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Geometry fun circuit play for children's geometric shapes recognition

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Abstract

Geometric shape recognition ability is among preschool children's cognitive development indicators. It is necessary to design an innovative method to stimulate their cognitive development through play, such as geometry fun circuit play. However, this play needs further security on its effects on children's geometric shape recognition ability. The present study attempted to test the effect of geometry fun play on preschool children's geometric shape recognition. A quasi-experimental study with a non-equivalent control group design was applied involving thirty participants. The experimental and control groups in this study showed a significance value of <0.001, meaning that the geometry fun circuit play significantly affects preschool children's geometric shapes recognition. Geometry fun circuit play is recommended as one of the alternatives parents, and teachers can use for stimulating preschool children's cognitive development.

Keywords: geometry fun circuit, play, shapes recognition

INTRODUCTION

Children are God gift for parents, who are responsible for raising and educating them. Parents play pivotal roles in children's education, given that they serve as children's first education (Darmawan, 2019). The term preschool children refer to individuals between 0-72 months of age (golden age). In this period, children are believed to experience a significant development progress. Psychological experts state that the early years of life are the most crucial period among other developmental stages. This period is an irreplaceable, pivotal period to prepare individuals' physical, cognitive, and mental aspects while realizing individuals' uniqueness (Hasnawati, 2019). Early childhood education should be presented in a concrete manner, as children in this period tend to be imitative. The provision of role models may facilitate their learning process while monitoring their developmental aspects to ensure the achievement of expected development.

Morrison (Risdianti, 2019) states that preschool activities should be able to support children's learning process through play, considering that play has long become the core of preschool programs. Learning through play can support the students' learning process and serve as an effective means of learning. Learning through play is believed to develop children's ability, as they can learn in a fun, interesting atmosphere while expressing their feelings (Mahardika et al., 2022).

Through play activities, teachers can develop more than one developmental aspect of children. Among the interesting play for children is the circuit play. This play consists of several posts where children are asked to solve certain challenges. The circuit play could be done in a group or individually. This play potentially develops children's ability to recognize shapes such as circle, triangle, and rectangle (Khosiah, 2018). Ability denotes one's capacity obtained from training.

Lestari, K.W. (Sukadariyah et al., 2020) states that introducing geometric shapes to preschool children allows them to recognize, point, state, and collect objects in their surroundings based on their geometric shape. Introducing geometric concepts to children could begin with identifying the shapes and learning the building, and classifying pictures according to their shapes (e.g., rectangle, circle, and triangle) (Sari, 2017). According to van Hiele, there are five stages in geometric learning for children (Nurjani & Jubaedah, 2020): socialization, analysis, arrangement, conclusion, and accuracy.

Geometry fun circuit play is believed to be helpful for developing children's geometric shapes recognition. Among its benefits, geometry fun circuit play allows children to develop all developmental aspects. This play also becomes an alternative learning activity on geometric shapes while motivating and stimulating their curiosity. For researchers, this topic provides them with an opportunity to develop a simple, safe, geometric circuit play (Risdianti, 2019).

Our preliminary observation in Bina Pelita Hati Kindergarten showed that students in this school learned geometric shapes based on their imagination without knowing the names and the characters of each shape. In this study, we attempted to introduce geometric shapes using geometry fun circuit play to see its effect on children's shapes recognition. In early childhood education, children are required to recognize, mention, and point the geometric shapes. However, learning media used by teachers to teach geometric shapes are still semi concrete in nature, and some children have not met the determined standard. Based on the issues described above, geometric shapes recognition is an important skill, and it is necessary to examine the effectiveness of geometry fun circuit play on the children's geometric shapes recognition.

METHOD

For the purpose of the study, a quasi-experimental method with non-equivalent control group was applied. This study was conducted in Bina Pelita Hati kindergarten

involving two classes, the B1 class as the experimental group and B2 class as the control group, consisting of 15 students each.

This quasi-experimental method was applied to see the difference between the two groups related to shape recognition and to see the effect of the treatment. This method was applied to see the effect of geometry fun circuit play on children's shapes recognition in Bina Pelita Hati kindergarten, Serang-Banten. The experimental group was treated using geometry fun circuit play, while the control group received the conventional learning method. The data collection instrument was used to collect the data on the ability to categorize geometric shapes, mention geometric shapes, mention and point to the geometric shape, and mention the features of geometric shapes.

The obtained data were processed using validity, reliability, normality, and homogeneity tests with SPSS 22 For Windows. The data were analyzed using paired sample t-test with SPSS 22 For Windows to see the effect of geometry fun circuit play on the shapes recognition ability.

RESULTS AND DISCUSSION

The validity test was performed in Aisyiyah Kindergarten-Banten, involving 30 children. The validity test shows that 5 of 20 questions were invalid. The invalid questions were item no. 8,9, 10, 11, and 15 as their t-count value was lower than the t-table with significance level of 5% (i.e., 0.3610, N=28). Then, the reliability test was performed by comparing the r15 value to the r product moment on the table, if the r-count was higher than r-table, the items were deemed reliable. It was found that the r15 was 0.877 (r>0.3610), indicating that the instrument used in this study was highly reliable. After that, the instrument was tried out to the respondent who has similar characteristic such as children in 5-6 years old.

The instrument which has been tried out to ensure it meets the validity and reliability standard. An instrument is deemed valid when it passes the reliability test. Sugiyono (Fikriyah, 2018) defines a research instrument as a tool to capture the natural or social phenomena being studied.

In this study, the instrument was used describe the children's geometric shape recognition ability based on four categories: 1 (Not developed), 2 (begin to develop), 3 (Develop as expected), and 4 (develop significantly). The data normality test was performed using One-Sample Kolmogorov Smirnov with SPSS 22. The probability value of 0.05 indicated

a normal distribution, while the value of less than .05 indicate that the data were not normally distributed.

1. Experimental Group

Table 1. Normality Test Result (Experimental Group)

		Pretest	Posttest
N		30	30
Normal Parameters [a,b]	Mean	1.5000000	.0000000
	Std.	.43578316	.26213304
Deviation		.116	.097
Most Extreme Differences		.116	.097
Absolute		-.090	-.081
	Positive	.116	.097
	Negative	.200[d]	.200[d]
Test Statistic			
Asymp. Sig. (2-tailed)[c]			

Source: Output SPSS Statistic 22 processed in 2021

As displayed in the **Table 1**, the normality test result for the experimental group showed a score of 0.200 in both pretest and post-test, indicating a normal data distribution.

2. Control Group

Table 2. Normality Test Result (Control Group)

		Pretest	Posttest
N		30	30
Normal	Mean	1.5000000	.0000000
Parameters [a,b]	Std.	.26223705	.43572058
Most Extreme	Deviation	.112	.111
Differences	Absolute	.063	.111
	Positive	-.112	-.109
	Negative		
Test Statistic		.112	.111
Asymp. Sig. (2-tailed)[c]		.200d	.200[d]

Source: Output SPSS Statistic 22 processed in 2021

As displayed in the **Table 2**, the normality test result for the control group showed a score of 0.200 in both pretest and post-test, indicating a normal data distribution. Afterword, the homogeneity in this study was performed using compare means One-Way ANOVA with SPSS Statistics 22. A sig. value of > 0.05 indicates a homogeneous data distribution, while a sig. value of <0.05 indicates nonhomogeneous data distribution.

a. Pre-test

Table 3. Pretest Data Homogeneity Test Result

Levene Statistic	df1	df2	Sig.
2.700	**1**	**38**	**.109**

Source: Output SPSS Statistic 22 processed in 2021

As shown in the **Table 3**, the homogeneity test result of the pretest data was 0.109 (>0.05), meaning that the pretest data of the experimental and control groups were homogeneous.

b. Post-test

Table 4. Posttest Data Homogeneity Test Result

Levene Statistic	df1	df2	Sig.
.878	1	38	.355

Source: Output SPSS Statistic 22 processed in 2021

As shown in the table, the homogeneity test result of the posttest data was 0.355 (>0.05), meaning that the posttest data of the experimental and control groups were homogeneous.

The hypotheses in this study were tested using paired sample t-test. Following the hypothesis tests, a sig. value of < 0.05 (2-tailed) indicate a significant effect between the pretest and posttest data in experimental and control groups, and vice versa. The hypothesis test was performed with the help of SPSS 22.

1. Experimental Group

Table 5. Uji-t Paired Sample t-Test Result

		Paired Differences					t	Df	Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Pretest - Posttest	-15.933	3.634	.938	-17.946	-13.921	-16.979	14	<.001	<.001

Source: Output SPSS Statistic 22 processed in 2021

As displayed in the table above, the experimental group exhibited a sig. value (2-tailed) of < 0.001. This means that H_0 was rejected and H_1 was supported. In other words, there is a difference in pre-test and posttest result, indicating a significant effect of geometry fun circuit play on children's shapes recognition.

2. Control Group

Paired Sample t-test Result										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	Df	One-Sided p	Two-Sided p
Pair 1	Pretest – Posttest	-10,067	6,341	1,637	-13,578	-6,555	-6,148	14	<.001	<.001

Source: Output SPSS Statistic 22 processed in 2021

As displayed in the table above, the control group exhibited a sig. value. (2-tailed) of < 0.001. This means that H0 was rejected, and H1 was supported. In other words, there is a difference in Pretest and posttest results, indicating a significant effect of geometry fun circuit play on children's shapes recognition.

The hypothesis test result shows a sig. value (2-tailed) of <0.001 for the experimental group and Sig (2-tailed) value of <0.001 for the control group. In this regard, the hypothesis stating that geometry fun circuit play does not affect the geometric shapes recognition ability was rejected. Meanwhile, the hypothesis stating that geometry fun circuit play may significantly the geometric shapes recognition was accepted.

The play activity presented in this study was found to support the children's learning activities. Play activity serve as an effective means to develop children's skills, as they are provided with a fun learning atmosphere that allows them to express their feelings. Geometric shapes introduced during the play were circle, triangle, and rectangle. Circuit play also involves walking, running, and jumping activities (Risdianti, 2019).

Learning through play activities allows them to understand, describe, and describe the objects in their surroundings (Rahmadani et al., 2017). Among the advantages of geometry fun circuit play is its ability to develop children's cognitive skills through fun, interesting atmospheres that allow children to express their feelings. Furthermore, circuit play can also train more than one developmental aspect of children, such fine motor (Paramitha & Supiati, 2020) and gross motor (Sihite & Dimyati, 2022). Through circuit play activities, children can indirectly develop other developmental aspects in a more directed manner.

CONCLUSION

The present study tests the effect of geometry fun circuit play on the geometric shapes recognition ability. The participants were assigned into two groups: experimental and control groups. The experimental group was treated using geometry fun circuit play, while the control group was taught using the conventional learning method. Following the hypothesis test result, the significance value of the experimental ad control groups was <0.001, indicating that H0 was rejected and H1 was accepted. In other words, the geometry fun circuit play can significantly affect the geometric shapes recognition. The result also shows that the geometric shapes recognition of children treated using geometry fun circuit play was better than that of children treated using the conventional method. From a theoretical viewpoint, this study confirms the effect of geometry fun circuit play on the children's geometric shapes recognition. This study showed that geometry fun circuit play could attract children's learning interest. This is because preschool-aged children are still in the playing period, and their learning activities should be done in the form of learning through play. Geometry fun circuit play can also develop children's cognitive development while taking their characters into consideration. This study confirms that geometry fun circuit play can be used for outdoor learning activities at school. However, it is necessary for teachers to pay attention to the children's development during play. Teachers need to monitor and assess children's development through geometry fun circuit play. Meanwhile, parents need to understand the children's mood during the learning activities and create a fun atmosphere.

REFERENCES

Darmawan, A. C. (2019). *Pedoman Praktis Tumbuh Kembang Anak (Usia 0-72 Bulan)* (1 April 20). IPB Press.

Fikriyah, M. D. (2018). Pengaruh Model Pembelajaran Cooperative Integrated Reading and Composition (CIRC) terhadap Kemampuan Membandingkan Isi Dua Teks yang Dibaca dengan Membaca Sekilas Siswa Kelas V SDN 1 Tanggaran Tahun Ajaran 2016/2017. *Simki-Pedagogia*, *2*(1), 1–9.

Hasnawati. (2019). Urgensi Pendidikan Islam pada Anak Usia Dini dalam Membentuk Kepribadian Islami. *Jurnal Andi Djemma : Jurnal Pendidikan*, *03*(01), 19–29. https://unanda.ac.id/ojs/index.php/andidjemma/article/view/223%0A

Khosiah, S. (2018). Pengaruh Farming Gardening Project Terhadap Kemampuan Mengenai Konsep Bilangan pada Anak Usia Taman Kanak-Kanak di Ar-Rahman Islamic School

Cinere Depok. *Fikrah: Journal of Islamic Education*, *2*(1), 68–84.

Mahardika, E. K., Darwiyati, D., Waluyo, S., & Hafa, M. F. (2022). Evaluasi Metode Pembelajaran Melalui Permainan di Taman Kanak Kanak Kota Blitar. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *6*(4), 2745–2752. https://doi.org/10.31004/obsesi.v6i4.1083

Nurjani, Y. Y., & Jubaedah, E. (2020). Pengenalan Bentuk Geometri Melalui Metode Bermain Permainan Tradisional Sondah Bagi Anak Usia Dini. *Journal of SPORT : Sport, Physical Education, Organization, Recreation, and Training*, *4*(1), 22–29. https://doi.org/10.37058/sport.v4i1.1557

Paramitha, M. V. A., & Supiati, V. (2020). Efektifitas Permainan Sirkuit dalam Menstimulus Kemampuan Motorik Halus Anak Usia Dini. *Jurnal Golden Age*, *04*(02), 343–350. https://doi.org/10.29408/jga.v4i02.2615

Rahmadani, B., Novianti, R., & Puspitasari, E. (2017). Pengaruh Permainan Twister Modifikasi terhadap Kemampuan Mengenal Bentuk Geometri Annak Usia 4-5 Tahun di Tk Shandy Putra Telkom Kota Pekanbaru. *Jurnal Online Mahasiswa Fakultas Keguruan Dan Ilmu Pendidikan Universitas Riau*, *4*(2), 1–15.

Risdianti, H. (2019). Pengaruh Pemanfaatan Permainan Sirkuit Geometry Fun Terhadap Kemampuan Fisik Motorik Kasar Kelompok B di TK An-Nur Malang. *Jurnal PAUD: Kajian Teori Dan Praktik*, *1*(2), 95–104.

Sari, R. (2017). Peningkatan Kemampuan Menganal Bentuk Geometri Melalui Model Pembelajaran Kooperatif Make A Match pada Anak Usia 4-5 Tahun. *Prosiding Seminar Nasional Pg Paud Untirta*, 205–210.

Sihite, J., & Dimyati, D. (2022). Pengaruh Permainan Sirkuit Pos Geometri Terhadap Motorik Kasar Anak Usia 5-6 Tahun. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *6*(3), 2223–2233. https://doi.org/10.31004/obsesi.v6i3.1896

Sukadariyah, R. F., Fatimah, A., & Maryani, K. (2020). Pengaruh Permainan Tradisional Engklek terhadap Kemampuan Geometri Anak. *Yaa Bunayya: Jurnal Pendidikan Anak Usia Dini*, *4*(1), 57–63.