# The Influence of Ethnomathematics-Assisted Congklak Games on Mathematical Critical Thinking Ability on the Material of Number Counting Operations in Grade II Elementary School

Ratu Asmaarobiyah, Aprilia Maharani

Education in Primary and Elementary Childhood, Indonesia University of Education, Serang, Indonesia

·ratuarh@upi.edu

## Abstract

The ability to think critically mathematically is a very important thing needed in solving various problems, especially in the field of mathematics. Ethnomathematics-assisted Congklak games can be a learning medium used in improving mathematical critical thinking skills. Ethnomathematics congklak is a traditional game that can teach mathematical facts, skills, concepts, and principles. This study aims to determine whether there is an influence of the integration of ethnomathematics-assisted congklak games on students' mathematical critical thinking skills on number counting operations material in grade II elementary school. The sample of this study was class II SDN Cipanas. The research methods used are quantitative with experimental techniques, quasi-experimental design, and non-equivalent form control group design which is analyzed using the help of SPSS 29 for Windows. The method of data collection is a test in the form of description and documentation. The results showed that the application of ethnomathematics-assisted congklak game media increased much better than conventional learning on students' mathematical critical thinking skills on number calculation operation material. This can be seen from the average score of the initial test of the experimental class which is 48.70 and the control class which is 46.52. While the average score of the final test of the experimental class was 81.77 and the control class was 52.08. And comparison using an independent t-test test on both class samples, obtained an average value of the initial test of 0.331 > 0.05 (no significant difference) and an average value of the final test 0.001 < 0.05 (there was a significant difference). As well as the results of the N-Gain comparison, the average in the experimental class was 0.6636 medium category and 66.3669% of the category was quite effective, while in the control class it was 0.0989 low category and 9.8901% of the ineffective category. The abstract should be written in one paragraph without any reference or citation, and footnote; all specialized acronym should be explained.

**Keywords:** Ethnomathematics-assisted Congklak games, mathematical critical thinking, number counting operations.

## A. INTRODUCTION

Education and culture are something that is very inherent in everyday life, because culture is a habit that prevails, is inherited and owned in social life, and education is a basic part of a human need to develop in social life. Culture is a principal value and idea of mind that is believed by some people in the life of a particular environment. Culture is including things that contain the culture of society. Related to this, cultural review can be seen from three aspects, namely first, universal culture is related to universal values that develop and apply in line with the development of social life and science and technology. Second, national culture is the values that develop in society and apply nationally. Third, local

culture that exists and continues to develop in community life in the local area. (Putri, 2017:21).

Indonesia is a country that has a variety of heterogeneous cultures, including cultures, namely tribes, clothing, traditional houses, weapons, languages, and traditional games. However, due to the rapid advancement of technology, it can cause the culture in Indonesia to disappear slowly if it is not preserved, especially traditional games that are increasingly disappearing in the lives of children today. It can be seen in the results of tutoring of one of the schools, namely at SDN Cipanas, showing that there are still many students who are less able to solve math problems, including learning related to daily life, because students have not been able to understand the concepts of mathematics learning, especially in terms of counting, this is because of the influencing factor, namely the teacher has not fully connected mathematics learning with everyday life. So, researchers try to find solutions to solve these problems and can teach mathematics learning and then connect with activities of daily life. Because according to researchers, a bridge is needed in learning mathematics that can connect with culture and everyday life, namely ethnomathematics.

Etymologically, ethnomathematics is a method or step, and learning techniques to understand, work, and solve problems in various environments, including natural, social, and cultural environments. One that can link culture with mathematics learning is ethnomathematics. (Wahyuni, Aji, Tias & Sani, 2013). So, it can be interpreted that ethnomathematics is the learning of mathematics in culture. Mathematics in ethnomathematics learning is one of the works of a culture produced by humans in life, so mathematics has social values that are tied to local culture. There are still so many cultures that can be utilized, including being used as material in learning, especially those related to ethnomathematics.

Mathematics is one of the subjects used as a benchmark in passing students' national examinations and is a compulsory subject. Therefore, better mathematics has been introduced early to children as an easy and fun learning. There are still many students who rely on modern calculating tools such as calculators to solve math problems and when students find it difficult and bored, they switch to playing games on mobile phones. So, researchers provide solutions to these problems, by choosing traditional games that can be fun and contain cultural values, of course, can train skills in counting.

In addition, several studies show that traditional games have an important position in mathematics learning activities. Traditional games are one of the cultures left by the previous community whose existence must be maintained and preserved because they contain the values of local cultural wisdom. (Mulyani, 2016). Traditional games are activities that are carried out freely to play that can make players feel happy with the rules in the game that have existed and developed since ancient times. In addition, traditional games have many benefits in children's growth and development and discipline, but many societies forget the existence of traditional games. Based on this, it can be concluded that traditional games have various benefits for those who play them, not only in children's self-development but have positive values for children.

Imswatama & Lukman (2018) in their research said that the use of ethnomathematics-based teaching materials is effectively used to increase student activity, solving skills, and critical thinking. Ramadhani (2018) also said that learning tools based on local wisdom are effectively used in learning. Based on this description, it is known that ethnomathematics has an important role both in helping students understand the material,

as well as helping students know and love their own culture, and can even be integrated in the use of teaching materials.

Thinking in the field of mathematics was proposed by Sumarmo (2008:3), as carrying out mathematical activities or processes (doing math) or mathematical tasks (mathematical tasks). Judging from the depth or complexity of the mathematical activities involved, mathematical thinking can be classified in low-order mathematical thinking (low order mathematical tinking) and high-order mathematical thinking (Sumarmo, 2008: 3). Low-level mathematical thinking includes: low-level understanding, such as recognizing and memorizing formulas and using them in routine/algorithmic calculations (understanding: mechanical, computational, instrumental, knowing how to). High-level mathematical thinking includes: high-level understanding (understanding: rational, relational, functional, knowing), mathematical critical thinking, mathematically creative and intuitive.

Mathematical critical thinking, which is the ability and disposition to engage prior knowledge, mathematical reasoning, and cognitive strategies to generalize, prove, or evaluate lesser-known mathematical situations in a reflective way (Glazer, 2001:13). A similar opinion was also expressed by Krulik and Rudnick, namely that what includes critical thinking in mathematics includes activities or processes of questioning, testing, connecting, evaluating every aspect that exists in a particular problem or situation (Fachrurazi, 2011:81).

Critical thinking and mathematics are inseparable. Critical thinking in understanding mathematical material through several processes needs to be developed in mathematics learning. One of the characteristics of someone who thinks critically is that they will be easily sensitive to certain information or circumstances. (Subandar, 2007: 5). Thus, developing mathematical critical thinking skills is closely related to cultivating students' sensitivity in collecting information and applying it to the situation. To stimulate this, what can be done is to expose students to certain circumstances so that students are able to construct their own thoughts based on these circumstances. (Shanti, W. N, Sholihah, D. A, Martyanti, A, 2017: 8). Krulik and Rudnick also state that critical thinking can grow if in learning there are problems as triggers and accompanied by several questions, such as "How to solve the problem in another way?", asking questions "What if...?", "What went wrong?", and "What would you do?". (Subandar, 2007: 8-9).

According to Facione (2013:5) there are six main critical thinking indicators involved in the critical thinking process, namely: 1) Interpretation, namely a person's ability to understand and express the meaning of a situation, data, judgments, rules, procedures, or criteria that vary. 2) Analysis, which is a person's ability to clarify conclusions based on the relationship between information and concepts, with questions that are in the problem. 3) Evaluation, which is the ability of a person to assess the credibility of a statement or other representation of one's opinion or judge a conclusion based on the relationship between information and concepts, with questions that exist in a problem. 4) Inference, which is the ability of a person to identify the elements needed in making rational conclusions, by considering information relevant to a problem and its consequences based on existing data. 5) Explanation, which is the ability of a person to express one's reasoning when giving reasons for justification from evidence, concepts, methodologies, and logical criteria based on existing information or data, where this reasoning is presented in the form of arguments. 6) Self-regulation, namely the ability of a person to have awareness to examine self-cognitive activities, the elements used in these

activities, and their results, using analytical and evaluation skills, in order to confirm, validate, and correct the results of reasoning that has been done before.

The following indicators of mathematical critical thinking aspects according to Normaya (2015:95) will be adapted by researchers, namely:

1. Interpretation

   Sub-indicator: Understand the problem shown by writing known or asked the question correctly.

2. Analysis

   Sub-indicator: Identifies the relationships between statements, questions, and concepts given in the problem demonstrated by making a precise mathematical model and giving appropriate explanations.

3. Evaluation

   Sub indicators: Using the right strategy in solving problems, complete and correct in doing calculations.

4. Inference

   Sub indicators: Make conclusions correctly.

In this study, mathematical critical thinking skills refer to critical thinking indicators according to Facione adapted by Normaya, namely Interpretation, Analysis, Evaluation, and Inference. The other two indicators, namely Explanation and Regulation, were not used in this study because according to Facione (2013: 6) these four indicators already meet the ability to think critically, while for the Explanation and Self-Regulation indicators are only owned by strong critical thinkers.

The material on number counting operations can be said to be less interesting for students. This is because student activities in following the process of teaching and learning activities are still at the level of recording, listening and paying attention to teacher explanations which are carried out by means of lecture methods and only using whiteboard media.

The needs that need to be developed in mathematics learning, namely in the form of learning media for grade II students. In learning mathematics subjects and basic competencies, adequate learning media is needed to be able to improve students' mathematical critical thinking skills concretely and contain elements of traditional cultural games so that they can be relevant to the age of students who are still in the category who are still happy to play and can preserve the existing culture.

Based on the explanation above, it is concluded that the ability to think critically mathematically is a very important thing needed in solving various problems, especially in the field of mathematics. Ethnomathematics-assisted congklak games can be an alternative learning media used in improving students' mathematical critical thinking skills. Conngklak ethnomathematics is a traditional game that can teach mathematical facts, skills, concepts, and principles, especially in number counting operations material in grade II elementary school.

## B. METHODS

This type of research is quantitative. The research method used is an experimental method. According to Sugiyono (2013, p. 107) experimental research can be interpreted as a research method used to look for the effect of certain treatments on others under controlled conditions. The form of experimental method used in this study is quasi

experimental design. Sugiyono (2013, p. 114) suggests that this design has a control group, but cannot fully function to control outside variables that affect the conduct of experiments. However, this design is better than pre-experimental design. The form of quasi-experimental design used in this study is non-equivalent control group design.

In this study there were two research subjects, namely the experimental group and the control group. The experimental group with mathematics learning used ethnomathematics-assisted congklak game learning media on number calculation operation material. While the control group used conventional learning methods. The data collection technique is by a test in the form of a description, with an initial test (pretest) and a final test (postest) with the same questions. This study aims to determine the effect of treatment between groups given ethnomathematics-assisted congklak game learning media with those given conventional teaching treatment on number counting operation material.

The procedure in this study goes through the following steps:

In the preparation stage by determining the place and schedule of research, determining the population and sample, preparing learning plans and preparing data collection tools.

At the implementation stage by validating the research instrument questions to the expert team then calculating the validation value of the test content, holding pretests and holding learning in two classes with the same material and time, it's just that the experimental class was given learning treatment using ethnomathematics-assisted congklak game learning media on the number counting operation material while the control was given conventional learning treatment.

At the final stage by collecting rough data from the implementation process, organizing and describing data according to predetermined variables, conducting data analysis with relevant statistical techniques and making research reports and drawing conclusions.

This research was conducted at SDN Cipanas, Jl. Raya Sepang, Sepang, Taktakan District, Serang City, Banten Province. The research period will be conducted in January – February 8, 2023. The population in this study was grade II students of Serang City Elementary School and the sample was 2 classes, namely grade II A and II B SD Negeri Cipanas, Taktakan District, Serang City, Banten Province. The sample consisted of 2 classes, 1 experimental class that was given treatment using ethnomathematics-assisted congklak game learning media and 1 control class that used conventional learning on number calculation operation material. The number of students in class II A is 27 students and II B is 25 students. The independent variable in this study is an ethnomathematics-assisted congklak game on the material of number calculation operations. And the dependent variable is the mathematical critical thinking ability of grade II students of SD Negeri Cipanas which will be obtained after the learning process.

To obtain data on students' mathematical critical thinking skills, scoring was carried out on students' answers to each question item. The scoring criteria used were modified rubric scores from Facione (1994) and Ismaimuza (2013).

**Table 1.** Guidelines for Mathematical Critical Thinking Skills

| Indicators | Information | Score |
|---|---|---|
| Interpretation | Did not write the known of the asked. | 0 |
| | Write the known and the inappropriately asked. | 1 |
| | Write down only what is known correctly or only asked correctly. | 2 |

| Indicators | Information | Score |
|---|---|---|
|  | Write what is known from the problem correctly but incompletely. | 3 |
|  | Write what is known and asked from the questions accurately and completely. | 4 |
| Analysis | Do not make mathematical models from the given problems. | 0 |
|  | Make a mathematical model of a given but not precise problem. | 1 |
|  | Make a mathematical model of the given problem correctly without giving explanations. | 2 |
|  | Make a mathematical model of the given problem correctly but there is an error in the explanation. | 3 |
|  | Make a mathematical model of the given problem correctly and give a correct and complete explanation. | 4 |
| Evaluation | Not using strategies in solving problems. | 0 |
|  | Using inappropriate and incomplete strategies in solving problems. | 1 |
|  | Using the right strategy in solving the problem, but incomplete or using an inappropriate but complete strategy in solving the problem. | 2 |
|  | Using the right strategy in solving complete problems but making mistakes in calculations or explanations. | 3 |
|  | Using the right strategy in solving complete and correct problems in doing calculations / explanations. | 4 |
| Inference | Did not make any conclusions. | 0 |
|  | Making conclusions that are not appropriate and do not fit the context of the problem. | 1 |
|  | Making inappropriate conclusions even if adjusted to the context of the problem. | 2 |
|  | Make conclusions appropriately according to context but are incomplete. | 3 |
|  | Make conclusions appropriately according to the context of the problem and complete. | 4 |

The method of calculating the percentage value is as follows:

| Percentage Value : | Earned score | X 100% |
|---|---|---|
|  | Maximum score |  |

The percentage value of mathematical critical thinking skills obtained from calculations is then categorized according to the table, namely the following (Setyowati, 2011).

**Table 2.** Percentage of Mathematical Critical Thinking Ability

| Interpretation (%) | Category |
|---|---|
| $81,25 < X \leq 100$ | Very High |
| $71,5 < X \leq 81,24$ | High |
| $62,5 < X \leq 71,4$ | Medium |
| $43,75 < X \leq 62,4$ | Low |
| $0 < X \leq 43,74$ | Very Low |

To see the validity of the content of an instrument is done by asking for a consideration (Judgment) of experts who know about the substance of the content of the instrument material being tested. Statistical data analysis techniques using Statistical Software Passage For The Social Science (SPSS) 29.0 for windows. Research criteria are the level of agreement between observers, that the level of agreement of 0.70 to 0.80 is sufficient and research instruments can be used in research. Test the instruments in this study with validity tests, reliability tests, differentiating power tests and difficulty tests. And data processing analysis of mathematical critical thinking ability test results with normality test, variance homogeneity test, average similarity test (independent sample t-test) and normalized gain score (n-gain) test.

## C.  RESULT AND DISCUSSION
**Result**

This research was carried out in grade II SD Negeri Cipanas. Class II A experimental class and class II B control class.

**Table 3.** Research Sample Data

| Class | Gender | SUM |
|---|---|---|
| II A | Male | 9 people |
| | Female | 18 people |
| | **SUM** | **27 people** |
| II B | Male | 14 people |
| | Female | 11 people |
| | **SUM** | **25 people** |

The research began with instrument validation by experts and concluded that based on the results of validation from validators, learning media trials, research instruments and statistical analysis showed that: 1) Learning media (Ethnomathematics-Assisted Congklak Game) obtained a total score of 85 with an average of 5, including the very good category and worthy of use without revision. 2) The Learning Implementation Plan (RPP) obtained a score of 98 with an average of 4.9, including the excellent category and worthy of use without revision. 3.) Student Worksheet (LKPD) obtained a total score of 44 with an average of 4.8, including the category of excellent and worthy of use without revision.

Analysis of the research instrument with the help of SPSS 29.0 for windows is to test the validity of 10 description questions and get a conclusion that the 10 questions are said to be valid. Reliability tests conclude that reliability and problems can be used to measure students' mathematical critical thinking skills. The discriminating power test concludes that the question items have good differentiation. And the difficulty test concludes that the question item has a good level of difficulty.

**Table 4.** Test result data
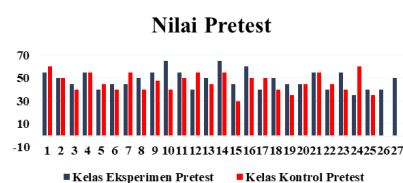
| PRETEST | Lowest | Highest |
|---|---|---|
| Eksperiment | 35 | 65 |
| Control | 30 | 60 |

| POSTEST | | |
|---|---|---|
| | Lowest | Highest |
| Eksperiment | 62 | 100 |
| Control | 33 | 70 |

**Nilai Postest**



■ Kelas Eksperimen Postest  ■ Kelas Kontrol Postest
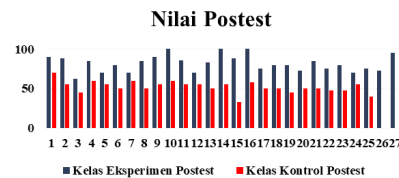
Analysis of data processing test results of mathematical critical thinking skills, namely:

1. The normality test results are known that the significance value (Sig.) for all Kolmogorov-Smirnov test data in the experimental class and control class, is >0.05. In the experimental class, the pretest data obtained a Sig. value of 0.069 and the postest obtained a Sig. value of 0.20. While in the control class, the pretest data obtained a Sig. value of 0.154 and the postest obtained a Sig. value of 0.166. So as to conclude that the entire distribution of research data is normally distributed.

2. The results of the variance homogeneity test, in the pretest it is known that the significance value (Sig.) Based on Mean, which is 0.832, the significance value (Sig.) Based on Median, which is 0.852, the significance value (Sig.) Based on Median and with adjusted df, which is 0.852, and the significance value (Sig.) Based on trimmed mean, which is 0.834. Thus, the significance value (Sig.) is greater than the significance level ($\alpha$) = 0.05. Thus, it can be concluded that the two variances of all pretest data are homogeneous (equal) and the result H0 is acceptable. And in the postest it is known that the significance value (Sig.) Based on Mean, which is 0.056, the significance value (Sig.) Based on Median, which is 0.075, the significance value (Sig.) Based on Median and with adjusted df, which is 0.075, and the significance value (Sig.) Based on Median and with adjusted df, which is 0.075, and significance value (Sig.) Based on trimmed mean, which is 0.056. Thus, the significance value (Sig.) is greater than the significance level ($\alpha$) = 0.05. Thus, it can be concluded that the two

variances of all postest data are homogeneous (equal) and the results are acceptable.

Test the homogeneity of variance on the pretest and postest of both variances, it can be known that the significance value (Sig.) >0.05. Thus, it can be concluded that both the variance of pretest and postest data from the experimental class and the control class are homogeneous (the same). Thus, one of the conditions (not absolute) in the independent t-test has been met.

3. The result of the average similarity (independent sample t-test), in the pretest it is known that the significance value (Two Sided p) in Equal variances assumed, which is 0.331. If referring to the basis of decision-making criteria, then the significance value (Two Sided p) 0.331 > 0.05, which means that H0 is accepted and Hα is rejected. So it can be concluded that there is no significant average difference in the initial test (pretest) between the experimental class and the control class on students' mathematical critical thinking skills. And on the postest it is known that the significance value (Two Sided p) in Equal variances assumed, which is 0.001. If referring to the basis of decision-making criteria, then the significance value (Two Sided p) 0.001 < 0.05, which means that H0 is rejected and Hα is accepted. So it can be concluded that there is no significant average difference in the initial test (pretest) between the experimental class and the control class on students' mathematical critical thinking skills. And on the postest it is known that the significance value (Two Sided p) in Equal variances assumed, which is 0.001. If referring to the basis of decision-making criteria, then the significance value (Two Sided p) 0.001 < 0.05, which means that H0 is rejected and Hα is accepted. So it can be concluded that there is a significant average difference in the final test (postest) between the experimental class using ethnomathematics-assisted congklak games and the control class using a conventional method approach to students' mathematical critical thinking skills on number counting operation material.

4. The results of the normalized gain score (n-gain) test found that the average score in the experimental class (ethnomathematics-assisted congklak game) obtained N-Gain Percent, which is 0.6636 or 66.3669%. With a minimum N-Gain percent value, which is 30.91% and a maximum, which is 100%. If referring to the basis of the division of the Gain score and the basis of the interpretation criteria for the effectiveness of N-Gain. So it can be concluded, that in the experimental class using ethnomathematics-assisted congklak games including medium gain scores with quite effective categories. While the average value in the control class (conventional method approach) obtained N-Gain Percent, which is 0.0989 or 9.8901%. With a minimum N-Gain percent value, which is -12.5% and a maximum, which is 33.33%. If referring to the basis of the division of the Gain score and the basis of the interpretation criteria for the effectiveness of N-Gain. So it can be concluded, that in the control class using a conventional method approach including a low gain score with an ineffective category.

Thus, it can be concluded that the integration of learning media in the form of ethnomathematics-assisted congklak games is considered quite effective in providing a significant improvement to students' mathematical critical thinking skills on number counting operation material in grade II A students of SD Negeri Cipanas for the 2022/2023 academic year. Meanwhile, the conventional method approach is considered ineffective in providing a significant improvement in students' mathematical critical thinking skills on number counting operations material in grade II B students of SD Negeri Cipanas for the 2022/2023 academic year.

**Discussion**

The process of learning activities using ethnomathematics-assisted congklak game media is carried out in experimental classes.



**Figure 1.** Congklak Game Media

In this activity, the teacher acts as a facilitator, which means that the teacher plays a role in directing, facilitating the process of learning activities in order to achieve learning objectives. In the implementation of learning, teachers use a realistic learning approach or Realistic Mathematic Education (RME), cooperative learning strategies, Student Centered Learning (SCL) models, example non example techniques and assignment methods, observations, questions and answers, lectures and demonstrations. The teacher explained about numerating numbers up to 500, adding and subtracting numbers up to 500, and multiplication and division up to two numbers.



**Figure 2.** Teacher Demonstrates Congklak Media

Teachers assess learning outcomes by providing Student Assessment Sheets (LKPD) to students. This is done to determine the increase in students' knowledge of mathematical critical thinking skills regarding the material of number counting operations.

While the process of learning activities with a conventional method approach is carried out in the control class. In this activity, the teacher acts as the main information center who is in full control of learning. In the implementation of learning, teachers use scientific learning approaches, expository learning strategies, Teacher Centered Learning (TCL) models, example non example techniques and assignment, observation, question and answer methods, and lectures.

The influence of ethnomathematics-assisted congklak games on students' mathematical critical thinking skills, namely as follows:

In the experimental class obtain:

| Test | Mean | Predicate | Category |
|------|------|-----------|----------|
| Pretest | 48,7037 | D | Low |
| Postest | 81,7778 | A | Very High |

In the control class obtain:

| Test | Mean | Predicate | Category |
|------|------|-----------|----------|
| Pretest | 46,52 | D | Low |
| Postest | 52,08 | D | Low |

**Table 5**. Comparison of Pretest and Postest Average

| Pretest | Classroom/Learning Experiment | Postest |
|---------|-------------------------------|---------|
| 0,331 > 0,05 | Experiment (Ethnomathematics-assisted congklak game) | 0,001 < 0,05 |
| | Control (Conventional method approach) | |

So it was concluded that there is a significant influence on learning with ethnomathematics-assisted congklak game media on the mathematical critical thinking skills of grade II A SD Negeri Cipanas students rather than learning with conventional method approaches in grade II B SD Negeri Cipanas students for the 2022/2023 academic year.

| Class | Category |
|-------|----------|
| Experiment (Ethnomathematics-assisted congklak game) | Moderate and Moderately Effective |
| Control (Conventional method approach) | Low and Ineffective |

Thus, it was concluded that the integration of learning media in the form of ethnomathematics-assisted congklak games was considered to have moderate quality and was quite effective in providing a significant improvement to students' mathematical critical thinking skills on number counting operation material in grade II A students of SD Negeri Cipanas for the 2022/2023 academic year. Meanwhile, learning with a conventional method approach is considered to have low quality and is not effective in providing a significant improvement in students' mathematical critical thinking skills on number

counting operations material in grade II B students of SD Negeri Cipanas for the 2022/2023 academic year.

## D. CONCLUSION

Based on the results of the comparison of data analysis of the average pretest and postest values and the results of the comparison of independent sample t-test tests on both samples, namely:

Learning using ethnomathematics-assisted congklak game media (experimental class) increased much better than learning using conventional method approaches (control class) to students' mathematical critical thinking skills on number counting operations material in grade II elementary school.

Based on the results of the comparison of the N-Gain test on both samples, namely:

The integration of learning media in the form of ethnomathematics-assisted congklak games is considered to have moderate quality and is quite effective in providing a significant improvement to students' mathematical critical thinking skills on number counting operations material in grade II elementary school.

Meanwhile, learning with conventional methods is considered to have low quality and is not effective in providing a significant improvement to students' mathematical critical thinking skills on number counting operations material in grade II elementary school.

## REFERENCES

Abdullah, In Hi. 2013. Berpikir Kritis Matematis. Delta-Pi: Jurnal Matematika dan Pendidikan Matematika. 2 (1), 67.

Febrina, Fira, dkk. (2022). Pengembangan Perangkat Pembelajaran Terintegrasi Etnomatematika Permainan Congklak Materi Operasi Hitung Pada Peserta Didik Kelas II SD/MI. JEMS (Jurnal Edukasi Matematika dan Sains). 10 (1), 162.

Ikhlas, Nabilah Nur, dkk. (2018). Pengembangan Media Pembelajaran Congklak Dilengkapi Kartu Soal Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa SMP. Seminar Nasional Pendidikan Fisika IV 2018: Universitas PGRI Madiun.

Karim, Normaya. (2015). Kemampuan Berpikir Kritis Siswa Dalam Pembelajaran Matematika Dengan Menggunakan Model Jucama Di Sekolah Menengah Pertama. Edu Mat: Jurnal Pendidikan Matematika. 3 (1), 95-96.

Putri, Risa. (2020). Eksplorasi Etnomatematika Pada Permainan Congklak Dan Kaitannya Dengan Pembelajaran Matematika. Skripsi, Jurusan Pendidikan Matematika dan Ilmu Pengetahuan Alam, FKIP: Universitas Jambi.

Rahmadhani, Efi. (2022). Ethnomathematics Dan Permainan Tradisional Dalam Pendidikan Matematika. Jurnal Pembelajaran Matematika Inovatif. 5 (1) ,82.

Seko, Wilfrida. (2020). Penerapan Media Pembelajaran Etnomatematika Gomo Tomo "Congklak" Untuk Materi Operasi Bilangan Bulat Pada Siswa Kelas VII SMPK

Alvarez Pada Tahun Pelajaran 2018/2019. Jurnal Pendidikan Matematika. Universitas Flores, 3 (1), 8.

Siregar, Nur Syarifah. (2014). Pengenalan Konsep Operasi Hitung Bilangan Melalui Permainan Congklak Dalam Pembelajaran Matematika. Jurnal al-Khawarizmi. 2 (2), 122.

Sugiyono. (2013). Metode Penelitian Pendidikan. Bandung : Alfabeta.

Yuntawati & Lalu Abdul Aziz. (2017). Pengembangan Media Congklak Pada Mata Pelajaran Matematika Materi Pokok Operasi Hitung Perkalian dan Pembagian Kelas III SDN 7 Pemenang Barat. Jurnal Ilmiah IKIP Mataram. 4 (1), 12.

Zaenuri, dkk. (2021). Etnomatematika Nusantara. Tasikmalaya: Perkumpulan Rumah Cemerlang Indonesia Anggota IKAPI Jawa Barat.