Effectiveness of Using the Congklak Game in Improving the Numeracy Skills of Grade 1 Elementary School/MI Students

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Abstract

One unique component that contributes to an individual's intellect is their capacity for calculation. The Congklak game is one of the most useful educational tools for helping primary school pupils improve their numeracy abilities. An ancient game that continues to rise in popularity in Indonesian society is congklak. This kind of research uses experimental methodologies and is quantitative in nature. Pre Experimental Designs is the design that was employed in this study. One Group Pretest-Posttest Design is the type of pre-experimental design that is employed. A significant value (p) of $0.000 < 0.05$ was found for the Paired Sample T-Test analysis, yielding a value of $t = -11.730$. This demonstrates that class I students at SDN 22 Bilah Hulu had a different average numeracy ability before and after receiving learning materials in the form of the classic game congklak. After receiving learning materials in the style of the classic Congklak game, students' average numeracy skill is higher than it was prior to receiving the conventional Congklak game learning materials. This study demonstrates the efficacy of the classic Congklak game learning resource in raising primary school students' numeracy proficiency.

Keyword: *Congklak Games, Mathematics, Ability to Count*

PRELIMINARY

Education in Indonesia is designed to develop skills in forming a dignified national character and civilization in order to develop students' potential. Education is a process of seeking knowledge in order to shape oneself to become a better person than before which is carried out continuously. With education, it can provide opportunities to compete in an increasingly advanced world, therefore there are various ways to improve the quality of existing education. Children must be educated from the womb until birth because the first education a child receives is primarily from his parents. It is not enough for children to get education from their parents, but children must also receive education from outside, for example elementary school education. (Verawati, 2020)

The elementary school period is a period of middle and late childhood development (ages 6 – 11 years) where children begin to master the skills of reading, writing and arithmetic (Widyastuti, 2020). The ability to calculate is a special factor that produces intelligence in individuals. According to Susanto, counting is the basis of several sciences used in every human activity, from addition, subtraction, division to multiplication. However, children's numeracy skills in Indonesia are still relatively low compared to other countries (Nataliya, 2015a). This is shown in the results of the 2012 Program for International Student Assessment, Indonesia was ranked 64th out of 65 countries participating in the mathematics and science ability test. Therefore, it is very important to improve numeracy skills, especially during elementary school.

To improve numeracy skills in elementary school children, it is necessary to pay attention to the stages of cognitive development so that the learning methods presented can make it easier for individuals in the learning process (Febrina, 2022). The stages of cognitive development proposed by Piaget, elementary school students enter the concrete operational stage (aged 7-11 years) where thought processes or mental tasks can be carried out (operational) as long as the object is still visible. So that children at elementary school level will find it easier

to complete operational tasks including addition, subtraction, division, sorting and reversal tasks if they use the help of learning media in the form of concrete objects that can attract their attention. (Nataliya, 2015a)

Research conducted by Maslahah stated that the game of snakes and ladders can improve children's cognitive abilities (Yanti, 2021). According to Diana (2012), the snakes and ladders game can improve numeracy skills for ADHD children as a mathematics learning tool to increase children's interest and motivation. This is in accordance with the opinion of Ainley, Hidi, and Berndorff that interest has a strong influence on cognitive and affective functions. In research conducted by Iswinarti (2017), traditional games such as engklek have therapeutic values including: (1) the value of early detection in children who have problems, (2) the value for good physical development, (3) the value for mental health good (4) problem solving value (5), social value.

One of the effective learning media to support the achievement of numeracy skills in elementary school students is the congklak game (Mastura, 2019). The congklak game is a traditional game that has grown and developed in Indonesian society to this day. However, its existence has gradually become extinct in the 4.0 era. Nowadays, students often choose gadgets as their game, even though the congklak game

has many benefits in sharpening students' intelligence (Sari, 2019).

Congklak games have developmental aspects in children, namely psychomotor (training fine motor skills), emotional (training patience and accuracy), cognitive (training the ability to analyze and formulate strategies), social (establishing social contact with playmates) and training the spirit of sportsmanship. (Musaropah, 2022). Apart from that, the congklak game has several benefits, namely training children's left brain to think, training strategies to defeat opponents, developing and forming the right brain, training children to work together and training children's emotions. According to Kurniati, the traditional game congklak is a game that focuses on counting skills (Nataliya, 2015a). Therefore, this game will be more interesting if it is applied as an active learning medium according to the cognitive development stage and developmental period of elementary school students in supporting their numeracy skills because it uses concrete objects (congklak seeds).

From the various explanations above, researchers are interested in using one of the traditional Indonesian games, namely the congklak game, as an effective learning medium to improve students' numeracy skills. Researcher interested in conducting research with the title: Effectiveness of Using Congklak Game

Learning Media in Improving the Numeracy Learning Ability of Class I SD/MI Students. The aim of this research is to determine the effectiveness of the congklak game in improving students' numeracy skills, especially in addition and subtraction material for Class I students at SD 22 Bilah Hulu.

Methods
Research design

This type of research is quantitative research with experimental methods. The design used in this research is pre-experimental (Pre Experimental Designs). The form of pre-experimental design used is One Group Pretest-Posttest Design. The experiment was carried out on one group without a comparison group. In this research, the test was carried out 2 times, namely before the experiment and after the experiment. Observations made before (O1) are called pretest, and observations made after the experiment (O2) are called posttest. For more details, this research design can be described as follows:

Tabel 1. One Group Pretest – Posttest Design

Pretest	Perlakuan	Posttest
O_1	X	O_2

Sumber : Sugiyono (2013)

Population and Sample

The population in this study were all Class I students of SDN 22 Bilah Hulu. Sampling in the research was carried out using Saturated Sampling. According to Sugiyono, saturated sampling is a sample selection technique if all members of the population are sampled (Sugiyono, 2013). In this study, the samples taken were all 28 students in class 1 of SDN 22 Bilah Hulu.

Research Variables and Instruments

This research examines 2 variables, namely the independent variable and the dependent variable. The independent variable in this research is the traditional game congklak and the dependent variable is numeracy ability. The traditional congklak game is a learning tool or means in the form of a traditional game which is played by filling the holes in the congklak board using grains that have been modified according to needs. The dependent variable in this research is numeracy ability. Numeracy ability is the ability to operate numbers or numbers, especially those related to addition and subtraction.

The measuring tool used in this research is a numeracy test in the form of number concept questions which will be tested on students before and after being given treatment. The questions created by researchers have been adapted to the learning material. The number of questions in the arithmetic test is 10 questions. The form of the test carried out is an essay test.

Each item tested has a weight of 2 for the correct answer, a weight of 1 for the wrong answer and a value of 0 for an empty answer.

Research procedure

The research procedure begins with the preparation stage, namely making observations at a predetermined location and compiling research instruments in the form of research modules and numeracy tests. Then the researcher gave arithmetic test questions to all grade 1 students at SDN 22 Bilah Hulu before giving treatment (pretest). After that, the researcher provided treatment in the form of learning media for the traditional congklak game. The researcher again gave arithmetic test questions (posttest) after the treatment on the sample had been completed. Next, the researcher analyzed the data from the pretest and posttest results.

The data analysis technique used is Paired Sample T-Test. The purpose of testing with the Paired Sample T-Test is to compare the average value of elementary school students' numeracy skills before and after being given learning media in the form of the Congklak game.

Research And Discussion

Researchers conducted a pre-test and post-test on research subjects to see the difference in the average numeracy ability of class I students at SDN 22 Bilah Hulu before

and after being given learning media in the form of the congklak game. The results of the pre-test and post-test scores can be seen in the following table

Tabel 2. Nilai hasil *pre-test* dan *post-test*

Subjek	Pre-test	Post-test	Subjek	Pre-test	Post-test
1.	55	75	15.	45	75
2.	60	85	16.	60	80
3.	45	75	17.	60	65
4.	50	80	18.	65	75
5.	65	80	19.	55	85
6.	55	70	20.	70	85
7.	65	80	21.	65	65
8.	55	75	22.	75	85
9.	60	80	23.	75	90
10.	45	75	24.	55	90
11.	55	85	25.	50	70
12.	45	85	26.	60	80
13.	60	70	27.	65	75
14.	60	75	28.	55	75

Researchers looked at the average difference in students' numeracy skills before and after being given the congklak game learning media using Paired Sample T - Test analysis. The following is a table of Paired Sample T – Test results.

Tabel 3. Tabel Paired Sample Statistic

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Preeks	57.68	28	8.442	1.595
	Poseks	78.21	28	6.696	1.265

Based on table 3, it shows that the use of the traditional congklak game learning media can improve student learning outcomes in numeracy material with an average value of 57.68 to an increase with an average of 78.21.

Tabel 4. Tabel Paired Sample Test

Paired Samples Test

					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	df	Sig. tailed
Pair 1	preeks – poseks	-20.536	9.264	1.751	-24.128	-16.944	-11.730	27	.000

Based on the Paired Sample T - Test analysis in the calculation table, the t value is -11.730 and the significance test shows the result (p) 0.000 < 0.05 with a significance level of 5%. This shows that there is a difference in the average numeracy ability of class I students at SDN 22 Bilah Hulu before and after being given the learning media of the traditional congklak game. The post-test average score was 78.21 higher than the pre-test average score of 57.68.

Based on the analysis results that have been presented, it can be concluded that the average numeracy ability of class I students at SDN 22 Bilah Hulu after being given the traditional congklak game learning media is higher than the average numeracy ability of class I students at SDN 22 Bilah Hulu before being given the traditional congklak learning media. . This shows that the traditional congklak game learning media is effective in improving elementary school students' numeracy skills.

The results of the analysis of the Paired Sample T - Test obtained a value of t = -11.730 with a significant value (p) of 0.000 < 0.05. This shows that there is a difference in the average numeracy ability of class I students at SDN 22 Bilah Hulu before and after being given learning media in the form of the traditional game congklak. The average student's numeracy ability after being given learning media in the form of the traditional congklak game is higher than the average ability of students before being given the learning media of the traditional congklak game.

When determining a game, it is necessary to pay attention to the stage of cognitive development and developmental period so that the learning method presented can make the learning process easier for children. The stages of cognitive development proposed by Piaget are sensory motor (0-2 years old), pre-operational (2-7 years old), concrete operational (7-11 years old), and formal operational (11-15 years old) (Febrina, 2022) . The researcher used concrete operational stages during the elementary school development period in his research because the research subjects were grade I elementary school students, aged 7 to 8 years. To adapt to these stages, researchers used the traditional congklak game as a learning medium, because by using the congklak game students can participate in learning actively, fun and according to the developmental stage of elementary school level children in supporting their ability to count using concrete objects. Apart from that, the traditional congklak game is a game that focuses on counting skills.

Congklak is a learning media that has an attention function. According to Levied and Lentz (in Shoimah, 2020) say that the attention function of learning media is where learning media can be used to attract students' attention to focus on learning activities. Apart from that, congklak also has a compensatory function where congklak can strengthen the concept of addition and subtraction for students who have weaknesses in understanding and remembering the content of the material (Sari, 2019). Apart from that, congklak also has a cognitive function where the learning objectives of understanding the concepts of

addition and subtraction can be achieved and easily accepted by students (Ritonga & Ramadhani, 2019).

Based on the results of research conducted by researchers, learning media in the form of the traditional congklak game is an effective medium for improving numeracy skills in the teaching and learning process of students at the elementary school level. In previous research, the use of dakon or congklak game media was able to improve student learning outcomes (Mandailina, 2018).

Congklak games have developmental aspects in children, namely psychomotor (training fine motor skills), emotional (training patience and accuracy), cognitive (training analytical skills and formulating strategies), social (establishing social contact with playmates) and training the spirit of sportsmanship. (Ritonga & Ramadhani, 2019). Apart from that, the congklak game has several benefits, namely training children's left brain to think, training strategies to defeat opponents, developing and forming the right brain, training children to work together and training children's emotions (Matulessy & Muhid, 2022).

This experimental research succeeded in showing the effectiveness of using the congklak game learning media to improve first grade elementary school students' numeracy skills, such as addition

and subtraction. This is shown by an increase in the average numeracy ability of elementary school students after being given the learning media of the traditional congklak game. Congklak seeds, which are concrete objects, can help students to solve counting problems so as to support children's ability to count according to their developmental stage (Rahmi, 2020).

In playing congklak, students are very enthusiastic and through congklak students' learning motivation increases. That description t is in accordance with what was conveyed by Supriyono (in Siregar, 2018) that the importance of using media in the learning process in the classroom, especially for elementary school students is due to the following reasons, including, elementary school students tend to still think concretely so that abstract subject matter needs to be visualized so that it becomes more real (Febrina, 2022). Furthermore, the use of media in the learning process can provide meaningful experiences for students because by using media students can directly witness things that are happening around them (Afriani, 2019).

The results of the research presented by the researcher are in line with the results of Li'anah and Sri's research where the traditional game dakon or congklak can be an effective medium for improving children's cognitive awareness in

recognizing the concept of numbers 1 to 20 in Kindergarten B children, this has been based on adjustments to the world of children who tend to be more interested in learning is packaged in a game (Nataliya, 2015b).

The research carried out was not free from several obstacles experienced such as limited space, noise, seating arrangements or student positions during treatment. So the average value of the post-test results obtained did not experience a maximum increase, namely 78.21 from the average pre-test value of 57.68. Apart from that, carrying out IQ tests classically or together results in less conducive implementation because the subjects often make noise and pay less attention to instructions. These obstacles should be taken into consideration by future researchers, so that difficulties can be avoided during the research.

Conclusion

Based on the research results, it can be concluded that there is a difference in the average numeracy ability of grade I elementary school students before and after being given learning media in the form of the traditional game congklak with a value of t = -11.730 and a significant value (p) = 0.000, namely the average numeracy ability of elementary school students after given the learning media for the traditional congklak game was higher than the average ability of

elementary school students before being given the learning media for the traditional congklak game. This research proves that the traditional congklak game learning media is effective in improving elementary school students' numeracy skills.

The implications of this research include that teachers are expected to be able to use the traditional congklak game learning media to improve elementary school students' numeracy skills. The elementary school period is a period of middle and late childhood development (ages 6-11 years) where children begin to master numeracy skills. To optimize numeracy skills, teachers need learning media that is appropriate to the child's developmental stage during elementary school, namely concrete operations (aged 7-11 years), one of which is the congklak game.

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