



Development of Activity-Based Science Learning Models with Inquiry Approaches

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ABSTRACT: This study aims to develop an activity-based science learning model with an inquiry learning approach for early childhood that can be used to increase the sense of curiosity and scientific thinking in children aged 5-6 years. This study was conducted with research and development / R & D research methods. Data was collected through interviews, observations, questionnaires, pre-test and post-test for children. Data analysis using paired t-test. The results showed that children were interested and enthusiastic in the learning process by using a science-based learning model with the inquiry approach, Sig. (2-tailed) showing results of 0.000, so the value of $0.000 < 0.05$ was different from before and after the use of learning models. Results show children can understand the material, more confident and has initiative to find answers for the teacher's questions about science, the child's curiosity increases to examine the information provided by the teacher, the child's understanding of work processes and procedures from science learning with the inquiry approach getting better. It was concluded that an activity-based science learning model with an inquiry approach for children aged 5-6 years used an activity model with an inquiry learning approach based on children's interests and children's needs so that children's curiosity would emerge and continue to be optimally stimulated.

Keywords: Inquiry approach, Learning model, Science Learning

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1 INTRODUCTION

One of the efforts to advance the Indonesian nation is to educate the life of the nation. It can be started through education from an early age. Early age is a golden period. The National Association for the Education of Young Children (NAEYC) states that based on the results of the psychology research on child development, there is a general pattern that can be predicted regarding the development during the child's first life, namely in the age range 0-3 years, 3-5 years, and 6-8 years. UU No. 20 Th. 2003 concerning the National Education System (SISDIKNAS) states that Early Childhood Education (PAUD) is an effort to provide guidance to children from birth to six years of age through the provision of educational stimuli to help physical and spiritual growth and development so that children have readiness in entering education. Furthermore, UU RI No. 20 Th. 2004 states that early childhood education is one of the institutions that organizes education for early childhood that cannot be ignored because it becomes a forum to provide stimuli in order to develop properly.

The main objective of early childhood education is to improve aspects of child development including aspects of religious, cognitive, linguistic, motoric, and artistic values and morals. To achieve this goal, programs for early childhood are arranged contextually, can be embedded in children and meaningful in accordance with children's development and achieved according to planned targets (Ginsburg & Golbeck, 2004); (Justice & Kaderavek, 2004). It can be understood that in preparing learning for early childhood must be arranged in a real, interesting and easily absorbed by the child.

One aspect of this development is the cognitive aspect of the child. Curiosity can be categorized as part of cognitive aspects because it involves a thought process. Curiosity is a potential that is stored in human beings who acts as a motivator to continue learning, looking for new insights and innovations and can influence the success and performance of children in various fields in the future (Walin & Grady, 2016); (Lindholm, 2018). One of the factors that identify early childhood active in learning is curiosity. Curiosity encourages children to pay much attention to an activity to get more specific information. Basically, every early childhood has the potential for high curiosity. Knowledge is an ability to recognize the effectiveness of questions to be able to solve mysteries (Jirout, 2011). Children who are active in asking about things that are found in their surroundings are a sign that the child has a high curiosity.

Stimulating curiosity and the desire to seek answers from within the child so that it continues to develop requires the right process. The formation of a child's curiosity can be initiated by inviting children to explore the surrounding environment according to their interests. Appropriate stimulation can help children to foster curiosity then the child will be motivated to actively find out the answers to the things he wants to know. The participation of parents and teachers is the main thing in the process. Ideally, in the classroom educators always try to foster a child's curiosity through various ways and strategies (Walin & Grady, 2016).

Some research investigated opportunities provided by parents to children in order to facilitate science learning and promote careers related to science. Themes were identified and then categorized into two main factors namely a) parental support and b) parents' academic expectations. Supporting factors for parents include supporting children in choosing science activities, providing assistance in improving children's achievement in science, involvement in increasing interest in science, involvement of activities related to science, and supporting career choices related to science. The academic parental expectation factor identifies the sixth theme, namely continuous parents' interest in children's achievements in science. These identified factors

can help schools to plan effective educational interventions that involve parental collaboration in increasing children's interest in science learning (Halim, Abd Rahman, Zamri, & Mohtar, 2018). The attitude of parents and families to the science of everyday life can play an important role in shaping children's scientific aspirations. Therefore, parents must provide better and more comprehensive support so that children can compete in this era of globalization. Parental support affects the development of children's education because parents not only have children interested in the field of science in school but also family history influences children's tendency to be interested in science. In addition, parents' beliefs about science can significantly influence children's interests and motivations in science (Buday, Stake, & Peterson, 2012); (Maltese & Tai, 2011); (Bustamance, White, & Grienfield, 2018); (Nugent et al., 2015).

Parents who have high hopes for their children to grow into popular individuals, forcing them to study in areas that are not in their children's interests. This will reduce their thinking ability and their motivation to learn. As such, it is important for parents to understand the interests of children and to keep up with developments, so that effective actions can be planned and taken to improve children's abilities for their future (Yahya & Ismail, 2011). The success of the child's curiosity formation, ability to study and the ability to find answers to the surrounding phenomena that children see is very dependent on the commitment of parents and teachers. Particularly for the school it is important to pay attention in developing the school's vision to carry out learning. This is because curiosity is the basis for children's scientific thinking / logical thinking process to be formed optimally.

Parents who succeed in influencing their children's career choices are those who have enough information, share that information with their children, and help their children in the process of making career decisions and appropriate courses (Lukas, 2015). Previous research shows that during early childhood, parents function as the most important motivating factor in the lives of their children and this includes career decisions. Previous findings also showed that the level of education of parents has a significant correlation with the desirability of children. During early childhood, parents provide guidance by developing children's skills and observing their academic improvement. Parents provide support to improve their achievements in science and mathematics during the early education stage (Cridge & Cridhe, 2011).

The problem is most children aged 5-6 years haven't high curiosity about the phenomena occurs around them. Most children are passive in learning. Some of the factors that cause this are lack of stimulation from both parents and teachers, lack of understanding and mindset of parents and teachers in understanding their functions, duties and responsibilities in stimulating children. Parents unconsciously dispel the child's curiosity potential, for example when children ask about something and parents does not provide a basic for their children motivation to find out more. The priority is academic ability, especially reading, writing and arithmetic. Play and explore activities for the environment according to the understanding of parents is a less useful thing. Even though through exploration, children can be stimulated by their reading, writing and arithmetic abilities. Children are passively accustomed at home, school so in science learning activities teachers are rather difficult to invite children to try to find / explore what phenomena children want to know. Some teachers also do learning without understanding the goals to be achieved and their impact on children's behavior. In the learning process the teacher is only limited to carrying out core activities, not yet reaching the awareness of interpreting the learning process towards the formation of children's scientific reasoning. Then the learning model used is a conventional learning model. This is what encourages to be able to find innovative learning models in order to stimulate cognitive development of children, especially in high curiosity.

Problems related to children's curiosity can be stimulated and realized through activities exploring in various fields according to their interests such as knowledge of nature, sports, art and so on (Borowske, 2005). When children are given the freedom to explore and explore the environment according to their interests, the child will find something new. Children will be increasingly curious about the things they have just met and will eventually ask parents and teachers to get the desired answers. As parents and teachers, they should not immediately give answers to children but only give instructions / steps so that children are more curious and try to think, looking for ideas to get the final answer.

Science is one content that can be introduced to stimulate children's curiosity. Science activities are effective techniques in acquiring basic concepts and positively influencing the development of concepts that already exist in children (Doğru & Şeker, 2012). Science is closely related to experimental activities, exploration and exploration that involve children to practice directly in learning. In societies that depend on scientific development, supporters and obstacles in the development of children's curiosity in school curricula and science education are essential (Lindholm, 2018). It is understandable that teachers continue to innovate on things that can support the development of children's curiosity to continue to develop optimally. A fundamental understanding of the concept of science in early childhood develops during the early years of school (Guo, Piasta, & Bowles, 2015), so that this can be a reference for teachers to be able to arrange learning programs in accordance with children's development.

Early childhood science education research highlights the need for early science research, especially in children from low income families. Science has a low readiness domain for children from poor economic families. This study shows a unique relationship between early science and learning approaches, in the learning approach predicting the effects on readiness of science is greater than the effects of mathematics or language readiness. This study further explores this relationship by examining the two-way potential between science and the learning approach. These results indicate that the development of children's approaches to learning is related to increasing science knowledge, and that increasing children's scientific knowledge is related to the positive development of the learning approach throughout the school year. This study provides support for future research that examines the potential of science interventions that serve as a context for developing approaches to learning skills that will help children engage in quality science learning (Bustamance et al., 2018). In connection with this research research on the development of activity-based science learning models with inquiry approaches is in line with the development of quality science learning. This can also affect all aspects of child development and school readiness.

Teachers who use conventional learning models encourage practitioners and experts to continue to create innovative learning models, especially in the field of science. This still needs to be done so that there are various variations in the learning process at school. Variations in learning models will stimulate curiosity as well as children's creativity. Developing of scientific learning model innovations must be able to simultaneously change the mindset of teachers in learning process and not only oriented to worksheets, but prioritize inquiry-based learning activities. Through inquiry learning children will get used to compiling their knowledge but still remain in the direction of the teacher through giving a foothold. This is inseparable from the development of concepts and skills from infancy to early childhood in inquiry learning in science (Lind, 1998); (Youngquist & Pataray-Ching, 2004). Inquiry learning is highly recommended as a basis for children's learning, especially in the fields of science and mathematics (Anderson, 2002). It can be understood that science and mathematics require logical thinking and curiosity to be able to find

answers and prove them scientifically. as Wang et al argue that children naturally explore and learn about the environment through investigation(Wang, Kinzie, McGuire, & Pan, 2010), then adapted to class, inquiry involves a problem-solving process (Lind, 2005) where the child answers the research question (Bell, Smetana, & Binns, 2005), build their own knowledge, and develop their understanding with the support of teachers and peers. Investigation helps students to develop their personal and social understanding of the world by utilizing various perspectives and various forms of knowledge, such as mathematics, science, language. Children spontaneously ask questions, ask questions and explore, to understand the world; this is an important key to their lifelong development that must continue to be supported(Youngquist & Pataray-Ching, 2004). The inquiry approach in learning is in harmony with the competencies that must be possessed by children in the 21st century, ensuring an increase in their motivation to learn, developing observing and asking skills, and positive changes in students' attitudes towards learning. Inquiry-based learning shows that the benefits of its application are better than conventional learning related to stimulation of abilities in investigations (Caballero Garcia & Diaz Rana, 2018). The use of inquiry-based learning is prioritized, because it has proven to be an effective method for increasing student motivation in science, technology, engineering, and mathematics (STEM) and increasing children's understanding of scientific concepts (Gerli Silm, Tiitsaar, Pedaste, Zacharia, & Papaevripidou, 2015) (Wu & Lin, 2016). Based on some of these things which underlie the need for the development of activity-based science learning models with an inquiry learning approach so that it can be one solution in order to stimulate children's curiosity optimally.

2 METHODS

Activity-based science learning model with inquiry learning approach is the result of research and development (Research and Development). Research and development are a research method that collaborates quantitative and qualitative research methods and is packaged in certain stages in order to test the effectiveness of a product being developed / innovated and new / original products.

The research was conducted in 4 cities in Indonesia, namely Jakarta, Bogor, Tangerang and Bekasi. The research subjects were children aged 5-6 years. This research analyzes qualitative and quantitative data about the emergence of children's curiosity. Qualitative data analysis was obtained through data from the needs analysis (literature studies, comparative studies, interviews & observations) while the quantitative data obtained through the results of tests conducted before (pretest) and after the use of activity-based science learning models with inquiry learning approach (posttest) Then the test scores were analyzed through paired t-test.

3 RESULT AND DISCUSSION

3.1 Result

The model design developed was in the form of an activity-based science learning model with an inquiry learning approach. Activity-based science learning model with inquiry learning approach is the result of modification of existing learning models. The goal is to stimulate and increase children's curiosity when using the learning model. This learning model is developed based on the process as follows:

3.1.1 Pre-Analysis

Pre-analysis is done with an effort to find a concrete initial picture of the condition of activity-based science learning in kindergarten children. This is done in order to get an overview of the implementation of activity-based science learning activities. The problems identified are passive children in science learning activities, lack of teacher understanding in implementing science learning into the learning process. Most teachers in the learning process still use conventional learning methods.

3.1.2 Final draft of activity-based science learning model with inquiry learning approach

Activity-based science learning models with an inquiry learning approach designed through design, implementation and evaluation. The purpose of activity-based science learning design is set in order to stimulate and increase children's curiosity. The science learning material is based on activities to shape children's scientific thinking which is characterized by the emergence of children's curiosity and finding answers to the phenomena that occur around them. Following is the design of the science learning model based on the inquiry learning approach:

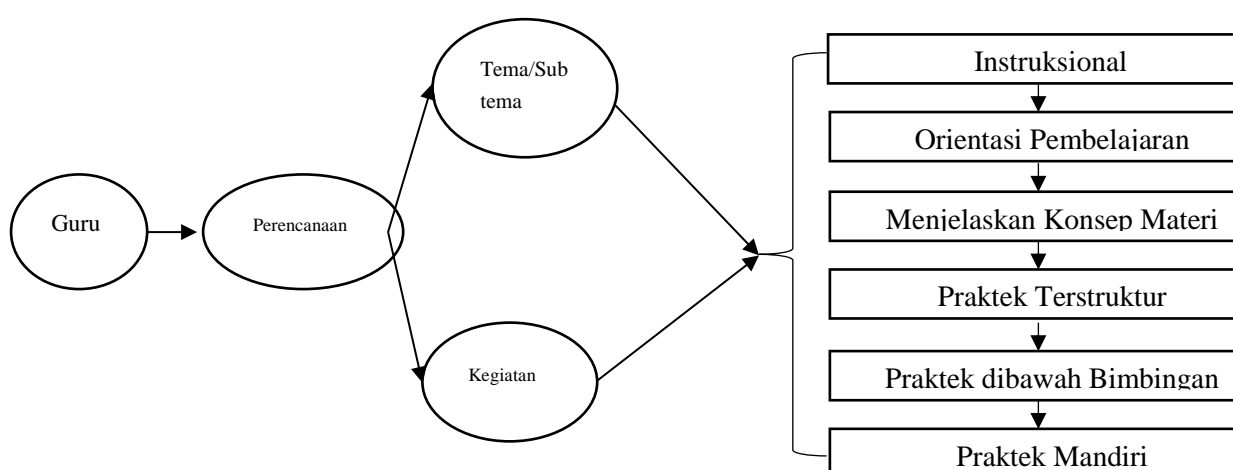


Figure.1: Design of a Science Learning Model Based on the Inquiry Approach

Activities-based science learning design steps with an inquiry learning approach can be done through:

First Stage: Learning Orientation

- The teacher determines the subject matter and appears in the form of themes / sub-themes.
- The teacher reviews the previous material by performing apperception.
- The teacher determines the learning objectives that are set and adjusted to the targets to be achieved to form a child's scientific thinking.
- The teacher determines the procedures and forms of activities that will be carried out with the child in learning activities.

Second Stage: Explain the Material Concept

- The teacher explains the concepts or new skills that the child will have.
- The teacher presents a visual representation of the tasks given with simple examples.
- The teacher ensures the child's understanding of the material taught by using observation and question and answer techniques during the process of learning activities.

Third Stage: Structured practice

- Teachers guide groups of children with examples of practice directly.
- The teacher instructs to do things according to the example,
- Children respond with questions and answers.
- The teacher provides corrections to errors.
- The teacher strengthens the practice of the right child.

Fourth Stage: Practice with Teacher's Guidance

- Children practice semi-independently, where all learning activities that must be done by the child are still under the guidance and guidance of the teacher (the teacher is in a position to provide reinforcement and memory).
- The teacher rotates the child to practice with other activities / examples and asks the child to observe and comment and assess the activities carried out by his friends according to the concept taught by the teacher.
- The teacher provides feedback in the form of praise, whispers and instructions for what the child is doing and about comments and evaluations of the activities carried out by the child.

Fifth Stage: Independent Practice

- Children practice independently at home or in class, the teacher involves other children to give comments and assessments of the behavior of their friends. Independent practice is done several times
- The teacher delays the response back and gives it at the end of the series of practices, meaning the teacher does not directly respond to what the child is doing, but postpones until the closing activity is done. Response is given to the closing activities and concludes with the children in order to provide reinforcement.

3.1.3 Effectiveness Test

The effectiveness of science-based learning model activities with inquiry approach was calculated using a quasi-experimental research method with a pre-test and post-test design on 20 respondents in an early childhood education institution. Pretest and posttest were used to measure the level of change that occurred between before and after treatment in using an activity-based science learning model with an inquiry approach. The following scores are obtained through the pretest and posttest:

Table 1. Pre-Test & Post-Test Score List Using Activity-Based Science Learning Model with Inquiry Approach

No.	Name	Pre Test	Post Test	Conclusion
1	Din	42	68	Improve
2	Far	38	67	Improve
3	Al	53	72	Improve
4	Rad	49	70	Improve
5	Shi	50	73	Improve
6	Nin	56	78	Improve
7	Wid	36	62	Improve
8	Bud	49	65	Improve
9	Nin	34	58	Improve
10	Ag	46	60	Improve
11	Her	37	62	Improve

12	Nun	48	67	Improve
13	Ti	51	65	Improve
14	Din	52	71	Improve
15	Alf	43	60	Improve
16	Ran	30	53	Improve
17	Nan	32	59	Improve
18	Ais	28	57	Improve
19	Ren	46	69	Improve
20	Bal	43	66	Improve

Based on the results in the table, it shows that there is an increase after using an activity-based science learning model with an inquiry approach. Increasing the child's score shows that the science-based learning model of activities with the inquiry approach can be accepted as one of the mediums to achieve the planned target, which is to be able to convey information and can increase the child's curiosity towards science activities. This is in line with Lua and Li in his research also obtained results that students become more confident in learning activities and feel satisfied with learning activities; students gain knowledge in accordance with the planned target (Lu & Liu, 2017).

Furthermore, in this study the effectiveness test of media use was calculated using paired t test through the SPSS application. Paired t tests are carried out on subjects tested on the condition before and after the process, or in pairs or similar subjects. The t-test formula is paired as follows:

$$t = \frac{\bar{x} - \mu_0}{S/\sqrt{n}}$$

Description:

t = value of t

– x = mean of group 1

μ₀ = mean of group 2

S = Standard deviation of measurement differences 1 and 2

n = number of samples

Then, the hypothesis is as follows:

H₀: μ₁=μ₂ (there is no difference between before and after the use of activity-based science learning models with the inquiry approach)

H_a: μ₁≠μ₂ (there is a difference between before and after the use of activity-based science learning models with the inquiry approach).

The following are the results of the calculation:

Table 2. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	43,15	20	8,222	1,839
	Posttest	65,10	20	6,231	1,393

Table 3. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	20	,839	,000

Table 4. Paired Samples Test- Pired Difference

		Paired Samples Test							
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	-21,950	4,524	1,012	-24,068	-19,832	-21,696	19	,000

The effectiveness test was carried out with quasi-experimental research methods through pre-test and post-test and analysis using paired t-test. The calculation value of paired samples test with SPSS obtained the mean value of -21,950 obtained from the average difference before the use of the science learning model and after the use of the science learning model. The standard deviation shows the value of 4,524 which is the standard deviation from the difference between before and after the use of the science learning model. Then for the confidence interval shows a lower value = -24.068 and upper = -19,832 which means the interval indicates the area of difference in recognition at the level of 95%. The results of the t-test showed a value of -21,696 which means that it is greater than t-table 2.56 at the level of 99%, this means that the difference in the introduction of marine life is accepted at the level of 99%. Then Sig. (2-tailed) shows the results of 0.000, so the value of $0.000 < 0.05$ then the data shows that there are differences from before and after the use of activity-based science learning models with inquiry learning approach.

3.1 Discussion

This study produced a product in the form of "Activity Based Science Learning Model with Inquiry Learning Approach". The outline learning model is a conceptual framework that describes a systematic procedure in organizing learning experiences to achieve certain learning goals and serves as a guide for learning designers and teachers in designing and implementing teaching and learning processes (Darmadi, 2017). The presence of inquiry learning based science learning models has a role to facilitate the learning process. The role of inquiry-based learning approaches can act as a potential tool to stimulate children's curiosity, as well as simple classroom techniques, which can be applied to almost all academic disciplines (Pluck & Johnson, 2011). It can be understood that the application of an activity-based science learning model with an inquiry approach can also influence the increase of children's knowledge but also can increase the creativity of the teacher in preparing learning activities.

Science is a knowledge that can be given from an early age. Studying science from an early age aims to facilitate the child's high curiosity and to be able to develop extensive knowledge about various phenomena that occur. As Saçkes stated in his research that in the United States science learning has been given in kindergartens in the fields of science and technology, such as earth and space, life, and physics (Sackes, Trundle, & Flevares, 2009). Science is a collection of knowledge used to explain natural phenomena, then the knowledge is arranged so that any new facts obtained can be confirmed by reference to other facts that were previously known. Science is a way to

uncover new parts of knowledge. This is achieved through a process of observation and testing designed to confirm whether there is an explanation proposed about something (Gross, 2012).

Based on the results of trials on activity-based science learning models with an inquiry approach, the fact is that children are stimulated by their curiosity about the theme of learning. This is in line with research on inquiry learning which reveals that science and technology learning supported by guided activities developed in line with the IBL approach (Inquiry Based Learning) has a significant effect on students' critical thinking skills in science and technology courses (Duran & Dökme, 2016). The science learning model based on an inquiry approach aims to increase children's curiosity so that later children will have the ability to think critically. Children instructed through inquiry-based learning score higher than instructed through traditional methods (Abdi, 2014). This is in line with the science learning model because the learning process takes place pleasantly, meaningfully, is centered on children and activities are carried out directly in practice.

Another finding in the use of science learning models based on inquiry approaches is that children are also active and involved in the exploration and discovery process about the themes presented. In inquiry-based science education, children become involved in many of the activities and thought processes that scientists use to produce new knowledge. Science educators encourage teachers to replace traditional teacher-centered teaching practices, such as emphasis on textbooks, lectures, and scientific facts, with an inquiry-oriented approach that (a) involves children's interest in science, (b) provides opportunities for children to use appropriate laboratory techniques to gather evidence, (c) ask children to solve problems using logic and evidence, (d) encourage children to conduct further studies to develop more complicated explanations, and (e) emphasize the importance of scientific writing and evidence-based explanations (Reiser, 2004). Inquiry-based teaching approaches support increasing children's knowledge in order to know that knowledge is the result of previous expert research (Bransford, Brown, & Cocking, 2000).

This is in addition to motivating children to continue exploring to find something so that someday in the future children can become inventors whose work will be known to many people from all over the world, also can be a means to introduce history to children about previous scientists find various fields of science's study.

The next finding is that shy children also become more confident to express their opinions. This is because there is a feeling of being able in children when doing science activities so that children are motivated to be more confident. Children's cognitive abilities automatically also increase compared before when children do learning using conventional learning models. In the early twentieth century prominent child psychologist Jean Piaget emphasized the importance of curiosity in children's cognitive development. He uses various terms to refer to curiosity and exploratory behavior, connecting them primarily with the assimilation process, which together with accommodation refers to two ways in which children adapt or learn about the world. In addition, Russian psychologist Lev Vygotsky has emphasized the role that adults play in encouraging children's exploration behavior. Vygotsky suggested that children's cognitive abilities were not established, but existed in the continuum from independent performance to what was possible in collaboration with adults. Thus cognitive abilities can be expanded through exploration and stimulation of childhood curiosity. The influence of Vygotsky and Piaget is very large in the field of child psychology and applied aspects in education (Pluck & Johnson, 2011).

High curiosity can also affect children's memory. Memory that a child remembering the process of mixing primary and secondary colors, when they remembers the characteristics of a living

being and so on. The effect of curiosity on memory may not be too strong due to various other factors. One is that children are more likely to remember answers that have more familiar words. Some of the questions kids want to ask might have answers with words that are not commonly used, while other curiosity-raising questions have a more memorable answer (Walin & Grady, 2016). Walin and Grady's research mentions that children's memory is the ability of children to remember terms or scientific vocabulary, but this study has not been studied further on scientific vocabulary because the vocabulary used is still general and this can be done in future studies.

The formation of scientific reasoning in children is a learning goal in kindergarten according to Permendiknas Nomor 137 dan 146 Tahun 2014 about standardization of early childhood development, which is realized through learning activities in schools. The learning objectives are achieved through learning activities carried out as long as the child is in school and can be followed up at home with the help of parents. The activity of learning the formation of scientific reasoning in children is a target that must be achieved by teachers in schools, so that children's scientific reasoning can develop optimally attached to children and can appear on children's behavior without being asked, forced and suppressed.

Activity-based science learning models with an inquiry learning approach were developed with regard to the development and formation of scientific reasoning in kindergarten children. Besides the activity-based science learning model with inquiry learning approach is characterized by the basis of children's development and learning, the basis of children's strengths, children's needs and interests as well as the child's social and cultural context. With this basis set 1) What activities can be given to children, interactions or learning experiences that are appropriate to the age and individual children; 2) Activities held are in accordance with the social and cultural aspects of the child so that the learning experience is easily understood by the child because the child is in that environment.

The contribution of activity-based science learning models to the inquiry learning approach in children is sought by describing the criteria for the formation of children's scientific reasoning in the design, implementation and evaluation of learning. The children's scientific reasoning values that are used as criteria for the development of children's scientific reasoning are determined through indicators of achievement of activity-based science learning outcomes with the inquiry approach. Activity-based science learning model with inquiry learning approach developed in accordance with children's development needs in the context of learning. Then directed to realize the purpose of learning to shape children's scientific reasoning. This was realized through the emergence of curiosity of children, continued the emergence of the desire to find out more than the phenomenon that children see in the surrounding environment and ended with the desire to find answers to the child's curiosity about the phenomenon he saw. The main role of the teacher is to provide appropriate footing to evaluate the success of stimulation to support children's learning (Falloon, 2019). Again, this will be achieved if the teacher's role is optimal and appropriate in providing stimulation to children.

4 CONCLUSION

The development of learning models based on inquiry approaches is an existing learning model innovation with the aim of increasing the potential of children's curiosity to be stimulated and develop optimally. This is evidenced by the findings in the study, namely the child's curiosity towards the theme of learning becomes greater, children become more active in exploring and exploring the surrounding environment, children's confidence becomes higher and children's

memory becomes higher. Developments in particular science-based learning models and inquiry learning approaches for early childhood to continue to be improved so that they become more varied to create fun and meaningful learning for children.

Given the limitations in this study, it is expected that further research can be investigated on the effect of activity-based science learning models with an inquiry approach to children's memory and early childhood vocabulary acquisition.

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