The Effectiveness of Lore Traditional Games Towards The Ability to Recognize The Concept of Numbers on Early Childhood

Received: 01-02-2021 ; Revised: 29-10-2021 ; Accepted: 17-12-2021

Jhoni Warmansyah*)

Institut Agama Islam Negeri Batusangkar,
Sumatera Barat, Indonesia

E-mail:

jhoniwarmansyah@iainbatusangkar.ac.id

Zulhendri

Institut Agama Islam Negeri Batusangkar,
Sumatera Barat, Indonesia

E-mail: zulhendri@iainbatusangkar.ac.id

Amalina

Universitas Islam Negeri Imam Bonjol
Padang, Sumatera Barat, Indonesia

E-mail: amalina@uinib.ac.id

*) Corresponding Author

Abstract: This study aims at finding out the effectiveness of traditional *Lore* games on the ability to recognize the concept of numbers in kindergarten. This research used a quantitative approach implemented in the form of the quasi-experimental method with a pretest-posttest design. The population of this study is all early childhood students of group B in South Pariaman District, Pariaman City. Sample withdrawal technique using simple random sampling. Data collection techniques use a test of the ability to recognize the concept of numbers that self-designed, refer to aspects and indicators. Hypothetical testing using data analysis techniques is a paired t-test by looking at each difference from the average score comparison. The result shows that traditional *Lore* games are effective in developing the ability to recognize the concept of numbers in early childhood. Therefore, the use of traditional games can be a strategy for teachers to teach math, particularly about the concept of numbers.

Abstrak: Tujuan dari penelitian ini untuk mengetahui keefektifan permainan tradisional *Lore* dalam mengembangkan kemampuan mengenal konsep bilangan di Taman Kanak-Kanak. Penelitian ini menggunakan pendekatan kuantitatif yang diimplementasikan dalam bentuk metode eksperimen semu dengan rancangan pretest-posttest. Populasi penelitian ini adalah seluruh peserta didik usia dini kelompok B di Kecamatan Pariaman Selatan, Kota Pariaman. Teknik penarikan sampel menggunakan simple random sampling. Teknik pengumpulan data menggunakan tes kemampuan mengenal konsep bilangan yang dirancang sendiri, mengacu pada aspek dan indikator. Pengujian hipotesis dengan menggunakan teknik analisis data yaitu uji t-test berpasangan dengan melihat masing-masing perbedaan dari perbandingan skor rata-rata. Hasil penelitian menunjukkan bahwa permainan tradisional *lore* efektif dalam mengembangkan kemampuan mengenal konsep bilangan anak usia dini. Penggunaan permainan tradisional dapat menjadi strategi bagi guru dalam pembelajaran matematika di taman kanak-kanak terutama dalam pembelajaran konsep bilangan.

Keywords: The Concept of Numbers, Lore Traditional Games, Early Childhood

INTRODUCTION

The early childhood period known as the golden age is the first laying ground in developing various aspects of child development. Therefore, in achieving the development that optimal required proper handling through the provision of stimulation from the surrounding environment (Arianti, 2016). Aspects of development listed in the 2013 curriculum for learning in kindergarten are cognitive development (Rahelly, 2018).

In cognitive development, the basic competencies that will be achieved are children are able to recognize simple concepts, solve simple problems in daily life, while one of the learning outcomes is that children can recognize the concept of numbers (Rozana et al., 2020). Previous research has found a link between children's ability to recognize the concept of numbers and other aspects of development and related to the results of achievement at the next level of education (McGuire et al., 2012; Östergren & Träff, 2013; Sarnecka & Lee, 2009; Van Herwegen et al., 2018; Yilmaz, 2017).

The results of a study showed that there is a positive relationship of number recognition in kindergarten learning with the addition of children's vocabulary (receptive and expressive) (Sarnecka & Lee, 2009) and has a good impact on the development of arithmetic abilities (Östergren & Träff, 2013). In other studies have found a significant influence of symbolic and non-symbolic program implementation in early childhood in developing the ability to recognize numbers (Van Herwegen et al., 2018).

Furthermore, a study stated that the number of learning given in kindergarten can help children obtain high math learning results in the early grades of elementary school, even the achievements continue until high school (McGuire et al., 2012). Children's ability to recognize the concept of numbers early on is a strong foundation in sustainability to understand higher mathematics and mature mathematical

performance (Yilmaz, 2017), and significantly support the growth of math skills in formal schools (O'Connor et al., 2018).

The results of various studies above prove that the ability to recognize the concept of numbers that develop well early on can have a significant impact on various aspects of development and skills, especially mathematics in the future. But the fact that the results of mathematics learning Indonesian students are still far from expectations. An international research report, Organization For Economic Co-Operation And Development (OECD) through the Program For International Student Assessment (PISA), measures the performance of 15-year-olds in the evaluation of the education system in a country, showing the Indonesian students' science and math ability scores are below average with a ranking of 72 out of 79 countries (OECD, 2018).

In addition to the results of the report is also reinforced by other international reports Trend in International Mathematics and Science Study (TIMSS), on how the direction and trend of development of mathematics the test followed by students in grade 4 elementary school and 8 junior high schools. The achievement of content and cognitive dimensions only 24% so that Indonesian students are ranked 45th out of 50 countries (Mullis et al., 2015). This indicates that there is still weak math ability of Indonesian children so that a deeper study of the causative factors and efforts must be made in improving the mathematical ability of Indonesian children.

The findings of the international data are directly proportional to the findings in the field. Based on initial observations on the learning process to recognize the concept of numbers in Aisyiyah Rambai Kindergarten, it was revealed that the expected competencies have not been achieved. Many children do not participate actively during learning activities, many children's work is not completed until ready, many children also say "I can not teacher!", meaning that

the child is not able to complete the task given by the teacher, especially the field of indicators know the concept of numbers. Children are less happy and bored compared to other learning activities.

After further observation, the learning problems that arise are caused because the teacher is less able to create a pleasant learning atmosphere, the teacher is too monotonous and less varied in using the learning media, the game tools used are less attractive to the child. So that it can be concluded that the learning strategies applied by teachers are not appropriate and the game tools used in learning know the concept of unsuitable numbers. Students can not enjoy learning with high motivation and easily feel bored.

Efforts can be made in overcoming these problems required a game plan that can create a pleasant learning atmosphere so that children do not feel stressed, bored, and feel burdened in learning. Children are expected to relax and enjoy learning so that children will love the learning provided. Traditional games in Minangkabau can be an alternative and developed to stimulate aspects of children's development.

Many studies have proven that traditional games can develop various aspects of a child's development. Research conducted by Devi (2020), found there is a positive influence of using traditional games enggrang on children's rough motor abilities. In line with the findings of the study, the traditional game of Gedrik is used as a medium of artistic stimulation to develop five aspects of development (Sakre, 2020).

In line with the research, research by Aulia & Fuadah Z., (2020), stated that the formation of friendly characters in the Education Unit can take advantage of pukang game which is one of the traditional games from Lampung Province. Research conducted by Lestari & Prima (2017), found that the emotional social development of early childhood can be improved through the use of traditional games in the curriculum of early childhood education units.

Traditional games are a legacy of traditions that have been carried by ancestors and ancestors through local culture and customs. But there are similarities and differences in the game procedures in each region or country (Kurniati, 2016). Therefore, this research is important in the introduction stage of traditional games early on in order to maintain the legacy of traditions that have begun to fade due to technological advances.

One of the traditional games in Minangkabau to enable learners to understand the concept of numbers easily is Lore game. The concept of lore game that will be done is that the child will attempt to match the symbol of the number with the number. In addition, the game lore also uses a variety of images with numbers written on geometric wakes called gundu/cak. The child chooses gundu/cak and throws on the same number of images on the symbol of the number written on the gundu/cak (Yenti & Nurizzati, 2018).

Based on some previous research, traditional games in developing various aspects of children's development have been widely done and proven, but in the use of traditional games Minangkabau especially, using Lore games in developing the ability to recognize the concept of numbers in early childhood has not been found. Therefore, this study aims to prove the research hypothesis that traditional Lore games can be effective in developing the ability to recognize the concept of early childhood numbers.

METHOD

This research uses a quantitative approach implemented in pseudo-experimental method with pretest-posttest design, namely by giving treatment to the experimental group in the form of traditional lore game.

The research population is all early childhood in group B who attend kindergarten in South Pariaman Subdistrict, Pariaman. As for the withdrawal of samples using simple random sampling techniques, by the mechanism of randomly selecting

from 8 kindergarten schools in the south Pariaman district so that Aisyiyah Rambai kindergarten becomes a sample that has 3 classes with 46 students, then to determine the experimental and control classes, then from the 3 classes in random again so that class B1 is selected into an experimental class with 15 students and B2 as a control class with 15 students.

Data collection in this study using the technique of taking primary data by doing an action test with an observation sheet (check) where the instruments are compiled and developed by researchers by referring to aspects and indicators consisting of 18 items, namely (1) knowing the symbol of numbers, (2) mentioning numbers, (3) sorting numbers, and (4) comparing the number amount.

Data analysis techniques use the average difference test of paired t-test value, by fulfilling precondition test first which is normality test to see if the data comes from normal distribution data through Liliefors technique and homogeneity test to know the similarity of homogeneous data through barlet test.

RESULTS AND DISCUSSION

The following shows the results of the Pre-test and Post-test scores:

Table 1. *The Ability to Recognize The Concept of Numbers of Pre-Test and Post-Test*

No	Students	Pre-Test	Post-Test
1	AF	21	27
2	AL	23	31
3	AD	28	35
4	AK	27	36
5	ARP	29	36
6	BGL	30	37
7	BAD	26	35
8	KA	27	34
9	JW	24	36
10	AM	31	34

11	CT	25	28
12	SLS	27	31
13	DR	25	30
14	AH	22	29
15	RA	23	28
Total		535	648
Y		26,75	32,4

Table 2. *Paired Samples Statistics*

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	25,8667	15	2,94877	,76137
	Post-Test	32,1333	15	3,39888	,87759

The output above shows the descriptive statistical results of an average Pre-Test value of 25.86, while the average Post-Test value is 32.13 from 15 data used as the research sample. The standard deviation value for the Pre-Test is 2.95 and the Post-Test is 3.39. Finally, the mean standard error for the Pre-Test is 0.76 and for the Post-Test is 0.87, because the average value of learning outcomes on the Pre-Test is 25.86 < Post-Test 32.13, it means that descriptive there is a difference in the average ability to recognize the concept of numbers between the Pre-Test and the Post-Test results.

Table 3. *Paired Samples Correlations*

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre-Test & Post-Test	15	,807	,000

Based on the output above, it is known that the correlation value is 0.807 with a significance value of 0.000. Because the sig value is 0,000 < 0.05 probability, it can be said that there is a relationship between the Pre-Test variable and the Post-Test variable.

Table 4. *Paired Samples Test*

Paired Samples Test									
Paired Differences						t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Test – Post Test	-6,267	2,01660	,52068	-7,383	-5,149	-12,03	14	,000

Based on the Paired Samples Test output, it is known that the Sig. (2-tailed) is 0.000 <0.05, then H_0 is rejected and H_a is accepted. So it can be concluded that there is an average difference between the ability to recognize the concept of Pre-Test and Post-Test numbers, which means that the use of traditional Lore games is effective in increasing the ability to recognize the number concept of group B children at Aisyiyah Rambai Kindergarten, Pariaman City.

These results can be explained the traditional games have a positive influence in developing cognitive aspects of children, especially the ability to recognize the concept of early childhood numbers. Traditional games given to early childhood will give rise to the spirit of learning with a pleasant atmosphere and learning will be effective because children are in a state of joy. The interest and pleasure in learning are closely related to the way the three types of brains process information namely, reptile brain, mammalian brain, and neo-cortex brain (Zulherma & Suryana, 2019). If a person is happy, calm, and calm, then the neo-cortex brain can be active and used for thinking and constitutes 80% of the mammalian brain, the reptilian brain works when a person is in a state of tension, stress, fear, so that his mind becomes empty, and does not remember anything learned before.

The game can be explained as a work that involves the balance of the right brain and left brain that collaborate to do certain things in everyday life so that it can be used as one of the learning tools to develop reason and

physique simultaneously (Hasmalena et al., 2020).

For early childhood, play is an activity that is done throughout the day and by playing children can learn about what they want to know and ultimately be able to get to know all the events that occur around it without feeling depressed. This is in line with the opinion of Nurjanah (2018), which states that children understand the concept of numbers through the experience of working and playing directly with concrete objects. Through positive play activities, children can use their muscles, stimulate their sensing, explore the surrounding world, and recognize the environment in which they live including recognizing themselves. Children's physical abilities are increasingly trained, as are their cognitive abilities and ability to socialize. In simple language, playing makes him hone his intelligence because each child basically has a different smart.

In the experiment group and control group, it can be seen clearly the difference that students who are in the experiment group master and memorize numbers faster than the control group. Children aged 5-6 years have a level of cognitive development that is in the pre-operational stage, this means that the child is already able to use symbols in the mind to present objects or events (Novitasari, 2018).

The ability to recognize numbers is important to learn, especially in early childhood. Because basically, every child needs numbers because numbers are an integral part of life. Knowing the symbol of numbers is important to be developed because it is the basis of mathematics ability

in children (Pradana, 2016). his is in line with the research Vogt et al., (2018) mentioned that the ability to recognize a good number symbol from an early age will make it easier for children to understand the operation of numbers at the next level of education. Children are said to know the symbol of numbers well when not only memorizing the symbols of numbers, but they also know the meaning of the number well.

Traditional games are games that use roughing tools or natural. Traditional games exist in every region of Indonesia, but some still maintain without changing the ways, and some leave it because of the times. Then there are the traditional games that accompany the development of the times. The purpose of traditional games is for entertainment, competition, and is useful for training five senses, languages, or other limbs. While the modern game trains the concentration and dexterity of the limbs alone in responding to the problems that are facing. There are important things that are not found in modern games such as socialization, children's creativity, objectivity, and activeness of the whole body movement (Sulistyaningtyas & Fauziah, 2019).

Minangkabau traditional games have also been distracted by the emergence of modern games that negatively affect traditional games, traditional Minangkabau games such as Sipak Tekong games, kites, gundu, kajai, catfish pegs, and so on. It is very concerning if a few more years of traditional Minangkabau games are just names and stories for Minangkabau children.

This is in line with research conducted by Furió et al., (2013) which mentioned that traditional games today are less visible both in villages and in urban areas. Children have been preoccupied with modern games such as online games, games on a computer or handphone or perhaps watching a show on TV. Playing like that can be done by fellow friends but it can also be done alone at home. Playing modernly children can choose games according to their wishes and they feel no

need for others and minimal socialization. They only interact with inanimate objects. Such games result in children not being able to get to know other people's characters.

In contrast to traditional games where their fellow players interact with each other and connect with various characters that have been built through various backgrounds. Those who are able to survive the game are children who have the advantage of their friends, both physically and mentally. The game can be done on a wide field and under the scorching sun and obviously, a game like this requires a strong physique (Nugraha et al., 2018).

Traditional games have a huge influence on the child's mental, physical, and mental development such as 1) the child becomes more creative; 2) can be used as therapy for children; 3) develop children's compound intelligence (Restati Siregar & Ilham, 2019).

The implications of this research are expected to increase the variety of teaching methods in increasing the introduction of the concept of numbers in children. Besides that, it can improve number recognition with traditional games that are interesting for children, because the lore game is one of the new games with traditional nuances for children and children will be excited in learning to recognize the concept of numbers. In addition, the results of the study are also in line with research that states that traditional games are one of the strategies in Grounding Local Cultural Values in Building National Character (Demina, 2016).

CONCLUSION

The results of the study can be concluded that traditional Lore games are effective in developing the ability to recognize the concept of children's numbers.

The use of traditional games in developing aspects of children's cognitive abilities is one of the strategies alternative that teachers can develop early math mastery so that it will be a strong foothold for children in understanding higher mathematics at the next level of education. Thus, it is recommended that teachers can

design other traditional Minangkabau games that can be modified and adapted to aspects of children's development. This research can also be developed by further researchers considering that the variables measured are limited to the development of the ability of the concept of numbers alone in utilizing the traditional game lore as a game that can stimulate other aspects of development.

REFERENCES

- Arianti, T. (2016). Pentingnya Pendidikan Anak Usia Dini Bagi Tumbuh Kembang Anak The Importance of Childhood Education for Child Development. *Dinamika Jurnal Ilmiah Pendidikan Dasar*, 8(1), 1–9.
- Aulia, N. A. Z., & Fuadah Z., A. (2020). Permainan Tradisional Pukang dari Provinsi Lampung dan Pembentukan Karakter Bersahabat pada Peserta Didik MI/SD di Indonesia. *Ibtida'iy Datokarama: Jurnal Pendidikan Dasar*, 1(2), 29–40. <https://doi.org/10.24239/ibtidaiy.Vol1.Iss2.9>
- Demina, D. (2016). Membumikan Nilai Budaya Lokal Dalam Membangun Karakter Bangsa. *Ta'dib*, 16(1), 1–13. <https://doi.org/10.31958/jt.v16i1.242>
- Devi, M. S. (2020). *Penggunaan Permainan Tradisional Egrang Batok Kelapa dalam Perkembangan Motorik Kasar Anak Usia 5-6 Tahun*. Universitas Islam Negeri Sultan Syarif Kasim Riau.
- Furió, D., González-Gancedo, S., Juan, M.-C., Seguí, I., & Rando, N. (2013). Evaluation of learning outcomes using an educational iPhone game vs. traditional game. *Computers & Education*, 64, 1–23. <https://doi.org/10.1016/j.compedu.2012.12.001>
- Hasmalena, Yosef, & Rantina, M. (2020). *Bermain dan Permainan: Untuk Anak Usia Dini*. EDU PUBLISHER. (2nd ed.). Edu Publisher.
- Kurniati, E. (2016). *Permainan tradisional dan perannya dalam mengembangkan keterampilan sosial anak*. (Pertama). Prenada Media Group.
- Lestari, P. I., & Prima, E. (2017). The Implementation of Traditional Games to Improve the Social Emotional Early Childhood. *Journal of Educational Science and Technology*, 3(3), 178–184. <https://doi.org/doi.org/10.26858/est.v3i3.0.4212>
- McGuire, P., Kinzie, M. B., & Berch, D. B. (2012). Developing Number Sense in Pre-K with Five-Frames. *Early Childhood Education Journal*. <https://doi.org/10.1007/s10643-011-0479-4>
- Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2015). *TIMSS 2015 International Results in Mathematics*.
- Novitasari, Y. (2018). Analisis Permasalahan "Perkembangan Kognitif Anak Usia Dini". *PAUD Lectura: Jurnal Pendidikan Anak Usia Dini*, 2(01), 82–90. <https://doi.org/10.31849/paudlectura.v2i01.2007>
- Nugraha, Y. A., Handoyo, E., & Sulistyorini, S. (2018). Traditional game on the social skill of students in the social science learning of elementary school. *Journal of Primary Education*, 7(2).
- Nurjanah, N. (2018). Penerapan Model Pembelajaran Inquiry Based Learning Dalam Meningkatkan Kemampuan Berhitung Dan Operasi Bilangan Anak Usia Dini. *Tunas Siliwangi: Jurnal Program Studi Pendidikan Guru PAUD STKIP Siliwangi Bandung*, 3(2), 105–119. <https://doi.org/https://doi.org/10.22460/t.s.v3i2p105-119.645>
- O'Connor, P. A., Morsanyi, K., & McCormack, T. (2018). Young children's non-numerical ordering ability at the start of formal education longitudinally predicts their symbolic number skills and academic achievement in maths. *Developmental Science*, 21(5), 1–16. <https://doi.org/10.1111/desc.12645>
- OECD. (2018). What 15-year-old students in Indonesia know and can do.

- Programme for International Student Assessment (PISA) Result from PISA 2018*, 1–10. <http://www.oecd.org/pisa/Data>
- Östergren, R., & Träff, U. (2013). Early number knowledge and cognitive ability affect early arithmetic ability. *Journal of Experimental Child Psychology*, 115(3), 405–421. <https://doi.org/10.1016/j.jecp.2013.03.007>
- Pradana, P. H. (2016). Pengaruh Permainan Balok Angka Terhadap Kemampuan Mengenai Lambang Bilangan Pada Anak Usia Dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 2(2), 117–124. <https://doi.org/https://doi.org/10.31004/obsesi.v2i2.38>
- Rahelly, Y. (2018). Implementasi Kurikulum 2013 Pendidikan Anak Usia Dini (Paud) Di Sumatera Selatan. *JPUD - Jurnal Pendidikan Usia Dini*, 12(2), 381–390. <https://doi.org/10.21009/jpud.122.21>
- Restati Siregar, N., & Ilham, M. (2019). Traditional Game As a Way for Healthy in Bajo's Children. *KnE Life Sciences*, 4(11), 19. <https://doi.org/10.18502/cls.v4i11.3848>
- Rozana, S., Wulan, D. S. A., & Hayati, R. (2020). *Pengembangan Kognitif Anak Usia Dini (Teori dan Praktik)* (R. S. Dewi (ed.); Pertama). Edu Publisher.
- Sakre, T. (2020). (2020). Stimulasi Seni Dalam Merangsang Lima Aspek Perkembangan Anak Usia Dini Melalui Permainan Tradisional Gedrik. *Buana Pendidikan: Jurnal Fakultas Keguruan Dan Ilmu Pendidikan*, 16(9), 99–105. <https://doi.org/https://doi.org/10.36456/bp.vol16.no29.a2597>
- Sarnecka, B. W., & Lee, M. D. (2009). Levels of number knowledge during early childhood. *Journal of Experimental Child Psychology*. <https://doi.org/10.1016/j.jecp.2009.02.007>
- Sulistyaningtyas, R. E., & Fauziah, P. Y. (2019). The Implementation of Traditional Games for Early Childhood Education. *Proceedings of the 3rd International Conference on Current Issues in Education (ICCIE 2018)*. <https://doi.org/10.2991/iccie-18.2019.75>
- Van Herwegen, J., Costa, H. M., Nicholson, B., & Donlan, C. (2018). Improving number abilities in low achieving preschoolers: Symbolic versus non-symbolic training programs. *Research in Developmental Disabilities*, 77(March), 1–11. <https://doi.org/10.1016/j.ridd.2018.03.011>
- Vogt, F., Hauser, B., Stebler, R., Rechsteiner, K., & Urech, C. (2018). Learning through play – pedagogy and learning outcomes in early childhood mathematics. *European Early Childhood Education Research Journal*, 26(4), 589–603. <https://doi.org/10.1080/1350293X.2018.1487160>
- Yenti, N. P., & Nurizzati, N. (2018). Kemas Ulang Informasi Permainan Tradisional Minangkabau di Kabupaten Pesisir Selatan. *Jurnal Ilmu Informasi Perpustakaan Dan Kearsipan*, 7(1), 313–324. <https://doi.org/https://doi.org/10.24036/1010100934>
- Yilmaz, Z. (2017). Young children's number sense development: Age related complexity across cases of three children. *International Electronic Journal of Elementary Education*, 9(4), 891–902.
- Zulherma, Z., & Suryana, D. (2019). Peran Executive Function Brain Dalam Perkembangan Kemampuan Kognitif Anak Usia Dini Pada Kurikulum 2013. *Jurnal Pendidikan Tambusai*, 3(2), 648–656.