on alternating with the other groups. During the game, students showed various expressions following the flow of the Jumanji board game. Some were happy because their pawn stopped on the box that said "forward 3 steps", some were annoyed because their pawn stopped on the box that said "back 3 steps", and still others looked very disappointed because their pawn stopped on the box that said "back to start". The presence of writings like these made the game more fun and not boring because students felt fluctuating emotions.

Likewise, when they received the challenge cards, the students were eager to answer. Each group had a different approach to answering the questions: some quickly discussed the questions with their group, others answered them themselves, others immediately ran to their desks to calculate in their notebooks, and still others were confused and couldn't find the answer.

The Jumanji-based board game is won by the group that reaches the finish line the fastest and earns the most rewards. During the game, Jojo's group successfully reached the finish line and earned the most rewards, thus becoming the winner. Jojo's group dominated the game from the start, as they were the most cohesive and quickest in answering the challenge cards. In addition to enhancing students' learning interest and critical reasoning skills, the Jumanji-based board game also trains students to be disciplined in following the rules, actively participating in learning activities, and working together to solve problems.

## **CONCLUSION**

Students have low interest in learning mathematics because it is considered complicated. As stated (Silviani 2017) that basically, mathematics aims to help train students' mindsets to be able to solve problems both in the field of mathematics and problems in everyday life, but most students are not interested in learning mathematics because they view mathematics as an abstract field of study. Jumanji-based board game media is a learning medium that is suitable to be implemented because it has gone through a validation stage by media experts and material experts. The results of the feasibility analysis by media experts obtained an average percentage of 88.5% with very suitable criteria. Meanwhile, the results of the feasibility by material experts obtained an average percentage of 92% with very suitable criteria. Jumanji-based board game media can increase students' interest in learning and critical reasoning abilities. This is evidenced by the results of the recapitulation of the student learning interest questionnaire which obtained an average score of 89.98 with a percentage of 80.3% and is in the very interested criteria. Meanwhile, in the pretest recapitulation, students obtained an average score of 80.2 with the criteria for very high critical reasoning ability and an average score in the posttest recapitulation of 85.2 with the criteria for very high critical reasoning ability. Students' critical reasoning abilities need to be honed so that students are able to solve problems

both in the field of learning and problems in everyday life. Similarly, what was conveyed by (Khasanah 2023) that students' critical reasoning skills must be developed so that they can easily solve life problems that cannot be separated from the environment.

## ACKNOWLEDGMENT

Thank you for the assistance of all elementary schools in Indramayu district,

## REFERENCE

- Ernawati, Y., & Rahmawati, F. P. (2022). Analisis Profil Pelajar Pancasila Elemen Bernalar Kritis dalam Modul Belajar Siswa Literasi dan Numerasi Jenjang Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6132–6144. <https://doi.org/10.31004/basicedu.v6i4.3181>
- Hadiansah, Deni. (2022). *Kurikulum Merdeka Dan Paradigma Pembelajaran Baru*. Bandung: Yrama Widya.
- Khasanah, V.A., Muthali'ain, A. (2023). Penguatan Dimensi Bernalar Kritis melalui Kegiatan Proyek dalam Kurikulum Merdeka. *Jurnal Dimensi Pendidikan dan Pembelajaran Universitas Muhammadiyah Ponorogo*, 11(2), pp 172-180. [https://www.researchgate.net/publication/377190664\\_Penguatan\\_Dimensi\\_Bernalar\\_Kritis\\_Melalui\\_Kegiatan\\_Proyek\\_Dalam\\_Kurikulum\\_Merdeka](https://www.researchgate.net/publication/377190664_Penguatan_Dimensi_Bernalar_Kritis_Melalui_Kegiatan_Proyek_Dalam_Kurikulum_Merdeka)
- Lestyorini, Ratna Dewi. (2019). Pengembangan Media Pembelajaran Matematika pada Materi Pecahan Berbasis Adobe Flash di Kelas V SD Negeri Kabupaten Indramayu. *DWIJA CENDEKIA*, 3(2), 217-225. <https://doi.org/10.20961/jdc.v3i2.34938>
- Putri, A., & Setyadi, D. (2022). Pengembangan Media Board Game Jumanji Matematika pada Materi Bilangan Kelas VII SMP. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 6(2), 2086-2098. <https://doi.org/10.31004/cendekia.v6i2.840>
- Rahayu, R., Rosita, R., Rahayuningsih, Y. S., Hernawan, A. H., & Prihantini, P. (2022). Implementasi Kurikulum Merdeka Belajar di Sekolah Penggerak. *Jurnal Basicedu*, 6(4), 6313–6319. <https://doi.org/10.31004/basicedu.v6i4.3237>
- Silviani, Tri Rahmah. (2017). Upaya Meningkatkan Minat Belajar Matematika Menggunakan Inquiry Based Learning Setting Group Investigation. *Kreano*, 8(2), 150-161. <https://doi.org/10.15294/kreano.v8i2.8404>
- Sugiyono. (2013). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabet.