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The Effect of Team Games Tournament Learning Model on Visual Spatial Ability Early Childhood

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ABSTRACT

Visual-spatial ability is one of the important aspects in the cognitive development of early childhood, which plays a role in understanding shape, size, position, and spatial relationships. This study aims to analyze the effect of the Team Games Tournament (TGT) learning model on the visual-spatial abilities of early childhood. The TGT learning model was chosen because it is based on group games that require children to collaborate, solve problems, and hone visual-spatial skills through media such as puzzles, blocks, sizes, and directions. This research is an experimental research, namely Quasi experimental design. The design used is Non-Equivalent Control Group Design. Data collection using observation, interview and documentation methods. The subjects of this study were Group B of Satya Dharma Kindergarten consisting of control class and experimental class. The data analysis results show tcount = 2.323 while at a significance level of 5% with dk = 50 the ttable value is 1.676 so that tcount 2.323> ttable 1.676. It can be seen that tcount> ttable, namely 2.323> 1.676 which means H0 is rejected and Ha is accepted. Based on the results of the t-test calculation, it shows that the Team Games Tournament game model can improve the visual spatial abilities of early childhood.

Keywords:
Team Games Tournament, Visual Spatial. Early Childhood

INTRODUCTION

Early childhood education is a means that plays an important role and is the most fundamental period in instilling knowledge in children, this period is a golden period, by implementing it according to the stages and characteristics of child development, child development can be maximized including helping all children develop their potential and intelligence appropriately, according to their stage of development, so that they are ready to take further education (Roza, Nurhafizah and Yaswinda, 2019) In early childhood, a person experiences a very rapid growth and development process. This is in accordance with Bloom's theory that children's intellectual development occurs very rapidly in the first few years of their lives. Around 50% of human intelligence develops at the age of 4 years, 80% appears at the age of 8 years and peaks at around the age of 18 years (Syafnita et al., 2023).

According to Gardner's theory (2011), intelligence is not only limited to intellectual intelligence (IQ) which is measured traditionally, but includes various types of intelligence that

are different in each individual. Gardner suggests that there are eight types of intelligence, namely linguistic-verbal, logical-mathematical, visual-spatial, musical, kinesthetic, interpersonal, intrapersonal, and naturalist intelligence. Visual intelligence is the ability related to sensitivity in combining visual perceptions through the eyes and mind, as well as the ability to transform visual-spatial perceptions. This intelligence is involved in activities such as painting, designing patterns, and designing buildings. Children with visual intelligence have sensitivity to elements such as color, line, shape, size, area, and the relationship between these elements (Abidin and Kurniawati, 2020)

Early childhood visual-spatial abilities are very important to develop because they are the basis for academic skills, problem-solving skills, motor coordination, visual memory, creativity, and readiness to face future challenges. With this ability, children also find it easier to interact socially and understand their surroundings. Therefore, early visual-spatial stimulation needs to be provided through various directed and fun play activities. So the efforts that teachers can make towards this are to make learning more interesting and invite children to develop visual spatial intelligence. One learning model that can be used for visual spatial intelligence is the cooperative learning model. Trianto (2012), stated that cooperative learning can improve children's performance in academic tasks, excel in helping children understand difficult concepts and to help children develop critical thinking skills. One learning model that can be used is the team games tournament learning model.

The Team Games Tournament type of cooperative learning model is a form of academic game in the learning process carried out in groups, where each group competes with other groups that have equal abilities. In addition, the goal is for children to work together and each team member can achieve high scores, thus motivating children to master the material better (Nur Endah Hikmah and Indri, 2020) According to Marhamah in Wahyuni (2023), cooperative learning is a learning model that involves small groups of children who work together actively and support each other to achieve group goals. This model emphasizes the importance of cooperation between children in completing tasks or problems given, as well as increasing interaction, socialization, and high-level skills, while the teacher acts as a facilitator. Research conducted by (Anshori, Purwanto and Priyasmika, 2022) entitled The Influence of Team Games Tournament-Puzzle Cooperative Learning Strategy on Visual-Spatial Intelligence in Molecular Shape Material shows that there is an increase in visual-spatial intelligence after being taught using the Team Games Tournament-Puzzle cooperative learning strategy, because the significance value (sig) <0.05. This is because the Team Games Tournament-Puzzle cooperative learning strategy can enable students to imagine the shape of molecules directly and realistically. This study focuses on games that are suitable for early childhood to measure the Team Games Tournament learning model on visual-spatial intelligence abilities. This study will further adapt the Team Games Tournament approach to facilitate intuitive and fun visual-spatial exploration for children, with the hope of providing significant results on the development of visual-spatial abilities at an early age.

METHODS

This study is classified as an experimental research type, namely Quasi Experimental Design, using a nonequivalent control group design. The experimental design used is post-test only. In this study, the control group and the experimental group were selected randomly. This design involves subjects taken from the population (Sugiyono, 2019). A total of 52 children in group B of Satya Dharma Kindergarten in the 2024/2025 academic year were used as research samples. Sample selection was based on Group Random Sampling analysis. The number of samples of 52 children was used with an error rate of 5%. Group B1 was designated as the experimental group (TGT application) and group B2 as the control group (Conventional Model)

The method of collecting data on children's visual spatial abilities is carried out through the observation method. The observation method is a method of collecting data where researchers directly observe the research subjects, examine in detail the activities and problems that are

occurring, and find solutions to these problems. This observation method can also be interpreted as observing and systematically recording the symptoms experienced by the research subjects (Rahardja, Harahap and Pratiwi, 2018). The results collected were then analyzed using descriptive statistics, normality tests with Chi-square, homogeneity of variance tests and hypotheses were tested using t-tests.

RESULTS AND DISCUSSION

Data on the effect of implementing the Team Games Tournament learning model to improve early childhood visual spatial abilities obtained from the results of the post-test given at the end of the study. The experimental group used in this study was group B1 consisting of 26 children while the control group was group B2 consisting of 26 children, so the sample used in this study was 52 children.

Before hypothesis testing is carried out, problem-solving ability data goes through prerequisite tests, namely the normality test of data distribution and the homogeneity test of variance. The results of the normality data test using SPSS, the Shapiro-Wilk test is taken because the number of samples of the control and experimental classes is 26, which is less than 50, then the visual spatial significance value of the control class is 0.128 and the visual spatial significance value of the experimental class is 0.186, which is more than 0.05 (p> 0.05), then the data is normally distributed. After that, the homogeneity test using SPSS obtained the results of the visual spatial significance value of 0.152, which is more than 0.05 (p> 0.05), then all data has the same variance (homogeneous).

With the testing criteria if tcount < ttable then H0 is accepted, and if tcount> ttable, then H0 is rejected, at a significance rate of 5% (α = 0.05) with degrees of freedom (dk = 26 + 26-2 = 50) the value is 1.676. The results of the hypothesis test calculation are presented in the following table

Table 1. Hypothesis Test Table of Experimental Group and Control Group

Sample	N	dk	Average	variance	count	table	Conclusion
Experiment	26		71.77	27.38	2,323	1,676	H0 is rejected
Control	26		67.96	44.43			

After the data is declared normally distributed and the data variance is homogeneous, the analysis is continued using the t-test. The results of the t-test obtained tcount = 2.323 while at a significance level of 5% with dk = 50 the ttable value was 1.676 so that tcount 2.323> ttable 1.676. It can be seen that tcount> ttable, namely 2.323> 1.676, which means that H0 is rejected and Ha is accepted. Based on the results of the t-test calculation, it shows that the Team Games Tournament game model can improve the visual spatial abilities of early childhood.

From the results of the data analysis techniques carried out, the Team Games Tournament learning model has a positive effect on the visual-spatial abilities of early childhood children. In the experimental class, the application of the Team Games Tournament (TGT) learning model proved to be more interesting and enjoyable in improving children's visual-spatial abilities. Through competitive game mechanisms, children are encouraged to compete to complete challenges designed to develop children's visual-spatial skills. The challenges not only involve solving visual-based problems, but also hone their abilities.
children in recognizing patterns, understanding relationships between shapes, and developing spatial orientation.

In addition, active interaction between children in their groups creates a collaborative learning environment. Children exchange ideas, discuss, and provide support to each other, which ultimately increases children's involvement in the learning process. Thus, the use of the TGT model not only provides a more enjoyable learning experience, but also contributes significantly to optimizing the development of early childhood visual-spatial abilities through an active and participatory approach.

Visual-spatial ability is part of the cognitive aspect. In early childhood, this ability is related to the process of seeing, observing, paying attention, responding, and understanding the environment around them. Children with well-developed visual-spatial abilities are able to recognize various objects in everyday life, compare objects based on their level of complexity, and identify size, shape, and color better (Nida'ul et al., 2018).

According to Vygotsky in Khadijah (2016), children's cognitive development does not only occur through interaction with objects, but also through social interaction with adults and peers. Help and guidance from teachers can accelerate children's learning process, while more skilled peers can be models in learning through verbal communication or observation.

In the context of learning, children build their understanding through active engagement with others, not just from objects or the physical environment. This approach is in line with the cooperative learning model of the Team Games Tournament type, this learning model allows children to play an active role in groups, in accordance with the development of children who are group ages so that children can develop their social emotional abilities, where children learn in small groups by sharing ideas, discussing strategies, and providing support to each other to achieve better understanding (Poerwati et al., 2021).

Based on the explanation above, the Team Games Tournament learning model is effective to use in the learning process. Learning carried out with the Team Games Tournament learning model can increase children's interest in learning and learning is more enjoyable so that it can improve the visual spatial abilities of early childhood children.

CONCLUSION

Based on the test results, the data analysis prerequisite test was carried out, including the data distribution normality test and the variance homogeneity test. After the data was normally and homogeneously distributed, it was continued with hypothesis testing. The results of the analysis showed that t count = 2.323 was obtained, while at a significant level of 5% with dk = 50, the t table value was obtained = 1.676. It can be seen that t count > t table, namely 2.323 > 1.676, which means that H0 is rejected and Ha is accepted. This means that there is a difference in visual spatial abilities between children

who follow the team games tournament learning model with children who do not follow the team games tournament learning model in group B of Satya Dharma Kindergarten. Based on the results of the t-test calculation, it shows that the team games tournament learning model has a significant effect on the visual spatial abilities of early childhood children.

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