Game-Based Hots Learning in Kindergarten

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Abstract. The Covid 19 pandemic that has spread throughout the world has implications for changes in all aspects of life, including education. The health and safety of citizens is an important matter, but saving students' education is no less important. After the government has taken the decision to close schools (face to face), learning is carried out remotely using a network (online). This training aimed at improving the knowledge and skills of Kindergarten teachers in Cluster 8, Lowokwaru District, Malang City in Game-based HOTS learning. To determine the achievement of success, pre-test and post-test were carried out as well as the product and process assessments during the training. The training applies lecturing, discussion, practice, and product presentation methods produced by the teachers in the training. The results of the paired sample t-test analysis showed t-value of 6.653, a df value of 23, and a significance value of 5%. According to the t distribution table, the t-table value obtained from the df value is 23 and the significance value of 0.05 is 1.7139. The t-value of 6.635 has a greater value than the t-table value of 1.7139, which means the t-value of 6.635 > 1.7139 t-table. It was concluded that the implementation of game-based HOTS management training had an effect on improving teacher management skills with a strong level of relationship.

Keywords: HOTS Learning · Game · Pandemic

1 Introduction

The Corona 19 virus originated from Wuhan, China, and spread to Indonesia in mid-2020 has become a pandemic. The existence of this pandemic has brought implications for changes in all aspects of life, including education. The health and safety of citizens is an important matter, but saving students' education is equally important. After the government has taken the decision to close schools (face to face), learning is carried out remotely using the network (online).

The pandemic period has completely changed the implementation of Early Childhood (PAUD) education. Early childhood must be saved for its future by providing continuous education services. Kindergarten teachers need to establish coordination, communication, and consultation in carrying out learning. Parenting is very important and necessary in learning during the pandemic.

Parenting is very much needed in helping the success of learning during the pandemic. According to Mc Farlane et al. (2010) parenting really helps students' social-emotional

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adaptation at school, so it is necessary to strengthen their knowledge. For Caughy, Franzini, Windle, Dittus, Cuccaro, Elliot, Schuster (2012) parenting is very helpful for caring and has a significant relationship with the environment. This means that parenting plays a role in creating a conducive environment for child care in the family environment. Similarly, Hillaker, Barbara; Brophy-Herb, Holly E; Villarruel, Francisco A; Haas, Bruce E (2008) found that parenting made a positive contribution to students. Parenting patterns change along with changes in the child's psychological flexibility. It is related to the research of Williams, Ciarrochi, Heaven (2012) which stated that changes in parenting patterns affect the psychological development of students in the future. The presence of parenting in the learning process is very important, especially during a pandemic. The teachers can collaborate with parents so that the implementation of the learning process can be successful. This success can be shown from the achievement of students' development. Parents of the students in very heterogeneous schools seen from various aspects will provide material enrichment to students. Sources of learning are not only teachers but also parents. However, the diverse backgrounds of parents and their various activities make it difficult to encourage parental participation in learning through parenting programs.

2 Methods

The implementation of this training activity is carried out by various methods. Using the various methods is intended to make the implementation of this training activity to be interesting, active, and fun. The methods used in the training are as follows. The training activity began with the Lecturing method, question and answer, and discussion on HOTs learning to improve understanding of HOTS learning concepts and Early Childhood (PAUD) games.

After the understanding of the concept increases, participants are given an assignment/workshop to make game-based HOTS learning media. After that, a demonstration of the game-based HOTS learning media was carried out by the participants and reviewed by the team. In addition, simulations on the use of game-based HOTS learning media were also carried out, and compiling online game-based learning tools were. In addition, participants practice developing game-based HOTS learning evaluation tools and learning tools.

The data analysis technique used in this study is the descriptive percentage technique. The results of the pre-test are compared to the results of the post-test, a difference will be found. If the difference is negative then the training has no effect on the ability of the participants. If the difference is positive, then the training has a positive and significant effect on the ability of the trainees.

3 Result and Discussion

The comparison of pre-test and post-test scores showed an increase in the teacher's game-based HOTS management ability. The results of data analysis of the two scores indicate an increase in the average score, maximum score, minimum score, and standard deviation value. A total of 22 people out of 24 participants experienced an increase

Table 1. Classification of Average, Maximum, and Minimum score and Posttest Standard Deviations

Score	Clasifications	*Pretest*	*Posttest*
0–33	Low	2	–
34–67	Moderate	19	13
68–100	High	3	11

in score. There are 2 people from the total number of participants who have a fixed score, meaning that there is no increase in score and neither has a decrease in score. The data analysis process is carried out through processing the data from the pre-test and post-test results, which are then compared and categorized into three groups, namely low, medium, and high. Categorization of teacher management ability level scores is conducted through the calculation of the average score, maximum score, minimum score, and standard deviation. The score of each participant is categorized into 3 groups, namely low, medium and high. The range of data for low scores is 0–33, moderate scores are 34–67, and high scores are 68–100. Table 1 is the result of categorizing participants' scores into 3 groups.

Table 1 contains the presentation of the results of the categorization of pre-test and post-test scores. The grouping of scores is done through manual calculations obtained from the maximum and minimum score, standard deviation, and range scores. Manual calculations on categorization are carried out to determine the range of scores at each level of categorization, which is then set in the application to determine the level of scores for each participant. The results of the categorization of pre-test scores are that there are 2 participants who have low scores, 19 participants who have moderate scores, and 3 participants who have high scores. The post-test scores showed that there were no participants who had low scores, there were 13 participants who had moderate scores, and 11 participants who had high scores. The conclusion is, there is an increase in teacher management ability scores after being given treatment in the form of game-based HOTS management training.

Processing of pre-test and post-test data were analyzed using experimental statistical tests. Hypothesis testing was carried out using a correlational model to determine the relationship between two related variables. The t-test formula was used to determine the effect of the treatment implementation in the form of game-based HOTS management training. The pre-test and post-test scores were processed using the SPSS version 26.0 application with a total number of 24 participants. Data analysis was conducted to determine the effect of game-based HOTS management training on participants' management skills. There are 25 questions in the pre-test and post-test, where each correct answer has a score of 4 and the wrong answer gets a score of 0, so the maximum score that participants get when answering 25 answers correctly is 100. The pre-test is carried out before the training is given, while the implementation The post-test is carried out after the implementation of the training with the aim of measuring the level of the teacher's competence before and after being given treatment.

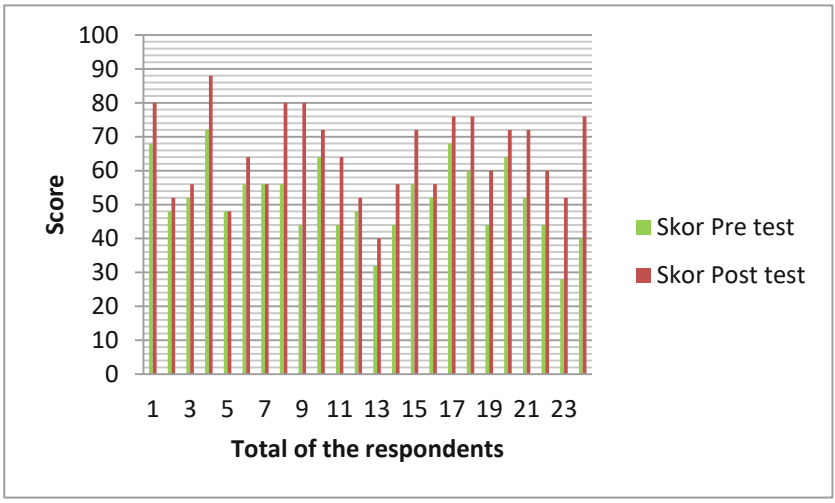

Fig. 1. The comparison of pretest and posttest score

The results of the pretest and posttest of the participants (trainees) can be compared to determine the impact of training on improving the competence of kindergarten teachers in game-based hots learning management. The results of this comparison can be seen in Fig. 1.

Figure 1 shows that there is an increase in the teacher's competence score after being given treatment. The green graph represents the pre-test score, while the red graph represents the post-test score.83% of the participants experienced an increase in score after being given treatment in the form of training, and 27% of the participants got a fixed score between pre-tests and post-test. The conclusion is that there is an increase in the ability of game-based HOTS management for the teachers after being given treatment in the form of training.

The participants' understanding of game-based HOTS learning materials is increasing. The results of the paired sample t-test analysis showed a t-value of 6.653, a df value of 23, and a significance value of 5%. According to the t distribution table, the t-table value obtained from the df value is 23 and the significance value of 0.05 is 1.7139. The t-value of 6.635 has a greater value than the t-table value of 1.7139, which means the t-count value of 6.635 > 1.7139 t-table. It can be concluded that the implementation of game-based HOTS management training has an effect on improving teacher management skills with a strong level of relationship. These results are related to the results of the research conducted by Margono (2014) who found that active participatory learning for adults through problem-solving can improve learning outcomes. Rakimawati's research (2013) also found that learning which provides active participation will provide creativity in problem-solving because learning is carried out through the participants' peer tutors. This learning provides a fun atmosphere because it is done freely through games. Learning through games provides imagination as if the participants present reality in front of them so that they are fun as research found by Murtiningsih (2013). Wiyono

(2012) also found that adult learning (andragogy) as in teacher training will also increase the active participation of the students (Bambang Budi Wiyono, 2012).

This understanding of game-based HOTS learning management also produces various games that can trigger higher-order thinking skills (HOTS) in students. Various HOTS games produced by the participants (trainees) include:

a. Floating and sinking object experiment game.
b. Gravity experiment game.
c. Game of snakes and ladders.
d. HOTS game media.
e. Pebble game.
f. Rainbow candle game.

The various games were tried by the participants (trainees) and they had an impact on higher-order thinking skills (HOTS) learning. According to Sutama (2021), HOTS learning can help teachers improve students' thinking skills.

4 Conclusions

Based on the results of data analysis as in the previous chapter, several conclusions can be drawn as follows. (a) The participants (trainees) of the HOTS learning parenting management training increased after attending the training. (b) The trainees have been skilled in creating and implementing game-based HOTS learning. Based on the conclusion, it is recommended for teachers to disseminate the results of the training and apply games in HOT learning. The teachers are advised to use games in HOTS learning so that learning becomes more interesting and fun.

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