

The Effect of Science Learning Model Based on Multisensory-Ecology to Social Emotional Children in Kindergarten

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ABSTRACT

This study aims to describe the effect of multisensory-ecology-based science learning that can improve the cognitive, social-emotional and physical abilities of Kindergarten children. This research uses a mix method research method. Data were collected through observation, interviews, and literature study. The data were analysed descriptively using Miles and Huberman. For quantitative data were analysed statistically using t-test. The results of interview data with teachers and open observations can be seen that children become more orderly in queues, complete work/tasks to completion, and dare to appear in front of the class or in front of friends. The conclusion of the study is that multisensory-ecology-based science learning can improve the socio-emotional skills of group A children at Aisyiyah Kindergarten Bushanul Athfal 86 Cipayung, Jakarta.

Keywords: *instructional model, science, multisensory-ecology, kindergarten*

1. INTRODUCTION

One of the principles of learning in Kindergarten is learning through play. However, the reality is that kindergarten children's play time has decreased. Children were lack of playing and doing exploration, but they tend to use their time to read and learn arithmetic [1]. When children play, they develop emotional and social. In addition, the environment where child grew up influences to the construction of child's emotional and social [2]. In line with this, the environment, play, and relationships are better support children's social and emotional development [3]. That is why it importance of measuring children's social-emotional [4].

Exploration is the first step for preschool and kindergarten age children in dealing with new situations [5]. Exploration can train children to experiment with various objects around them to develop early childhood science skills [6]. Children can use their sense to foresee and communicate therefore they can find other points of view [7]. From observation and experience the child will gain knowledge about how to understand the environment around them and how to use it [8].

As it is knowing that science is a study learning facts and the system or truths and learning the general legal operations [9]. Science can also be interpreted as a way to try to discover the nature of things, learning the

attitudes and skills which is useful for problems solving in human daily life [10]. Science learning in early childhood can be interpreted as things that stimulate children to increase their curiosity, interest and problem solving, thus giving rise to thoughts and actions such as observing, thinking, and linking concepts or events [11]. For children, science is about trying to understand the world they see, namely humans, animals, plants, and other objects in the environment by conducting experiments and reporting their findings [12].

Science for children is about how children interact with the world around them [13]. Children need teacher encouragement to experience science through play and interaction [14]. Whereas learning in kindergarten must consider the time that children use as active learners. Children can use all their senses to discover new things. This means that children need support for learning by using multiple senses. Children will try to observe, seek and find various important knowledge and concepts related to various fields of development so that children's development develops in line [15]. The quality of interaction is very important for children's learning and development [16].

The multisensory-ecology-based science learning model (PSB Mugi) is a science learning model that prioritizes process skills and science content through

multisensory experiences and emphasizes human interaction with the surrounding environment [5]. Ecological theory has a view that the environment is very influential on child development [17].

Mugi's PSB conceptual model consists of five characteristics and learning principles. The principles of Mugi's PSB model are: learning that prioritizes child-centered learning; integrated learning; learning methods are varied and prioritize playing activities; learning themes that begin with the project method; and assessments carried out simultaneously to develop children's cognitive, social emotional and physical in the learning process [18]. So PSB Mugi is a science learning model for early childhood where the development of multisensory-ecology-based science needs to be done to improve the cognitive, social, emotional and physical development of young children.

Based on the things that have been described previously, it is necessary to learn science that develops the basic aspects of children's development, which includes not only developing children's cognitive but also children's social and emotional simultaneously in learning science. This study aims to describe the effect of the multisensory-ecology-based science learning model on the emotional social of early childhood.

2. METHOD

The research was conducted at Aisyiyah Kindergarten Busthanul Athfal 86 Cipayung, Jakarta. The target of this research is the students of group A as the main object of research and the teacher as the secondary object.

The method used in this research is the mix method. Combined research (mixed methods) is a scientific method used in seeking or finding scientific answers according to the problems and objectives of the study/study using quantitative and qualitative research methods. According to mix-methods is a research approach that combines or associates qualitative and quantitative forms [19].

The validity of the observation instrument for children's social emotional abilities and the interview instrument for teachers and the head of kindergarten were carried out by asking the views of five experts. Furthermore, for the observation instrument, field trials were also carried out in other kindergartens. The results of the field trial were then carried out with a "varimax rotation" test to see the construct validity of the instrument.

The data collection technique used several methods, including: (1). Observation Technique. In this study, 2 observation techniques were used, namely closed observation using an instrument sheet for observing

children's social abilities and using notes in the form of teacher notes for recording data. (2) Interview Techniques. In this study, interviews were conducted with teachers and the head of kindergarten using interview guidelines and (3) Documentation Techniques. There are two other types of documents that deserve attention for qualitative researchers, namely photos and statistical materials. In this study, a camera was used to take photos regarding the implementation of the Mugi PSB science learning program for early childhood.

3. RESULT

The 1 are four phases of learning process of multisensory-ecological science that can be observed through the syntax of the learning model; (1). Pre-Learning phase; (2) The introductory learning is in the form of initial learning activities containing the maturation of the collected information in the form of activities related to efforts to understand the relationship with the activities carried out which consist of opening by reading the title of the joint activity, brief explanation of activities, and positioning. (3). Learning is in activities to carried out to obtain the objectives of the material being studied which consists of phases of core learning activities, questions and answers, and waste management and (4). Closing

In this model, the kinds of play activities that children do in this learning model are playing the catwalk, running and jumping, digging the ground, playing in water, and so on. The assignment is done by giving a worksheet, then the child is asked to do the requested task, for example students are asked to circle pictures of objects that are seen in the clear sky in the morning. In this model the project method is carried out as a series of activities to cover the theme, for example a plant project.

The results of field notes observations show that learning resources are carried out in door and out door. In-door learning resources are carried out in the classical room and or central room, while out-door learning resources are carried out in the school yard and utilizing the surrounding environment. The allocation of learning time chosen is flexible, adjusted to the type of activity carried out, but in general it is carried out for 1.5 hours from 8.00 WIB to 9.30 WIB or 9.30 WIB to 11.00 WIB. The time allocation for each learning phase is also flexible, depending on the type of activity, which is outlined in the daily activity plan.

The results of interview data with teachers and open observations can be seen that children become more orderly in queues, complete work/tasks to completion,

and dare to appear in front of the class or in front of friends.

To measure the effect of the model, an assessment of , socio-emotional abilities was carried out before and after the large group formative evaluation. Evaluation result. The results of children's abilities are presented in table 1. below.

Table 1. Results of the Average Score of Children's Ability Before and After Large Group Formative Evaluation

No Responden	Score of Children's Ability	
	<i>Pre expreiment</i>	<i>Post expreiment</i>
1	30,5	39
2	28	38
3	29	34,5
4	32	40
5	25	36
6	26,5	35
7	32	37,5
8	21,5	35
9	33	38
10	32,5	40
11	29	34,5
12	28,5	36,5
13	28	37,5
14	31,5	40
15	20,5	25,5

Then, a t-test was conducted on the children's ability data before and after the large group formative evaluation of 15 kindergarten children in group A. The t-count value of social-emotional skills was 12.65. The t-table value of one-way test with a confidence level of = 95% with a degree of freedom (df = n-1) is 1.76. Because the value of t-count is greater than than t-table, the researcher rejects the null hypothesis, meaning that the working hypothesis is accepted. This means that statistically there is an increase in children's social skills after a large group formative evaluation.

4. DISCUSSION

The results of field notes observations show that learning resources are engaging in-door and out-door. In-door learning resources are carried out in the room and or living room, while out-door learning resources are carried out in the school yard and take advantage of the surrounding environment. The results of interview data with teachers and open observations shows that children become more orderly in queuing, completing work/tasks to completion, and daring to appear in front of the class or in front of friends.

The characteristics and principles of Mugi's Model are in line with research in the field of neuroscience which has proven that: (1) children learn through

interaction with other people and the surrounding environment; (2); all senses of children need to be stimulated even if not all at once; and (3) there must be a balance between indoor and outdoor activities [20].

Science learning in early childhood can be interpreted as things that stimulate children to increase curiosity, interest and problem solving, giving rise to thoughts and actions such as observing, thinking, and linking concepts or events [11]. For children, science is about trying to understand the world they see, namely humans, animals, plants and other objects in the environment by conducting experiments and reporting their findings [12].

Furthermore, a t-test was also conducted on the children's ability data before and after the formative evaluation of a large group of 15 kindergarten children in group A. The t-count value of social-emotional skills was 12.65. The t-table value of one-way test with a confidence level of = 95% with degrees of freedom (df = n-1) is 1.76. Because the value of t-count is greater than t-table, the researcher rejects the null hypothesis, meaning that the working hypothesis is accepted. This means that statistically there is an increase in children's social skills after a large group formative evaluation is carried out.

Assessment is carried out throughout the activity process. The observed aspect is the child's social emotional state. The final result of this multisensory-ecology-based science learning is the occurrence of higher social emotional abilities of children in group A TK Aisyiyah Buthanul Athfal 86 Cipayung than before. This shows that the multisensory-ecology-based science learning model is proven to be able to improve the social emotional abilities of group A children in Aisyiyah Kindergarten Busthanul 86 Athfal Cipayung.

This is also in line with the results of research which also explains that the Mugi PSB conceptual model consists of five characteristics and learning principles [18]. The five principles of Mugi's PSB model are: learning that prioritizes child-centred learning; integrated learning; varied learning methods and prioritize play activities; learning themes that begin with the project method; and assessments are carried out simultaneously to develop children's cognitive, social emotional and physical in the learning process.

5. CONCLUSION

It can be concluded that the multisensory-ecology-based science learning model can improve the socio-emotional skills of children in Group A Kindergarten Aisyiyah Busthanul Athfal 86 Cipayung, Jakarta. The

research recommendation is that the Kindergarten Principal is expected to motivate teachers to carry out multisensory-ecology-based science learning.

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