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IMPROVING SPATIAL VISUAL ABILITIES IN CHILDREN AGED 4-5 YEARS USING THE THREE SAME THINGS GAME

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Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan permainan three same things terhadap kecerdasan visual spasial anak usia 4-5 tahun. Metode yang digunakan dalam penelitian ini adalah kuantitatif dengan jenis penelitian pre-experimental. Penelitian ini menggunakan desain one group pretest-posttest. Sampel dalam penelitian ini berjumlah 22 anak yang berusia 4-5 tahun. Teknik pengambilan sampel menggunakan purposive sampling. Teknik pengumpulan data yang digunakan dalam penelitian ini yaitu observasi dan dokumentasi. Observasi yang dilakukan menggunakan lembar observasi yang telah diuji validitas dan dinyatakan semua indikatornya valid, kemudian diuji reliabilitasnya menggunakan rumus alpha cronbach dan dinyatakan sangat reliabel dengan skor X sebesar 0,939 dan skor Y sebesar 0,910. Hasil penelitian menunjukkan rata-rata skor N-Gain sebesar 0,48 yang berarti bahwa pengaruh permainan three same things terhadap kecerdasan visual spasial anak berada pada kategori sedang. Kemudian, hasil pengujian menggunakan uji regresi linear sederhana mendapatkan nilai signifikansi sebesar 0,000 kurang dari 0,05 ($0,000 < 0,05$), hal ini membuktikan bahwa terdapat pengaruh antara permainan three same things terhadap kecerdasan visual spasial anak usia 4-5 tahun.

Kata kunci: kecerdasan visual spasial; permainan three same things; anak usia dini

Abstract: This research aims to know the effect of using the three same things game on the visual-spatial intelligence of children aged 4-5 years. This research used a quantitative method with a pre-experimental type of research. This research used a one-group pretest-posttest design. The sample in this research consisted of 22 children aged 4-5 years. The sampling technique used purposive sampling. The data collection techniques used in this research were observation and documentation. Observations were done using an observation sheet that had been tested for validity, and all the valid indicators were declared. Then, they were tested for reliability using Cronbach's alpha formula and declared very reliable with an X score of 0,939 and a Y score of 0,910. The results of the research show that the average N-Gain score is 0.48, which means that the influence of the three same things game on children's visual-spatial intelligence is in the medium category. Then, the test results using a simple linear regression test obtained a significance value of 0.000 less than 0.05 ($0.000 < 0.05$); this proves that there is an influence between the three same things game on the visual-spatial intelligence of children aged 4-5 years.

Keywords: visual-spatial intelligence; three same things game; early childhood

INTRODUCTION

Every child in the world has a variety of intelligence at different levels and indicators, which shows that all children are inherently intelligent. According to Gardner's theory of multiple intelligences, there are nine types of intelligence. When applied in education, Multiple Intelligences becomes a theory that treats all students with the same special treatment. Multiple intelligences assume that there are no children who are stupid or intelligent; there are children who stand out in one or several types of intelligence (Masdudi, 2017).

Spatial visual intelligence is one of the nine multiple intelligences. Spatial visual intelligence itself is the ability to see an object in great detail, so people with this intelligence will tend to imagine to produce creativity, which, if the creativity develops well, will give birth to skills in dealing with a problem (Nopiana et al., 2020). Spatial visual intelligence involves sensitivity to the color of lines, shapes, spaces, and relationships between these elements, which includes the ability to visualize, represent ideas graphically, and orient oneself appropriately in a spatial matrix (Syafudin et al., 2018). This spatial-visual intelligence must be developed in children as early as possible.

In early childhood, children with high spatial-visual intelligence tend to think by involving their imagination. When the teaching and learning process takes place, teachers are expected to be able to provide the proper stimulation to support the development of children's spatial-visual intelligence. Teachers must involve play in every child's learning process. Play is all children's activities, including moving, working, or doing anything that can channel their hobbies to get to know the world (Rini et al., 2015). Play is a form of learning activity for early childhood in kindergarten, which is creative play and fun play (Sofia et al., 2015). For this reason, teachers can invite children to play a game that can stimulate the development of their spatial-visual intelligence.

The development of spatial visual intelligence in children aged 4-5 years has its characteristics; at this age, children should be able to recognize 12 colors, children can arrange three-dimensional puzzles, children begin to be able to draw an object in detail, children can understand the concept of direction and position, and children can understand the concept of size (Anjani & Nurjanah, 2014). However, the field shows that children's spatial-visual intelligence development still needs to improve. This is seen from the low ability of children to explain the objects around them; children still have difficulty forming or arranging based on the objects around them, and children still need clarification in choosing colors. One of the causes is the need for more innovation from teachers in learning or combining learning and playing, so the learning process seems monotonous and boring for children. Teachers only guide children in academic learning activities by using children's worksheets when studying (Rahmatia., 2021).

The problem of spatial visual intelligence in children can be overcome by providing the proper stimulation. Based on several previous studies, spatial-visual intelligence in children can be stimulated through the block center. This is in line with research (Pa'indu et al., 2021) The results of this study show that spatial-visual intelligence in children can be improved through the block center, to improve it is carried out with four footings, namely the footing of the play environment, the footing before playing, the footing during play, and the footing after playing. In addition, children's spatial-visual intelligence can also be stimulated through puzzle games. A similar study is from (Erica et al., 2018). The research results he carried out found that applying puzzle games can increase spatial-visual intelligence in children. Blocks and puzzles and spatial-visual intelligence can also be stimulated through games. One of the games that can be used to stimulate children's spatial-visual intelligence is the garlic game. This is according to research by Harmonis et al. (2022). The results of this study show that the use of garlic game media to increase students' spatial-visual intelligence that is attractively packaged can provide interest that provokes children's spatial-visual intelligence to emerge and develop. The implementation of the gartic game is carried out through needs analysis, introduction of spatial visual intelligence through the gartic game, evaluation of activities, and tiered plans.

This research will be different from the previous research because, from the many games that already exist, the author wants to present a new game that has never existed before, namely the Three Same Things game, which is a game that is the result of modifying the Candy Crush Saga game. The game Candy Crush Saga is played by the player swapping the position of two adjacent objects, either left, right, up, or down, so that it is in the form of three or more objects arranged vertically or horizontally. When three or more objects of the same type end up adjacent and aligned vertically or horizontally, the object will "Pop" to give points to the player and then disappear; this is to the game mechanics of Candy Crush Saga proposed by (Guala et al., 2014).

Similar to the Candy Crush Saga game, the Three Same Things game has the same steps, but the difference lies in how it is played. The game Three Same Things is played offline or in person. This game is played by changing the position of initially random objects into three equal objects aligned vertically and horizontally. When the three objects are arranged in 3 parallels, then the three objects are removed from the box. Applying the Three Same Things game is expected to increase the spatial visual intelligence of 4-5-year-olds. The increase in spatial visual intelligence in children will undoubtedly have a positive impact on children's development in the future. Through this activity, it is hoped that children can channel their imagination, improve their ability to recognize more colors, recognize various shapes, know directions, arrange objects, adjust positions, sort according to patterns, and train their concentration.

METHODOLOGY

The research method used in this study is a type of research with a quantitative approach. Quantitative research is defined as a research approach that uses a lot of numbers and statistical analysis in its application, starting from data collection and analysis to the appearance of data (Sugiyono, 2013). This study uses a pre-experimental design in the form of a one-group pretest posttest. The pretest is carried out before the treatment; then, the posttest is carried out after the treatment so that the study results can be known more accurately. The pretest was given three times, the treatment was carried out six times, and the posttest was given three times. The population in this study is 40 children, while the sample is 22. The data collection techniques used in this study are documentation and observation. The data collection tool uses observation sheets that have been tested and declared valid, and the data analysis technique uses the N-Gain test and a simple linear regression test.

RESULT AND DISCUSSION

Result

This research is an experimental research conducted in 6 meetings. The theme used in this study is plants, with the sub-theme of fruits and vegetables. This study uses two sub-themes that are given alternately. This study involved three observers and the researcher, who assisted in implementing the learning process in the classroom. The assessment rubric is an observation guideline in this study; the assessment rubric used is equipped with aspects that children must achieve. The learning activities designed by this study aim to determine the influence of using *the Three Same Things game on the spatial* visual intelligence of children aged 4-5 years. The following is the schedule for the implementation of research activities, which is presented in the form of tables.

Table 1. Schedule for Implementation of Research Activities

Meeting	Activities carried out	Sub Theme
-	Implementation of <i>Pretest</i>	Q&A, puzzles, learning to draw fruits and vegetables based on directions
Meeting 1	Treatment I	Green vegetables
Meeting 2	Treatment II	Yellow Fruits
Meeting 3	Treatment III	Red vegetables
Meeting 4	Treatment IV	Orange fruits
Meeting 5	Treatment V	Purple vegetables
Meeting 6	Treatment VI	Green fruits

-	Posttest Implementation	Questions and answers, puzzles, learning to draw fruits and vegetables based on directions, and learning to arrange according to patterns
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Source: Research data, 2024

After the pretest, treatment, and posttest activities are carried out, the research data will be processed. Pretest and posttest data in this study were used to measure the extent of learning effectiveness using the three same things game. Meanwhile, the treatment data in this study was used to see how much influence the three same things game had on children's spatial-visual intelligence through the analysis of a simple linear regression hypothesis test. Based on the research that has been carried out, the results of the pretest for the number of samples of 22 students were obtained, namely a minimum score of 12, a maximum score of 18, and an average of 14.81. Meanwhile, the posttest results for the number of samples of 22 students were a minimum score of 21, a maximum score of 28, and an average of 25.18. This shows that there is a difference in scores between the pretest and the posttest that has been carried out, which can be seen in the following frequency distribution table.

Table 2. Pretest Frequency Distribution

No.	Category	Interval	Frequency	Presented
1	BB	12-13	2	9,09%
2	MB	14-15	13	59,09%
3	BSH	16-17	6	27,27%
4	BSB	≥18	1	4,55%
Total			22	100%

Source: Research data,

2024

Based on the data contained in the pretest distribution table, it is

data frequency

known that

children in the undeveloped category range (BB) number 2 people with a percentage of 9.10%. Children in the beginning to develop (MB) category amounted to 13 people with a percentage of 59.09%. Children in the category of developing according to expectations (BSH) amounted to 6 people with a percentage of 27.27%, and children in the very well-developed category (BSB) amounted to 1 person with a percentage of 4.55%.

Table 3. Posttest Frequency Distribution

No.	Category	Interval	Frequency	Presented
1	BB	21-22	1	4,55%
2	MB	23-24	6	27,27%
3	BSH	25-26	9	40,91%
4	BSB	≥27	6	27,27%
Jumlah			22	100%

Source: Research data, 2024

Based on the data contained in the posttest frequency distribution table, it is known that

children in the undeveloped category (BB) range amounted to 1 person with a percentage of 4.55%. Children in the starting to develop (MB) category amounted to 6 people with a percentage of 27.27%. Children in the category of developing according to expectations (BSH) amounted to 9 people with a percentage of 40.91%, and children in the very well-developed category (BSB) amounted to 6 people with a percentage of 27.27%. This is certainly different from the results of the pretest frequency distribution in the previous table.

The data obtained from the pretest-posttest results will then be analyzed using N-Gain to determine the magnitude of the influence of children's spatial-visual intelligence after treatment. The calculation of N-Gain in this study uses the help of the IMB SPSS Statistics 20 program and produces an average N-Gain score for 22 samples, which is 0.48. The results of the N-Gain test are then classified according to the N-Gain grouping criteria according to Hake in Warda & Sudibyo (2018). Based on the test results, the average obtained is 0.48, which means the result is in **the medium** category. After obtaining the N-Gain value, the next step is to conduct a simple linear regression test analysis to see if the three things in the game affect spatial-visual intelligence in children. A simple linear regression test in the study was carried out with the help of the IMB SPSS Statistics 20 program, with the decision-making criteria declared significant if the value of Sig <0.05. The summary of the results of the regression test analysis is as follows.

Tabel 4. Distribusi Frekuensi Posttest

<i>Model</i>	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
<i>Regression</i>	38,189	1	38,189	18,591	0,000

Sumber: Data penelitian, 2024

Based on the table of the results of simple linear regression analysis, a significance value of 0.000 was obtained less than 0.05 ($0.000 < 0.05$), so it can be concluded that there is an influence between *the three same things* game on the spatial visual intelligence of children aged 4-5 years. This is seen based on the decision-making criteria for a simple linear regression test, namely;

- If the significance value is < 0.05 , variable X affects variable Y.
- If the significance value is > 0.05 , variable X does not affect variable Y.

The magnitude of the influence of *the three same things game* on the spatial visual intelligence of children aged 4-5 years is explained in the following table;

Table 5. The Great Influence of Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,694	0,482	0,456	1,433

Source: Research data, 2024

Based on the results in the table above, it can be seen that the magnitude of the value of the determination coefficient (*R Square*) is 0.482. If the percentage is 48.2%, it can be concluded that the influence of *the three-same-things* game on spatial visual intelligence in children aged 4-5 years is 48.2%. So, *the three-same-things* game affects the spatial visual intelligence of children aged 4-5 years.

Discussion

Based on the results of this study, there is a difference in the pretest and posttest scores from the average results. The value is then tested using the N-Gain formula, which produces a score in the medium category. The score in the medium category was caused by the treatment in the experimental class, which was only carried out six times, through the provision of three same things games with limited subthemes, namely fruits and vegetables. If the treatment is carried out for a longer duration with more and more varied subthemes, the possibility of the score obtained will also be higher. This is evidenced by the enthusiastic child when invited to play the game of three same things. However, at the end of the meeting, the child has memorized and understood this game, so if it is played with a longer duration of treatment, it is feared that the child will feel bored.

When the treatment was given, the children who were members of the experimental class looked very enthusiastic about playing the game of three of the same things because this game was a medium that the teacher had never used in the classroom. The three-same-thing game has a physical shape that can attract children's attention because it uses bright colors, various shapes, and different images to interest children. This shows that the three same things game can be a learning medium that can arouse interest and curiosity in children (Ridayani & Purwanto, 2024). The learning media itself plays a role in conveying information to make the learning process more effective (Safira, 2020). The use of learning media attracts children to participate more actively in every activity given by the teacher (Maulida et al., 2020).

The game of three things invites children to play while learning. Early childhood cannot be separated from playing; play for children can be a learning process because, through play, children receive stimuli that can affect their development. Through play, children can use their body muscles, stimulate the senses in their bodies, explore the world around them, and discover what they are like (Sofia et al., 2015). That is why play has a vital role in the early childhood learning process.

One type of game that early childhood loves is constructive play. Through constructive play, children can channel their creativity and imagination. Children usually play constructive

games, such as maps, pictures, etc. Construction-building games can help children optimize the development of their spatial-visual intelligence. The game of three same things is included in the type of constructive game; this game is a modification of the Candy Crush Saga game, which is still included in the puzzle type (Aisyah et al., 2024). In general, the provision of stimulation games using three of the same things games to optimize children's spatial-visual intelligence has gone well (Marisyah et al., 2023). During the learning process, children tend to be less interested in the activities carried out, where children are usually only asked to fold paper, color, or stick. However, after being treated by playing with three of the same things in the dimension of capturing information, the children enthusiastically mentioned the colors of the objects they composed (Hidayad et al., 2023; Purwanto & Al Firdaus, 2023). Children are also very enthusiastic about telling the shape and characteristics of objects such as durian fruits, pineapples, carrots, tomatoes, and the like that they have encountered or eaten that they have eaten. Not only that, children are also trained in their accuracy in reading the location of the objects they are playing.

Furthermore, in the previous dimension of thinking ability, children could still not group objects based on their shape and type. However, children's thinking ability can develop well after being treated by playing three of the same things. This is proven during learning activities that children can mention the shape of the picture on the object precisely, and then the child can distinguish and group these objects based on their shape, type, and color. Not only that, children can also distinguish details from the visual shape of the object they see, such as durian fruit having skin with sharp thorns on the outside while rambutan fruit has hairy skin. This dimension of thinking ability helps children to develop their creativity and imagination. When children use their imagination, their creativity develops so that they can produce innovative ideas and find a way to solve problems (Maulana & Mayar, 2019).

Then, in solving the problem of the child's ability before being given treatment, it needs to develop optimally. This condition can be seen when the child is still confused and mistakenly asked to arrange and stick the color circle according to the pattern of the place. However, after treatment, the child's composing ability develops well. This can be seen when, after being treated through playing the game of three of the same things, the child can find the location of objects that do not match the arrangement pattern (Nuswantoro et al., 2023; Umar et al., 2023). Not only that, children are also able to arrange the location of objects that were initially random into regular according to the pattern lines and according to the same type. Early childhoods need to be faced with simple problems in their daily lives because that way, their thinking skills will develop well because, through problem-solving, children will use their knowledge and experience (Ningsih et al., 2018). One of the simple problems that children can face is arranging the position of objects according to

their place and justifying the irregular position of objects.

Based on the presentation of the results above, it can be seen that there is a difference in the results of the pretest and posttest scores in the class that is used as an experimental sample due to the different treatments so that the response issued by the child is also different. The difference between before and after the treatment through the game of three same things can be seen through the difference in the average score. The average score after the treatment through playing the game Three Same Things was superior to the average score before the treatment.

When playing the three same things game, in the dimension of changing the object's position, the child learns to recognize the right, left, up, and down directions. When playing the game of three same things, children will change the position of objects that do not fit into being arranged according to the pattern of their place but still pay attention to the object's direction of movement. When children repeat things like this, they will remember the directions they have learned. Then, in arranging according to the pattern, the child learns to find three similar objects close to each other and then arrange the objects according to the vertical or horizontal pattern. This three-same-things game requires children to arrange three objects (fruits/vegetables) that are the same according to their type to form descending or horizontal lines. When children learn to arrange according to patterns, their precision and creativity in solving problems will be tested because objects deceive them on the game board. Objects that deceive are objects of the same color but different shapes, objects of the same size but different colors, and objects of the same image but different details. Therefore, treating children to use the game of three things can increase their spatial-visual intelligence.

Playing the three same things, game makes learning more exciting and fun. When playing, children can develop intelligence and bedeviled intelligence and have the right to develop and develop (Abubakar & Asni, 2019). Playing the game of three things can stimulate children's spatial-visual intelligence. Playing a game of three of the same things can help children channel their imagination and creativity. In addition, this game can also improve children's ability to recognize more colors, recognize various shapes, know directions, arrange objects, children can adjust the position of objects, children can sort according to patterns, and train children's concentration. Based on the description of the research results and discussion above, using the three same things games influences the spatial visual intelligence of children aged 4-5 years.

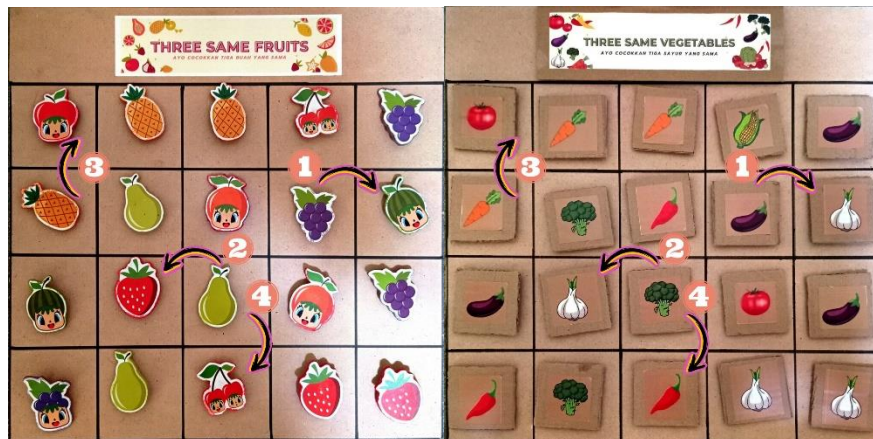


Figure 1. Three Same Things Game Tools

CONCLUSION

Spatial visual intelligence is one of the nine existing intelligences. This intelligence must be stimulated in order to develop optimally. One way that can be done to stimulate children's spatial-visual intelligence is by playing *the game of three things*. This game has a physical shape that can attract children's attention because of its bright colors, diverse shapes, and different images. The research was conducted on vulnerable children aged 4-5 years with treatment through *the game of three things*. Based on the results of hypothesis testing in this study using statistical analysis of a simple linear regression test, a significance value of 0.000 was obtained less than 0.05 ($0.000 < 0.05$), so it can be concluded that the use of *the Three Same Things game* affects the development of spatial visual intelligence of children aged 4-5 years.

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