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Article

The Effect of Educational Board game on Students' Reflective Thinking Skill in Learning Subject Nutrition in Food

Fika Zakiya Al Mustafid[1*], Aristiawan[2], Vika Puji Cahyani[3]

[1,2]Institut Agama Islam Negeri Ponorogo, Indonesia
[3]Universitas Negeri Makassar, Indonesia

**Corresponding Address: bali101201@gmail.com*

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ABSTRACT

Reflective thinking skills are one of the five high-level thinking skills in twenty-first-century learning. The process of reflective thinking is crucial, especially in science education. Mastering reflective thinking skills helps students in solving scientific problems using scientific methods. There are three stages of reflective thinking: reaction, elaboration, and contemplation. To enhance students' reflective thinking skills, the first step is to stimulate student interest. One alternative learning model that can engage student interest is Game-Based Learning using educational board game. Board game is a type of non-digital game that has various advantages compared to other types of games. This study investigated the reflective thinking skills of junior high school students as an impact of using educational game media in science lessons, especially the material of Nutritional Substances in Food. The research was conducted at SMPN 2 Jetis, Ponorogo Regency. The research sample was the VIII grade students of SMPN 2 Jetis. This research is a quantitative study with a research design using a quasi-experiment with a nonequivalent control group. The data collection technique used pre-test and post-test to measure reflective thinking skills before and after treatment in the control class and experimental class. The results showed that reflective thinking skills at the Reaction, Elaboration, and Contemplation stages in the experimental class using board game media were not higher than the control class using paper and pencil media. These results can be influenced by several variables that cannot be controlled by researchers. The conclusion of this study showed that board game media could not always be used to improve reflective thinking skills.

INTRODUCTION

Education in the twenty-first century has an important role in ensuring that learners have the skills to survive in the globalisation era. The various competencies needed by learners in the globalisation era are often referred to as 21st Century Skills. 21st Century Skills are then developed into an educational concept known as 21st Century Learning (Andrian & Rusman, 2019). 21st Century Learning also encourages learners to develop Higher Order Thinking Skills. According to Krulik, there are five skills included in the

Higher Order Thinking Skill, namely: logical thinking skills, critical thinking skills, reflective thinking skills, metacognitive thinking skills, and creative thinking skills (Fuady, 2017; Kurniasari & Fauziah, 2022). According to Chang, reflective thinking skills are very important in the learning process because the reflection activities carried out can help students develop their own thinking (Dewi & Erman, 2021).

Reflective thinking is the process of thinking about a problem by considering pre-existing knowledge and then drawing conclusions about the problem. The reflective thinking process includes the process of understanding a problem, then the process of extracting information and data until finally students are able to solve problems and make conclusions (Armelia & Ismail, 2021). John Dewey argues that reflective thinking skills can develop higher-order thinking skills. Learners are also encouraged to think abstractly and conceptually and apply specific strategies in solving the problems they face (Fitriati et al., 2020). Reflective thinking skills are important for students to have in science learning to determine the solution to a problem, one of which is nutrition education.

Science learning is part of formal education material that must be studied by every student at the Junior High School (SMP) level. Science learning is able to produce quality human resources. Science learning is not limited to the mastery of knowledge, but also as knowledge that is implemented in everyday life (Astalini et al., 2018). Nutrition is one of the topics in science education at the junior high school level. Learning about nutritional health is important for children to improve their skills and awareness in choosing healthy and unhealthy foods (Putri & Silalahi, 2019). Varied learning can increase the level of student knowledge. Safitri and Rahayu's research showed that the use of poster media improved students' knowledge of nutrition on food labels compared to lecture and discussion methods (Safitri & Rahayu, 2019). The use of learning media aims to create a pleasant learning atmosphere.

According to Sadiman, Raharjo, Haryono and Rahardjito, learning activities should be fun, so as to make learning more meaningful and can develop the potential of students. To create a pleasant learning atmosphere, teachers must develop innovative learning media. One of the learning media that can be used is board game (Fitriana et al., 2022). Latief said that board game are a type of non-digital game that has various advantages compared to other types of games (Prambudi & Yunianta, 2020). According to Dewar, board game can be used as learning media because students will analyse patterns, design strategies, predict alternative solutions and outcomes, and learn from experience. Board game can also train students' courage in making decisions and solving problems (Mahyuddin et al., 2022). The characteristics of this board game are aligned with reflective thinking skills consisting of Reaction, Elaboration, and Contemplation (Dewi & Erman, 2021).

Surbeck, Han, and Moyer stated that Reaction is the initial response of students when faced with a problem. Elaboration is the act of connecting the problem at hand with the knowledge already possessed. Contemplation is the action of learners to solve the problem and have reached a conclusion (Adha & Rahaju, 2021). The use of board game in reflective thinking skills is suitable because of the alignment of the flow of thinking. At first, learners are faced with a problem and analyse and search for information. Based on the analysis and information obtained, learners determine several alternative solutions and predict the results. Finally, students will execute the solutions they make. Fitriana's research shows that the learning outcomes of students who use board game media are in the very good category (Fitriana et al., 2022). Card game-type board game are also proven to be effective for training students' higher order thinking skills (Alodia, 2016; Yulianti, 2016).

To implement board game as learning media, the learning model used is Game Based Learning (GBL). Game Based Learning is a learning method supported by experiential learning. According to Silberman (2014), learning games are the main approach in experiential learning (Rodliyah et al., 2018). Through game rules and gameplay, students can

engage in hands-on experiences, reflect on learning, and receive immediate feedback from peers (Chen et al., 2020). Experiential learning as defined by Kolb (2008) consists of four stages in the following order of events: concrete experience, reflective observation, abstract conceptualisation, and active experience (Wrzesien & Alcañiz Raya, 2010). The GBL learning model is also proven to increase learners' interest and motivation in participating in learning activities. Even with the development of its own games that are customised in such a way as to meet the needs, the GBL learning model is able to improve students' literacy skills (Diana, 2022).

This research was conducted at Junior High School 2 Jetis. Students who participated in this study were students of SMPN 2 Jetis. SMPN 2 Jetis was chosen as the research location because SMPN 2 Jetis students have the potential to improve reflective thinking skills. Board game were chosen as an innovative medium to improve students' reflective thinking skills. Board game have many advantages as learning media. Board game have also proven successful in improving student skills.

Pramjit Singh has researched the relationship between card games and students' numeracy skills. Singh's research showed positive results, meaning there was an improvement in students' abilities after using card games. Students also enjoyed the game, so they were involved in meaningful learning and interaction between students (Singh et al., 2021). Another research was conducted to develop Make a Match game cards. The game card effectively trains higher-order thinking skills on the structure and function of cell organelles (Yulianti, 2016). Five high-level thinking skills are logical thinking, critical thinking, reflective thinking, metacognitive thinking, and creative thinking skills (Fuady, 2017; Kurniasari & Fauziah, 2022).

Many studies have shown the successful use of board game in training students' thinking skills. Even so, there is still little research on the correlation of board game with reflective thinking skills. The novelty of this research is using board game to train students' reflective thinking skills. With all its advantages, the board game is expected to improve students' reflective thinking skills.

Based on this explanation, reflective thinking skills are important for students to master in solving problems, especially in the field of science. In improving reflective thinking skills in the classroom, innovative and effective learning is needed. Using board game as learning media with Game-Based Learning is an innovative step in learning practices because of its educational and entertaining nature. The study aims to test and measure the effectiveness of the board game in improving reflective thinking skills in the field of science, especially on the topic of nutrition and nutrition for grade VIII Junior High School students. Therefore, this study contributes to the testing of learning media and its effectiveness in improving reflective thinking skills in class VIII of SMPN 2 Jetis.

METHODS

This research uses a quantitative method of quasi-experimental type with nonequivalent control group design. This research design requires two sample classes as control and experimental classes. The experimental class is given special treatment in the form of learning using Super Foods board game media in learning while the control class is not given special treatment. This aims to determine whether the independent variable (board game) effectively affects the dependent variable (reflective thinking skills). The data collection technique uses a pre-test to measure student skills before treatment and a post-test to measure student skills after treatment.

Table 1. Nonequivalent Control Group Design (Sugiyono, 2013)

Class	Pre-Test	Treatment	Post-Test
Experiment	O_1	X	O_2
Control	O_3	-	O_4

The population of this study was class VIII of SMPN 2 Jetis in the academic year 2023/2024. The sample of this study consisted of 15 students in the control class and 15 students in the experimental class. The sample selection in this study used non-random sampling technique, namely purposive sampling. This sampling technique was carried out because the participants in the school were already divided into two classes, so it would be more difficult to do random sampling and divide them again. With purposive sampling, the study used class VIII A as the control class and class VIII B as the experimental class. Each class had studied the Nutrition in Food material at the previous meeting.

This research procedure began with providing the same subject matter between the experimental group and the control group using the paper and pencil method. Learners followed the classroom learning on Nutrition in Food. Then, the experimental group practised reflective thinking skills on Nutrition in Food using the Super Foods board game, while the control group practised using paper and pencil. Students were asked to do a written test to measure reflective thinking skills. The test questions were in the form of questions developed for students to think reflectively through three stages, namely Reaction, Elaboration, and Contemplation (Adha & Rahaju, 2021). The data that has been obtained is then tested for normality using the Shapiro-Wilk formula with the help of SPSS software. Then the data is tested using Independent Sample T-Test if the data is normally distributed and Mann Whitney test if the data is not normally distributed. The data taken is divided into three based on indicators of reflective thinking skills, namely Reaction, Elaboration, and Contemplation (Adha & Rahaju, 2021).

RESULTS AND DISCUSSION

Result

Table 2. Result Tests of Normality Using the Shapiro-Wilk

	Class	Shapiro-Wilk		
		Statistic	**Df**	**Sig.**
Result Reaction	Control Class	.879	15	.046
	Experiment Class	.833	15	.010
Result Elaboration	Control Class	.916	15	.165
	Experiment Class	.878	15	.044
Result Contemplation	Control Class	.672	15	.022
	Experiment Class	.843	15	.014

In this study, the normality test used the Shapiro-Wilk formula because the amount of data did not reach 50 samples or more. In the Shapiro-Wilk normality test, if the Sig. value is greater than 0.05, then the data is considered normally distributed. Based on **Table 2**, the Sig. value in the Shapiro-Wilk normality test shows a value greater than 0.05. This means that the post-test data in the experimental group and control group have been normally distributed even though with a small value. Because the data has been normally distributed, a parametric test using the Independent Sample T-Test was conducted. This test serves to compare two unrelated samples, namely pre-test and post-test. This test is also useful to determine whether there are differences in reflective thinking skills before and after treatment in each class (Sarwono, 2015).

Table 3. Result Independent T-Test Reaction Stage with Software SPSS

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Convidence Interval of the Difference	
									Lower	Upper
Reaction	Equal variances assumed	.389	.538	.646	28	.524	.66667	1.03249	-1.44829	2.78162
	Equal variances not assumed			.646	27.506	.524	.66667	1.03249	-1.45000	2.78334

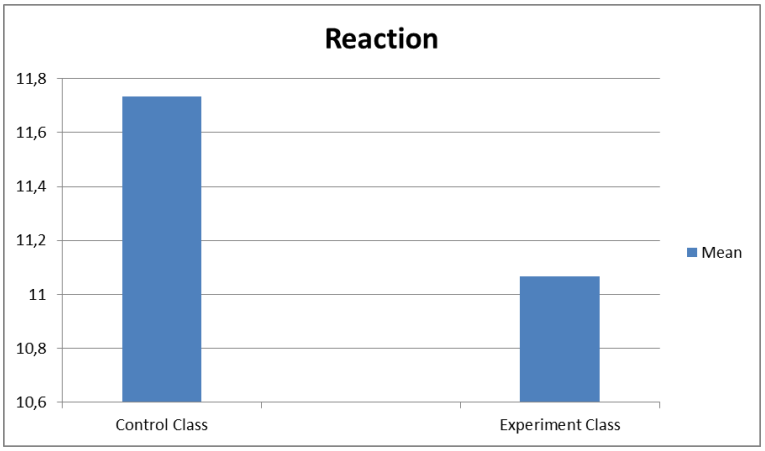

Figure 1. The diagram of Mean values for the Reaction stage

Based on the Independent T-Test results, the Sig. F on Levene's Test for Equality of Variances shows a value of more than 0.05 (0.538 > 0.05). This can be interpreted that the variance of the control and experimental group data is homogeneous or identical. Then the interpretation of the Independent T-Test results refers to "Equal variances assumed" to show whether there are differences in Reaction stage reflective thinking skills between the control group and the experimental group. Sig. (2-tailed) in **Table 3** is 0.524. Because the value of Sig. (2-tailed) is greater than 0.05, it can be concluded that there is no significant difference in Reaction stage reflective thinking skills between the control group and the experimental group (Sujarweni, 2012). A comparison of the calculated t value and t table also shows the same thing. The calculated t value is smaller than the t table (0.646 < 2.048). This result shows that there is no difference in the average reflective thinking skills of students at the Reaction stage.

The Reaction stage is the earliest stage of reflective thinking skills. In the Reaction stage, students must identify the problem and understand it to find a solution (Adha & Rahaju, 2021). The data in **Table 3** shows that the treatment received by the experimental class did not provide a significant difference in the improvement of reflective thinking skills compared to the control class. In **Figure 1,** the mean value of the control group is higher than the experimental group. This can be seen from the "Mean Difference" value which shows a positive value. This can occur possibly because the Super Foods board game media has not been able to increase and direct students' attention to learning. In addition, the Super Foods board game media has not been able to provide an evenly distributed experience to students (Mashuri, 2019).

Table 4. Result Independent T-Test Elaboration Stage with Software SPSS

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Convidence Interval of the Difference	
									Lower	Upper
Elaboration	Equal variances assumed	2.982	.095	.210	28	.835	.33333	1.58465	-2.91267	3.57934
	Equal variances not assumed			.210	25.401	.835	.33333	1.58465	-2.92770	3.59437

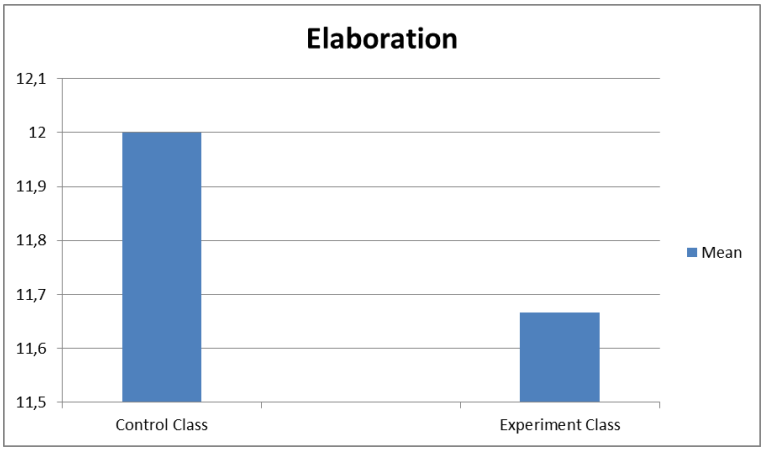

Figure 2. The diagram of Mean values for the Elaboration stage

Based on **Table 4**, the Sig. F value on Levene's Test for Equality of Variances is higher than 0.05 (0.095 > 0.05). Then the variance of the research data is homogeneous or identical. So that the interpretation of the Independent T-Test results is based on "Equal variances assumed". Sig value. (2-tailed) at the Elaboration stage is greater than 0.05 (0.835 > 0.05). Based on the value of Sig. (2-tailed), it can be concluded that there is no significant difference in reflective thinking skills in control and experimental class students (Sujarweni, 2012). Comparison of the calculated t value and t table shows that the calculated t value is lower than the t table value (0.835 < 2.048). This indicates that there is no difference in the average reflective thinking skills of control and experimental class students at the Elaboration stage.

The Elaboration stage is a continuation of the Reaction stage in reflective thinking skills. After students identify the problem and understand it, at the Elaboration stage students connect the problem with previously acquired knowledge or experience. At this stage students are expected to be able to think of several solutions to solve the problem at hand (Adha & Rahaju, 2021). The data in **Table 4** shows that the reflective thinking skills at the Elaboration stage of the control class and the experimental class are not much different. In **Figure 2**, the mean value of the control group is higher than the experimental group in Elaboration stage. The score of Mean Difference is a positive number indicating that the average value of the control class is better than the experimental class. This is likely because the Super Foods board game media is less able to improve students' mastery of concepts and facts so that when students are faced with problems, they lack information (Mashuri, 2019).

Table 5. Result Independent T-Test Contemplation Stage with Software SPSS

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Convidence Interval of the Difference	
									Lower	Upper
Contemplation	Equal variances assumed	.502	.484	.220	28	.827	.20000	.90781	-1.65957	2.05957
	Equal variances not assumed			.220	27.571	.827	.20000	.90781	-1.66088	2.06088

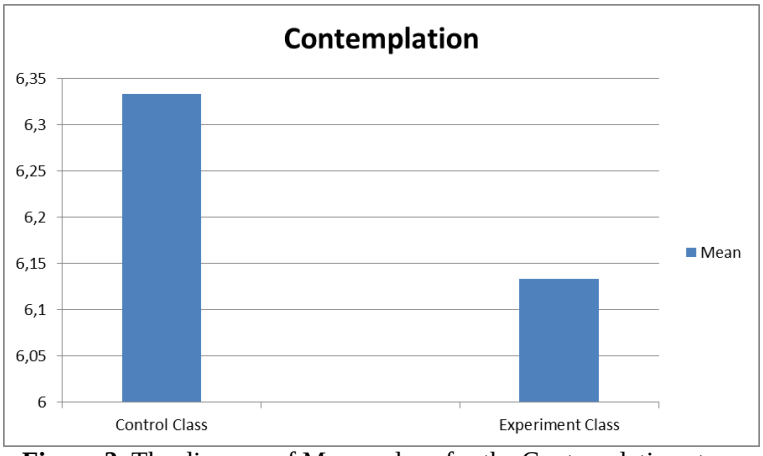

Figure 3. The diagram of Mean values for the Contemplation stage

Table 5 shows the results of the Independent T-Test for the Contemplation stage. The Sig. F in the Levene's Test for Equality of Variances column is greater than 0.05 (0.502 > 0.05). This indicates that the data variances are homogeneous or identical. Then the interpretation of the Independent T-Test results is based on "Equal variances assumed". The value of Sig. (2-tailed) is 0.827. The value of Sig. (2-tailed) which is greater than 0.05 indicates that there is no significant difference between the two groups tested. So it can be concluded that the reflective thinking skills of the Contemplation stage between the control class and the experimental class do not have a significant difference (Sujarweni, 2012). The calculated t value at the Contemplation stage is lower than the t table value (0.220 < 2.048). This comparison shows that there is no difference in the average reflective thinking skills of the Contemplation stage between the control group and the experimental group.

The Contemplation stage is the final stage of reflective thinking skills. After students identify the problem at the Reaction stage, then explore the problem at the Elaboration stage, students must provide solutions to solve the problem at the Contemplation stage (Adha & Rahaju, 2021). The data in **Table 5** shows that there is no significant difference in reflective thinking skills at the Contemplation stage between the control class and the experimental class. In **Figure 3**, the mean value of the control group is higher than the experimental group in Elaboration stage. The "Mean Difference" value is a positive number which indicates that the average score of the control class is better than the experimental class. This is likely because the Super Foods board game media does not train problem solving skills that are relevant to everyday life.

Discussion

This study contributes to the understanding of science learning using Game-Based Learning (GBL), particularly in the implementation of board game media to develop students' reflective thinking skills. The results of the study revealed that the experimental group of students did not show a significant difference from the control group in reflective thinking skills. According to Surbeck, Han, and Moyer, reflective thinking skills are divided into three levels: reaction, elaboration, and contemplation (Adha & Rahaju, 2021). Reaction refers to the students' initial response to their personal understanding of the problems they face. At the reaction stage, students are expected to understand and explain the problems using their own language and identify the issues. The elaboration stage involves students' efforts to analyze and clarify the information obtained during the reaction stage with their experiences. Students are expected to find relationships based on the information to develop solutions. The contemplation stage is where students use deep personal understanding to explain, consider, and reflect in order to find the correct problem solution (Utomo et al., 2021). Reflective thinking skills are crucial for students to solve problems, particularly in science learning.

The goal of science education is to produce a scientifically literate generation. A scientifically literate generation is expected to understand scientific concepts, formulate theoretical hypotheses, apply scientific processes and concepts, and integrate an understanding of the nature of science into daily life (Kurniasari & Fauziah, 2022). Therefore, mastering reflective thinking skills is essential for students in science education. The process of understanding, integrating insights, creating solutions, and reflecting is highly beneficial in science learning. This process will develop students' logical thinking, aiding them in finding the best solutions to problems (Ningrum & Fauziah, 2021). Then, to enhance students' thinking skills, innovative teaching approaches are required to stimulate students' interest, one of which is Game-Based Learning using board game (Chen et al., 2020).

Board game are innovative media capable of stimulating students' interest. Board game have also been proven effective in training students' high-level thinking skills (Alodia, 2016; Yulianti, 2016). Specifically, board game have been found effective in training students' creative thinking skills in mathematics (Widiyanto & Yunianta, 2021). Other studies also indicate that students positively respond to using board game as a learning evaluation tool. Students' critical thinking skills using board game are also considered excellent (Fitriana et al., 2022).

Although board game have shown positive results when used to train critical thinking and creative thinking skills, board game media has not yet been able to effectively enhance reflective thinking abilities. The results of this study indicate that, firstly, the influence of the Super Foods board game on reflective thinking skills did not show a significant difference compared to paper and pencil exercises. Secondly, both the control and experimental groups of students had similar scores in the three stages of reflective thinking: reaction, elaboration, and contemplation. Thirdly, practicing reflective thinking using paper and pencil-based media is equally effective as using the Super Foods board game.

The author conducted an analysis to determine why the Super Foods board game is ineffective in enhancing reflective thinking skills. The first reason is the game's overly simplistic design. Super Foods is a point-collecting type of board game where the objective is to collect as many points as possible to win. Due to its overly simplistic gameplay, players do not engage in reflective thinking processes during the game. Additionally, these results may also be influenced by students' emotions. Other studies have shown positive and negative emotions can affect students' performance. A statistically significant improvement was observed in students who used game-based media compared to those who used paper and pencil media (Chen et al., 2020). However, if students' positive emotions are too overwhelming, they may become overly focused on playing, leading to a lack of understanding of the information conveyed through the game. Another study conducted at

MTs Sulamul Huda showed that gender differences can also affect students' skills. On average, female students' reflective thinking skills are higher than male students in solving scientific, social issues-based problems at MTs Sulamul Huda (Ningrum & Fauziah, 2021).

This study has several theoretical and practical implications. Firstly, it indicates that the Super Foods board game using the Game-Based Learning model is ineffective in training students' reflective thinking skills. Secondly, educators can develop customized board game to train students' reflective thinking skills. Students can independently prepare themselves for the game. Lastly, board and card games allow teachers to design and deliver creative instructions using minimal resources, which can benefit education systems with limited resources (Chen et al., 2020). This research only measured the effectiveness of the board game media on students' reflective thinking skills in nutrition content. The researchers acknowledge that many variables can influence students' reflective thinking skills. Therefore, further research is needed to understand these variables and their impact on students' reflective thinking skills or Game-Based Learning.

CONCLUSION

Based on the research that has been done, the Super Foods board game media is an interesting and innovative learning media. Other studies have shown that board game have a good impact on student learning achievement. Even so, based on the experimental results, it shows that the use of Super Foods board game media is still not enough to improve students' reflective thinking skills. The limitation of this study is that this study only examines the variable effect of learning media in the form of the Super Foods board game on reflective thinking skills by ignoring other variables. This aims to determine the effect of using Super Foods board game media on students' reflective thinking skills on nutrition material. In addition, the board game media used is a board game that is sold on the market, not developed independently. This makes it difficult to adjust the board game to the research objectives. The sample of this study was also limited due to the limited number of students at the research location.

Suggestions for future research, first, add other variables to find out whether what affects reflective thinking skills is only learning media or there are other variables. Second, if you use board game as learning media, it is better to do your own development. This is to facilitate research and so that the board game is in accordance with the research objectives. Third, look for research locations with large populations and samples. A small population and sample can reduce the accuracy of the research because if there is defective data, it cannot be corrected.

REFERENCES

Adha, S. M., & Rahaju, E. B. (2021). Profil Berpikir Reflektif Siswa Sma Dalam Memecahkan Masalah Matematika Ditinjau Dari Kecerdasan Logis-Matematis. *Jurnal Penelitian Pendidikan Matematika Dan Sains*, *4*(2), 61. https://doi.org/10.26740/jppms.v4n2.p61-71

Alodia, M. C. (2016). *Efektivitas Kartu Permainan Make A Match Untuk Melatihkan Keterampilan Berpikir Tingkat Tinggi Materi Pertumbuhan Dan Perkembangan Kelas Xii Sma*. *5*.

Andrian, Y., & Rusman, R. (2019). Implementasi pembelajaran abad 21 dalam kurikulum 2013. *Jurnal Penelitian Ilmu Pendidikan*, *12*(1), 14–23. https://doi.org/10.21831/jpipfip.v12i1.20116

Armelia, M. N., & Ismail, I. (2021). Pengaruh Self-Regulated Learning terhadap Kemampuan Berpikir Reflektif Matematis Siswa. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *5*(2), 1757–1768. https://doi.org/10.31004/cendekia.v5i2.687

Astalini, A., Kurniawan, D. A., & Putri, A. D. (2018). Identifikasi Sikap Implikasi Sosial dari IPA, Ketertarikan Menambah Waktu Belajar IPA, dan Ketertarikan Berkarir Dibidang IPA Siswa SMP Se-Kabupaten Muaro Jambi. *Jurnal Tarbiyah : Jurnal Ilmiah Kependidikan*, *7*(2). https://doi.org/10.18592/tarbiyah.v7i2.2142

Chen, S., Jamiatul Husnaini, S., & Chen, J.-J. (2020). Effects of games on students' emotions of learning science and achievement in chemistry. *International Journal of Science Education*, *42*(13), 2224–2245. https://doi.org/10.1080/09500693.2020.1817607

Dewi, V. A. K., & Erman. (2021). *Model-Model Praktik Berpikir Reflektif Dalam Pembelajaran Ipa: Sebuah Studi Perbandingan*. *9*.

Diana, H. (2022). Game Based Learning Berbantuan Media Board Game Klaster untuk Meningkatkan Kemampuan Literasi Siswa. *Jurnal Didaktika Pendidikan Dasar*, *6*(2), 661–676. https://doi.org/10.26811/didaktika.v6i2.622

Fitriana, I., Kosasih, U., Saputra, S., & Wahid, A. (2022). Analisis Terhadap Kemampuan Berpikir Kritis Peserta Didik Pada Pembelajaran Trigonometri Melalui Papan Permainan Evaluasi. *Jurnal Dimensi Matematika*, *5*(2), 422–434.

Fitriati, F., Novita, R., & Johar, R. (2020). Exploring The Usefulness Of Rich Mathematical Tasks To Enhance Students' Reflective Thinking. *Jurnal Cakrawala Pendidikan*, *39*(2), 346–358. https://doi.org/10.21831/cp.v39i2.24047

Fuady, A. (2017). Berfikir Reflektif Dalam Pembelajaran Matematika. *JIPMat*, *1*(2). https://doi.org/10.26877/jipmat.v1i2.1236

Kurniasari, I., & Fauziah, H. N. (2022). Model Pembelajaran Creative Problem Solving (CPS) Berbasis Socioscientific untuk Meningkatkan Kemampuan Berpikir Reflektif Peserta Didik. *Jurnal Tadris IPA Indonesia*, *2*(3), 272–282. https://doi.org/10.21154/jtii.v2i3.919

Mahyuddin, N., Yaswinda, Y., Sofya, R., & Putri, V. M. (2022). *Innovation and Implementation of Board game Media to Develop Aspects of Early Childhood Development:* 6th International Conference of Early Childhood Education (ICECE-6 2021), Padang, Indonesia. https://doi.org/10.2991/assehr.k.220602.041

Mashuri, S. (2019). *Media Pembelajaran Matematika* (1st ed.). Penerbit Deepublish.

Ningrum, A. A., & Fauziah, H. N. (2021). Analisis Kemampuan Berfikir Reflektif dalam Menyelesaikan Permasalahan Berbasis Isu Sosial Ilmiah Ditinjau dari Perbedaan Gender. *Jurnal Tadris IPA Indonesia*, *1*(2), 87–98. https://doi.org/10.21154/jtii.v1i2.158

Prambudi, E. Y., & Yunianta, T. N. H. (2020). Pengembangan Media Bus Race Algebra Pada Materi Bentuk Aljabar Untuk Siswa Kelas VII SMP. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *4*(1), 8–22. https://doi.org/10.31004/cendekia.v4i1.150

Putri, R. M., & Silalahi, V. (2019). The Influence Of Health Education On The Selection Of Healthy Snacks For School. *Jurnal Keperawatan*, *10*(1), 64–72. https://doi.org/10.22219/jk.v10i1.6372

Rodliyah, I., Saraswati, S., & Sa'adah, N. (2018). Implementasi Model Experiential Learning Pada Materi Kelipatan Persekutuan Terkecil dan Faktor Persekutuan Terbesar Kelas IV. *Jurnal Gantang*, *3*(2), 143–151. https://doi.org/10.31629/jg.v3i2.601

Safitri, D. E., & Rahayu, N. S. (2019). Pengaruh Edukasi Literasi Label Pangan Terhadap Pengetahuan Siswa Sekolah Menengah Pertama. *ARGIPA: Arsip Gizi dan Pangan*, *3*(2), 91–95.

Sarwono, J. (2015). *Rumus-Rumus Populer dalam SPSS 22 untuk Riset Skripsi* (1st ed.). Penerbit ANDI Yogyakarta.

Singh, P., Hoon, T. S., Md Nasir, A., Md Ramly, A., Md Rasid, S., & Meng, C. C. (2021). Card game as a pedagogical tool for numeracy skills development. *International Journal of Evaluation and Research in Education (IJERE)*, *10*(2), 693. https://doi.org/10.11591/ijere.v10i2.20722

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.

Sujarweni, V. W. (2012). *SPSS Untuk Paramedis* (1st ed.). Penerbit Gava Media.

Utomo, D. P., Junirestu, E., & Khusna, A. H. (2021). Students' reflective thinking based on their levels of emotional intelligence in mathematical problem-solving. *Beta: Jurnal Tadris Matematika, 14*(1), 69–84. https://doi.org/10.20414/betajtm.v14i1.399

Widiyanto, J., & Yunianta, T. N. H. (2021). Pengembangan Board Game TITUNGAN untuk Melatih Kemampuan Berpikir Kreatif Matematis Siswa. *Mosharafa: Jurnal Pendidikan Matematika, 10* (3), 425–436. https://doi.org/10.31980/mosharafa.v10i3.997

Wrzesien, M., & Alcañiz Raya, M. (2010). Learning in serious virtual worlds: Evaluation of learning effectiveness and appeal to students in the E-Junior project. *Computers & Education, 55*(1), 178–187. https://doi.org/10.1016/j.compedu.2010.01.003

Yulianti, A. (2016). *Keefektifan Kartu Permainan Who Am I Untuk Melatihkan Keterampilan Berpikir Tingkat Tinggi Peserta Didik Pada Submateri Struktur Dan Fungsi Organel Sel*. *5*.