

EFFECT OF COGKLAK GAME METHOD TO STUDENT'S MATHEMATICS LEARNING OUTCOME AT STATE ELEMENTARY SCHOOL

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Abstract

This study aims to examine the effect of congklak game method on student learning outcomes and to determine student learning outcomes before and after the application of congklak game method in math subject. The method uses in this research is a quantitative field research. The research conducts using a true experimental design research with a one group pretest-posttest design model. The sample in this study is 15 students of class IV B. The results showed that, firstly, the results of hypothesis testing are obtained $t_o > t_{table}$ at the significance level of 5% or 0.05 and the significance level of 1% or 0.01, namely $1,76 < 37,31 > 2,14$ which means that there is a significant effect of congklak game method on student learning outcomes. Secondly, the average pre-test score of students is 30, and the average post-test score of students is 80. Based on these data, it can be concluded that learning using congklak game method can improve student learning outcomes in the math subject of lowest common multiple (LCM) and greatest common factor (GCF).

Keywords; Congklak Game Method, Learning Outcome, Mathematics

Abstrak

Penelitian ini bertujuan untuk meneliti pengaruh metode permainan congklak terhadap hasil belajar siswa dan untuk mengetahui hasil belajar siswa sebelum dan setelah penerapan metode permainan congklak pada mata pelajaran matematika. Metode yang digunakan dalam penelitian ini adalah jenis penelitian lapangan (field Research) yang bersifat kuantitatif. Adapun penelitian yang dilakukan menggunakan penelitian true eksperiment design dengan model one grup pretest-posttest design. Sampel pada penelitian ini yaitu 15 siswa kelas IV B. Hasil penelitian menunjukkan bahwa, pertama hasil uji hipotesis diperoleh $t_o > t_{tabel}$ pada taraf signifikansi 5% atau α 0.05 dan taraf signifikansi 1% atau α 0.01, yakni $1,76 < 37,31 > 2,14$ yang berarti bahwa ada pengaruh yang signifikan dari metode permainan congklak terhadap hasil belajar ssiwa. Kedua, rata-rata nilai pre-test siswa sebesar 30, dan rata-rata nilai post-test siswa sebesar 80. Berdasarkan data tersebut dapat disimpulkan bahwa pembelajaran dengan menggunakan metode permainan congklak dapat meningkatkan hasil belajar siswa pada mata pelajaran matematika pokok bahasan KPK dan FPB.

Kata Kunci; Metode Permainan Congklak, Hasil Belajar, Matematika

INTRODUCTION

In the learning process, the method becomes one of the things that an educator thinks about so that learning objectives are achieved optimally. One method which can be used is the game method or the playing method. In general, the play method is a tool in the learning process, which can be applied to stimulate thoughts, feelings, attention and abilities or learning skills so that it is able to encourage a learning process which is applied to achieve learning goals (Ramadhani et al,

2020). It is a common phenomenon when students have difficulty in receiving numeracy or math subject so that the teacher's role becomes the main thing in carrying out the learning process. A study by applying congklak game method to extraordinary elementary school children in learning to count turned out to provide convenience for mentally retarded students in understanding the concept of numbers (Pratiwi, 2015).

The game method is popularly known as the ice-breaker. Literally ice-breaker is "ice breaking". Extremely, the meaning of warming up in the learning process is solving the frozen mental or physical situation of students. The game is additionally intended to build a dynamic, enthusiastic, and enthusiastic learning atmosphere (Rusmana, 2010). The game method developed by J.P Dienes is the theoretical basis in the development of math subject (Degree, 2021). In Cookroff's view, math needs to be taught to students in which math is invariably used in all lines of life. All fields require mathematical skills, being a means of strong, concise, and clear communication. Furthermore, it can improve logical thinking skill, thoroughness and awareness and provide satisfaction in solving challenging problem (Alaris, 2013). Dakon or congklak is a folk game which has developed for quite a long time in the Malay area (Dekha, 2010). A fun learning process will provide a quality and meaningful level of learning success (Syofnidah, 2015).

Successful learning certainly cannot be separated from the role of the learning methods used, such as providing direct understanding to students that congklak playing method is able to provide insight into traditional playing culture. Playing congklak not only hones students in their numeracy skills but also provides competitive, social, and mutual respect (Prima Nataliya, 2015). According to Ahmad Susanto, student learning outcomes are abilities obtained by children after going through learning activities because learning is a process of someone trying to obtain a form of behavior change that is relatively permanent. Children who are successful in learning are those who succeed in achieving learning goals (Ahmad, 2015). Meanwhile, according to Nana Sudjana (2017), learning outcomes are a result of the learning process using measurement tools, namely in the form of tests which are arranged in a planned manner, both written tests and oral tests as well as action tests.

Math is a field of study which exists at all levels of education, from elementary school to higher education. In fact, math is taught in kindergarten informally. Based on the etymology of Elea Tinggih, the word math means "knowledge obtained by reasoning". This does not mean that other sciences are obtained not through reasoning, but in math, it emphasizes activities in the world of ratios (reasoning). whereas, in other sciences, more emphasis is placed on the results of observations or experiments in addition to reasoning. According to Ruseffendi ET, Math is formed as a result of human thinking related to ideas, processes, and reasoning (Ruseffendi, 20006). According to Johnson and Rising, math is a pattern of thinking, organizing pattern, logical proof in which math is a language which uses terms which are carefully, clearly, and accurately defined. its representation is symbolically and densely, more in the form of a language of symbols about ideas than about sounds.

Currently, there are still many students who complain of difficulty in concentrating while studying. In particular, math subject is considered by most students to be a difficult subject. Nevertheless, it cannot be denied that math is important for human life. The learning difficulties experienced by students are caused, among other things, by the teacher's teaching methods that seem rigid, resulting in students not fully understanding what they are learning. Students are not allowed to find mathematical experiences in everyday life. This raises the notion that math is just a boring thing and something scary. Sometimes, students also think that the teacher who teaches math is a scary teacher because it is not interesting in conveying the material.

In fact, math is one of the most useful human knowledge in everyday life. Almost every part of our life contains math so children need the right experience to be able to appreciate the fact that math is an important subject for their future. Therefore, a good math learning method must be able to attract student learning outcomes so that the knowledge conveyed can be more easily accepted.

Based on the results of research by Ni Nyoman Darminiasih, et al in 2014 with the title "Use of Traditional Game Playing Methods in an Effort to Improve Language and Social Emotional Skills of Children in Group B of Serbana Sari Kindergarten", the results of this study using the traditional game playing method can significantly improve the language and social emotional skills of children in group B of Sebana Sari Kindergarten Denpasar in the 2013/2014 academic year. Hayatinnopus and Indah Permatasari in 2019 with the title "Application of the Game Method in Improving Beginning Reading Skills in Class 1 of Elementary School", Likewise in research on the effect of the traditional game of Congklak on intelligence, mathematical logic and honest character, This study trains children's logical intelligence in mathematical numbers and behaves honestly in interacting while playing congklak (Desari, 2018).

Referring to some previous studies, it shows that the game method for student learning outcomes is better than student learning outcomes which does not use the game method for math subject at 23 State Elementary School. Therefore, the author is interested in using the same method to identify math learning outcomes in 23 Palembang State Elementary School because learning outcomes at the school are still relatively low (observation, 2020). This study is also to test whether there is an effect of congklak game method on the learning outcomes of math.

RESEARCH METHOD

This study uses an experimental method (Dani, 2015) with a true experimental design model). The research design used is the One Group Pretest-Posttest Design. The subjects of this study amounted to 15 people, namely Class IV students at 23 Palembang State Elementary School. The process is carried out 1 time in accordance with the Learning Implementation Plan (LIP) that has been prepared by the researcher. The data collection technique in this study is a test (pre-test and post-test) with 20 questions. Tests are given to students before and after the learning process with congklak game method to determine student learning outcomes. The data analysis technique in this study applies a comparative analysis technique using the "t" test formula on the value data obtained.

RESULT AND DISCUSSION

Researcher applies data collection methods in the form of tests to obtain data obtained from student scores, both pre-test and post-test in the learning process in math. The process is carried out in accordance with the Learning Implementation Plan (LIP) that has been prepared by the researcher. Firstly, the researcher gives a pre-test using the lecture method and continues with the application of congklak game method, then gives post-test questions. Researcher give tests in the form of multiple choice questions as many as 20 questions for pre-test and post-test before and after the learning process took place. To provide a score for the answers to each item, the researcher first made a weight score. The weight of the score is 5 / question or if all is correct then it obtains a score of 100.

Pre-test Learning Result or before the Application of congklak Game Method

Before learning with congklak game method, the researcher gave a pre-test or initial test with the aim of knowing the students' initial knowledge. Before the learning is carried out,

learning congklak game method is given pre-test questions. The results of the pre-test are as follows:

Table 1. Student's Learning Outcome on Pre-Test

No	X	F	Fx	X (X-Mx)	x ²		F.x ²
1	60	1	60	30	900		900
2	45	1	45	15	225		225
3	40	2	80	10	100		200
4	35	2	70	5	25		50
5	30	4	120	0	0		0
6	15	5	75	-15	225		1125
	215	N=15	450	45	1475		2500

Based on the table above, it can be concluded that before congklak game method is applied, the average class IV B math learning outcomes at 23 Palembang State Elementary School are 30 and the standard deviation is 12.92. There are no students who obtain grades which meet the minimum completeness criteria, and as many as 1 student (6.7%) whose score is low, and 14 students (93.3%), and very low. This pre-test value data shows that students' understanding of the material of lowest common multiple (LCM) and greatest common factor (GCF) is still very low. Therefore, the researcher applies congklak game method to find out whether there is an increase in learning outcomes after the application of the method.

Post-Test Learning Result or after the Application of congklak Game Method

From the results of the application of congklak game method, the students are more active and happy to participate in the learning process. This game method is carried out by, first, students are asked to evenly divide a number of dice (according to the two or three numbers sought for the smallest common multiple and the largest common factor) on the dokan/congklak. For example, to determine the least common multiple of 2 and 3, students must place multiples of 2 in the holes in the first row according to the number of dakon holes and multiples of 2, that is, 2, 4, 6, 8 and so on. After that, to determine the Corruption Eradication Committee 3, students put the dakon seeds in the second row holes according to the dakon hole numbers and multiples of 3, namely, 3, 6, 9, 12 and so on. From the rows of the first and second holes, students can determine the LCM by looking at two dakon seeds that are located in one column or are in the same dakon hole number, namely at number 6. So, the LCM of 2 and 3 is 6.

After the researcher applies congklak game method to the material of the lowest common multiple (LCM) and the greatest common factor (GCF), the researcher give a post-test to students to measure the level of student understanding or student learning outcomes from the application of the method. The post-test results are described in the following table:

Table 2. Student's Learning Outcome on Post-Test

No	Y	F	Fy	Y (Y-My)	y ²	F.y ²
1	95	1	95	15	225	225
2	90	2	180	10	100	200
3	85	2	170	5	25	50
4	80	3	240	0	0	0
5	75	5	375	-5	25	100
6	70	2	140	-10	100	200
	720	N= 15	1200	15	475	775

Based on the table above, it can be seen that after applying congklak game method, there is an increase in the math learning outcomes of Class IV B students at 23 Palembang State Elementary School which is quite significant with an average value of 80 and a standard deviation of 7.19. Students classify as very high (very good) with a score of 8 students (53.3%), and quite good as many as 7 students (46.7%). The results of this post-test are evidence that the application of congklak method is quite effective in increasing students' understanding of the material for the Lowest Common Multiple (LCM) and the Greatest Common Factor (GCF) is still very low.

Analysis of the Effect of congklak Game Method to Student's Learning Outcome

Furthermore, the researcher tests whether there is an effect of congklak game method on student learning outcomes with the "t" test. In this study, the researcher proposes a research hypothesis, namely, first H_0 = There is no positive effect of the application of congklak Game Method on the Math Learning Outcomes of students in Class IV at 23 Palembang state elementary school. Secondly, H_a = There is a positive effect of applying congklak game method to the math learning outcomes of students in Class IV at 23 Palembang state elementary school. In this case, the researcher tests the students' pre-test and post-test scores as shown in the following table:

Table 3. Student's Pre-Test and Post-Test Score

No	Student Name	X Pre-test	Y Post-test	D (y-x)	D ² (y-x) ²
1	Agista	30	75	45	2025
2	Syifa P.D	15	70	55	3025
3	Reynandra	15	80	65	4225
4	Qanita S.S	45	90	45	2025
5	Junata	40	85	45	2025
6	M. Grabriel A	30	75	45	2025
7	M. Kausar ALR	15	70	55	3025
8	M. Zaki F	15	75	60	3600
9	Syifa P.H	35	80	45	2025
10	Naura K	35	85	50	2025
11	M. Fadlan A.	30	80	50	2500
12	Zihan K	60	95	35	1225
13	Refa A.P	40	90	50	2500
14	Syahdelin P.Z	30	75	45	2025
15	Ahmad Maulana	15	75	60	3600
		450	1200	750	37.875

The value data above is used as data to perform the "t" test. As for df or $db = (N-1) = 15-1 = 14$ With a df of 14, the critical price t is obtained in the table, namely at a significant level of 5%: $t_t = 1.76$, while at a significant level of 1%: $t_t = 2,14$. Based on the calculation, obtained to $= 37.31$. Thus, it can be seen that t_o is greater than t_t , namely $1.76 < 37.31 > 2.14$. Thus, t_o is greater than t_t both at a significant level of 5% and a significant level of 1%. Extremely, the null hypothesis (H_0) proposed in advance is rejected, and H_a is accepted. Based on the results of the statistical test above, it can be concluded that congklak game method affects students' math learning outcomes, especially in the material of The Lowest Common Multiple (LCM) and the Greatest Common Factor (GCF).

CONCLUSION

The application of congklak game method is quite effective in making it easier for students to understand the material for the Lowest common multiple (KPK) and the greatest common factor (FPB). As the results of the study, this proves that there is an increase in student learning outcomes at 23 Palembang State Elementary School. The results of the pre-test (before the application of congklak game method) with an average value of 30 and a standard deviation of 12.92. Only 1 student (6.7%) has a low score, and 14 students (93.3%), which is classified as very low. Meanwhile, the results of the post-test (after the application of congklak game method), the students' average score is 80 and the standard deviation was 7.19. The grades of students classified as very high (very good) are 8 students (53.3%), and classified as quite good as many as 7 students (46.7%). Based on the "t" test that has been carried out it also proves that congklak game method has an effect on student learning outcomes. Thus, teachers can apply congklak game method as one of the learning methods in math learning, especially in the material of the Lowest Common Multiple (LCM) and the Greatest Common Factor (GCF).

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