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FACULTY OF EDUCATION
STATE UNIVERSITY OF MALANG

theme:
Improving the Quality of Education and Training
through Strengthening Networking

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Improving The Quality of Education and Training Through Strengthening Networking

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PREFACE

The International Conference on Education and Training (ICET), Faculty of Education, State University of Malang, 2016 took place in Malang, Indonesia, between 4 and 6 November, 2016. ICET is an international conference covering research and development in the field of education and training. The conference aims at creating a forum for further discussion for an education and training field incorporating a series of issues and/or related to quality improvement in education and training. Therefore, the call for papers was addressed to scholars and/or professionals of the field of eduaction and training. Driven by the fast-paced advances in the education field, this change is characterized in term of its impact on the education implementation.

During the conference, 4 keynotes speakers were held in order to advance and contribute to specific research areas in the filed of education. More than 250 pre-registered authors submitted their work in the conference. The ICET 2016 finally accepted and hosted 200 original research papers. All papers submitted to the conference were reviewed using a double-blind peer review process. The conference commite decided about the acceptance or not of the submitted papers, with the contribution of competence and expertised reviewers.

We would like to thank all members that participated in any way in the ICET 2016, especially: (a) the Inderscience Publisher for supporting and receiving the selected papers to be published as the Special Issues Edition of the International Journal of Innovation in Education; (b) the Co-organizing Universities and Institutes for their support and development of a high-quality conference; (c) the members of the scientific committee that honored the conference with their presence and provided a significant contribution to the reviewer of papers as well as for their indications for the improvement of the conference; and (d) all members of the organizing committee for their willing to organize the conferenece as good as possible.

Dean,

Prof. Dr. Bambang Budi Wiyono, M.Pd

TABLE OF CONTENTS

DESCRIPTION OF APPROACH IN LEARNING SCIENCE THE SCIENTIFIC BEGINNING

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ABSTRACT

Learning to use a scientific approach focuses on the child as a subject of learners and teachers would only serve as a motivator in the learning processs. In the process of learnig to use a scientific approach, children are able to carry out the process of observing, asking questions, trying, associate, and communicate discovery the result. Science in early childhood can be defined as a process that can stimulate the child in an effort to increase the curiosity, interest and problem solving, which raises the thoughts and deeds such as observing, thinking, and links between concepts and events. The problem in this is how the description pelitian scientific approach to science learning beginning? The purpose of this research to describe the scientific approach to learning science starters. Type a descriptive qualitative research. Data collection techniques in this study using observation, interview and documentation. The results obtained in this study is, learning to use a Scientific Approach in Children showed good results. The results of the data on observation shows that children are able to perform learning science by using scientific approaches such as the activity observed, ask, gather information, reason and communicate is already well developed in accordance with the child's age and developmental level of a child's learning needs. By using a scientific approach to learning is very influential on a child's knowledge, the value of spiritual / religious character of the child and the child to think scientifically and critically.

Keywords: *description, approach, scientific, science*

Intro to science should be done from an early age with fun activities and through habituation process so that children experience science in action. Learning science in children has a very important role in helping to put the basic capabilities as well as the formation of human resources. Science in early childhood can be defined as a process that can stimulate the child in an effort to increase the curiosity, interest and problem solving, which raises the thoughts and deeds such as observing, thinking, and links between concepts and events.

Learning science in early childhood let done by observing, classifying, comparing, measuring, communication and experimentation. Introduce science in children should be tailored to the child's age and stage of its development. Train children to use the five senses to recognize the various objects symptoms or symptoms of the events. Children are trained to see, feel, smell, feel and hear. Child acquire new knowledge of the results penginderaanya with a variety of media that is around. It also can train the senses to recognize the various symptoms of objects and events (Suyanto, 2008: 75).

To portray these functions can be done through a scientific approach to develop all aspects of child development precisely on the development of cognitive, affective and psychomotor. Thus, the child is directed to find out for yourself the facts, concepts, and new values necessary for his life. Scientific approach to learning is learning to adopt measures in building pengetahuanya scientists through scientific methods.

The learning model is needed is capable of generating the ability to learn, skills, and attitudes of children. Scientific Learning also does not regard the learning outcomes as the estuary end of the learning process is considered very important. In this model children are invited to perform the search process the knowledge with respect to the subject matter through the various activities of the process of science, as was done by scientists in conducting scientific investigations (Nur, 1998).

The whole learning activities by using a scientific approach focuses on the child as the subject of "learners" and teachers only act as motivators in the learning process of children in finding pengetahuanya. In the process of learning to use a scientific approach, children are able to carry out the process of observing, asking questions, trying, associate, and communicate penemuanya through a work of art. Based on these ideas, do research titled Application of Scientific Approach In Science Learning Startup.

Nature of Scientific Approach

The approach can be viewed as a series of actions patterned or organized based on certain principles (eg, basic philosophical, psychological principles, didactic principles, or ecological principles), which are systemic focus on the goals to be achieved. The approach contains a number of components or elements, namely: purpose, activity patterns, methods or techniques, sources used and principles (Sulistyorini, 2007: 13). The approach can be interpreted as a starting point or our view of the learning process.

Whereas the teacher centered approach lowers the learning strategy directly (direct instruction), or expository deductive learning. Meanwhile, learning approach student-centered learning strategies lowers discovery and inquiry and inductive learning strategies (Sanjaya, 2008: 127).

By viewingtheory put forward by experts, the approach is the starting point or view of organized or patterned to the learning process to achieve the learning objectives. Scientific approach was first introduced in America in the late 19th century, as the emphasis on the laboratory formalistic approach that leads to scientific facts (Hudson, 1996: 115).

The scientific approach allows teachers or curriculum developers to improve the learning process, namely by breaking the process down into steps or stages in detail which contains instructions for the students carry out learning activities (Maria Varelas and Michael Ford, 2008: 31). It is the basis of curriculum development in 2013 in Indonesia. The scientific approach is a learning process that is designed so that learners are actively building competencies attitudes, knowledge and skills through the stages observe, ask, gather information, reason, and communicate.

The scientific approach is believed to be the golden bridge and the development of attitudes, skills, and knowledge of learners. In the approach or work process that meets the scientific criteria, the scientists put forward pelararan inductive (inductive reasoning) rather than deductive reasoning (deductive reasoning). Deductive reasoning see a common phenomenon to then draw specific conclusions.

Conversely, look at the phenomenon of inductive reasoning or specific situation to then draw conclusions overall. Indeed, inductive reasoning put specific evidence in relation to the broader idea. The scientific method generally puts a unique phenomenon with specific studies and detail to then formulate general conclusions. Scientific method refers to the investigative techniques on one or several phenomena or symptoms, acquire new knowledge, or correcting and integrating previous knowledge.

To be called a scientific, the search method (method of inquiry) should be based on evidence of objects that can be observed, empirical and measurable with the principles of reasoning that is specific for the scientific method generally includes a series of activities of collecting data through observation or experiment, process information or data, analyze and formulate and test hypotheses. Scientific approach based learning is more effective results compared with traditional learning.

Research results prove that the traditional learning, retention of information of teachers by 10 percent after 15 minutes and the acquisition of contextual understanding by 25 percent. In a scientific approach based learning, information retention of teachers by more than 90 percent after two days and the acquisition of contextual understanding by 50-70 percent.

Characteristics of Scientific Approach

As for the characteristics of the scientific approach according Kemendikbud (2013) are as follows: 1) The substance or learning materials based on facts or phenomena that can be explained by the specific logic or reasoning; not limited to, approximately, fantasy, legend, or a mere fairy tale. 2) Explanation of the teacher, the response of learners and educational interaction teacher-learners free of prejudice necessarily, subjective thinking or reasoning that deviate from the flow of logical thinking. 3) To encourage and inspire students to think critically, analytically and precisely identify, understand, solve problems, and apply the lessons. 4) Encourage and inspire students to think hypothetically in seeing the differences, similarities, and link to one another of the learning materials. 5) Encourage and inspire students in understanding, applying, and develop rational thinking patterns and Bendatif in response to learning materials.6) Based on the concept, theory, and empirical facts that can be accounted for. 7) The learning objectives are formulated in a simple, clear, and attractive presentation systems.

The Steps Saintific Approach

Thats are 1) Questioning. Inquire as a process of finding out or confirm or match from prior knowledge of children with new knowledge that is being studied. Basically, the son of a reliable researcher, children are always curious about something that captured his senses. Therefore children often ask, which is sometimes very unexpected question adults. But the process of scientists coming from the critical mind. 2) Collecting. Collecting data is a process that is very interested in children. In this process the child to try - failed - please try again "trial and error". Children love to repeat the same activities but with a different way of playing. Learning who allow their children to do many things very supportive creative thinking abilities. While a lot of learning to use the work sheet instead shackle the creative abilities of children. 3) Associate. The association is a further process in which children begin to link the knowledge he already had with new knowledge acquired or in the surroundings. The associated processes important for children to develop a new understanding of the world around him. Piaget noted that children make up new schemata without discarding existing but previously improve and strengthen.4) Communicate. The process of communicating is the process of strengthening the knowledge to new knowledge on child get. Communicating is an activity to pass things that have been studied in various forms, for instance through

stories, movement, and by showing the work in the form of images, shapes out of dough, dolls from papier-mache, crafts from recycled materials, and the results of webbing (Paudjateng: 2015).

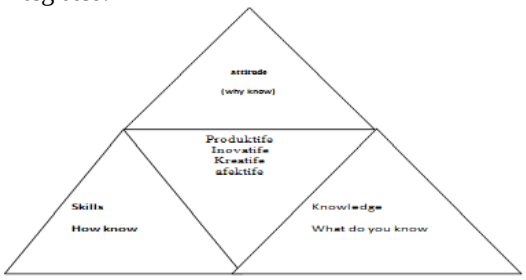
Learning Science Starters

Ability to learn to benefit the development of human civilization either individually or in groups. Individual children's learning abilities can be delivered on the personal development that leads to the formation of the pattern of individual skills, life skills, and mastery of certain skills.

Piaget's theory (Daryanto, 2014: 53) states that the study relating to the formation and development of sekema (distance schemata). Scheme is a mental structure or cognitive structure in which someone intellectually adapt and coordinate the surrounding environment (Baldwin, 1967) .Next Vygotsky in his theory states that learning occurs when learners work or learning to handle tasks that have not learned yet that task they are within range of abilities or tasks that are within the zone of proximal development area is located between the level of child development is currently defined as problem solving skills under the guidance of adults or peers who are more capable.

Learning the scientific method has had the following characteristics: a) Centered on children; b) Involve science process skills in constructing the concept, law or principle. c) Involves the cognitive processes of potential in stimulating the development of the intellect, especially the child's thinking skills. d) Can develop a child's character.

The following chart will be presented learning outcomes childbearing productive, creative, innovative, and affective through the strengthening of attitudes, skills and knowledge are integrated.



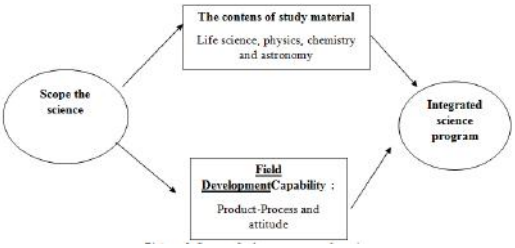
Picture 1 (Nugraha, 2008)

Learning Outcomesproduce of Children Productive, Creative, Innovative, And Through Strengthening Affective Attitude, Skills and Knowledge Integrated

It is recognized that learning is a combination of structured covers elements of human, material, facilities, equipment and procedures that affect each other achieve the learning objectives. In this case the man involved in the learning system, namely, children, teachers and other personnel. Furthermore, materials such as whiteboards, markers, books and so forth. The facilities and supplies consist of classrooms audia visual equipment. Procedures such as practice, study schedules and methods of information delivery. Learning must be marked by the organization of various interrelated components. Early childhood learning is a process of interaction between children and teachers and other adults in this case the parents in a development environment to achieve the task. Conceptually early childhood learning is learning through play where play activities are part of the learning process it is motivated by the conditions characteristic of early childhood are actively exploring the lingkungannnya.

According to Isjoni (2009: 56) Learning directed to the development and refinement of the potential capabilities such as language skills, socio emotional, motor and intellectual. From the description of teachers should design the learning so that children are not burdened in achieving development tasks.

A scientific attitude with regard to children's ability to think critically is a cornerstone in conducting scientific investigations so as to produce a product of science as facts, concepts, principles, theories and laws, Amin (1987) describes the relationship between the ability to investigate, process, and products of science and scientific attitude. The scope of the development program of science learning in children in terms of the development or capability that must be achieved so that there are three dimensions that must be developed which include, capabilities associated with the mastery of science products, process mastery of science and master of science attitudes (life scientists).



Picture 2. Scope of science program learning (Nugraha, 2008:94)

From picture 2 can be explained that the division of the scope of the development program of science learning can be meaningful if all development programs that are integrated science learning should be able to draw on a wide range of field development planning into one unified and synergistic. The task of further teacher development program for the benefit of science learning is selecting the things that can be incorporated more specifically associated with the development of

science program for children. General expectation is with the development of science learning have an understanding and experience of learning science intact, meaningful and functional for life.

The way children learn science

The children aged 4-6 years are part of early childhood, which is a sensitive period for children in which experts refer to as the golden age, at this time the intellectual development of children has increased to 50% that occurred maturation and psychological functions of children who are ready to respond to stimulation provided by the environment. According to (Isjoni 2009: 19) This period is due to lay the first foundation in developing physical abilities, cognitive, language, art, social, emotional, self-discipline, religious values, self-concept and self reliance.

Child is a unique individual many theories experts both psychologists, educational specialists, and other experts who study child development, especially early childhood, - temuan findings of the latest research results that are closely related to the profile and characteristics of children has been widely presented and believes that the behavior and the realization of children are very influenced by the environment can not be separated from it, the teacher as the person who demanded his role in a child menagani advisable to know very basic things related to the development of children both generally and specifically. Understanding of the development and characteristics of children adequately will be able to optimize the activities carried out which activities are controlled optimally and conducive to learning. Instead of learning situations that are not based on developmental characteristics of children the situation is not clear. From these explanations can be simply illustrated by the following Scheme (Nugraha, 2008: 47).

In general Mustafa 2002 (Nugraha, 2008: 50) identified a number of characteristics of early childhood as follows: a) Using all senses to explore objects; learning through motor activities and social participation; b) Still short attention span; bored easily and may look away when there is a new response. c) Started to develop the basics of language skills, playing with sounds; learn basic vocabulary with concepts; began studying implicit rules that regulate its expression. d) The rapid development of language. e) Active attention to everything but with a short attention span. f) Put themselves as the center of his own world; interest behavior and his thoughts were focused on themselves (egosentric); g) Inquisitive about the world of his own as a child; h) Became interested in the mechanism of how things work and the outside world around him.

The review of early childhood provides early childhood information that can not be ignored, they have a number of potential that can be developed. Related to the development of science, information about the characteristics and development as described will be used as a foundation to facilitate and mengobptimalkan starters science learning in children.

The dimensions of the changes that occur in early childhood after participating in science learning, (Nugraha, 2008: 57) is as follows; 1) Personality, namely by having the response pattern or a new behavior. Example: originally a child likes to lie and impatient, but after following appropriate science lessons, now it becomes less of a lie habit and start diligent in working and learning. 2) The behavior of actual or potential, namely the ability to perform activities that are not real or apparent (usually internal behavior). Example: before the children can not distinguish between crabs and spiders, but after a science lesson he can explain the difference between the two animals were adequately. 3) Skill. Skills in acting, ie kemampun associated with the use of motor (coarse and fine). Example: before the children can not enter kelubang thread the needle, but with continuous practice eventually he can do well. 4) Attitudes and habits, ie the application of the values of life in everyday behavior. Example: before children are not familiar with their own washing dishes after a meal, but because the environment at home do so, then he studied, and eventually he became commonplace and familiar. 5) Knowledge and understanding, in the form of mastery of the concepts, principles and theories. Example: Before the child can not properly explain the concept elephant but after a visit to the zoo and he watched carefully, he was finally able to explain adequately.

METHOD

The purpose of this study was to describe the scientific approach to learning science starters, performed in group B TK Beringin District of Gorontalo city Dungingi totaling 20 children. This research type describe clearly in detail, obtain accurate data of the focus of research by using qualitative approach, method naturalistic study for research performed under conditions of natural (natural setting) where the researcher is as a key instrument to collect data that is more detailed and can dipertanggung justified.

Data is in this research was obtained through observation of the observation guide to see the scientific learning process in children in group B, to improve the validity of the study using

photographs. Interview guidelines are guidelines that form the basis for making inquiries to the informant to obtain data on learning scientific activities include observing, ask, collect infirmasi, reason and communicate, obtained directly from informants who were in school, such as Principal, Teachers, Children and references other to support this research.

FINDINGS AND DISCUSSION

Based on data from Description Approach Scientific in Learning Science Starters result of research based on observations have been obtained that there are 17 children who are already well developed in indicators of communicating, the indicator observes that has developed very well amount to 15 children, the indicators gather information that has developed numbered 14 children , the propose activities that has developed a very good indicator amounted to 13 children and reasoning are developed very well amount to 12 child.

This is consistent with the data that is assessed by means of observation checklists with information undeveloped, began to grow, develop according to expectations and growing very well. Where children are grown on the activity observed, ask, gather information, associate and communicate during the process of learning takes place inside and outside the classroom. In accordance with the results of observations conducted guidelines, children who are in Beringin kindergarten District of Gorontalo city Dungingi on scientific learning has been growing. There are five indicators in the observation that:

Observing

Observingis performed to determine such things with senses such as seeing, hearing, breathing, feeling and touching. From the results of research conducted through the results of the first semester (odd) on the scientific study shows that some children have not developed the indicators observed by the number of 10 children of a number of 20 children. This is because most of the children are still less focus on the object / objects being observed by the child, frequent delays of children coming to school and is still a lack of resources in the form of a real child observation.

After the application of the scientific approach to the learning process in the second half (even) has suggested that the B1 group on scientific learning activities already developed very well with a number of 15 children, developing according to expectations amounted to 2 children. So that the result of observing indicators of child well-developed amounted to 17 children from 20 children. This shows a good result, because in the learning activities of scientific indicators to observe that in the second semester, more children are given the opportunity for teachers to play an active role in learning activities scientifically as children can observe the object / objects to be studied, can feel the difference in taste, distinguish between smooth and rough texture and can perform some simple science experiments such as experimental objects floating, floating and sinking.

Ask

In the scientific approach to learning is a child ask the parties. the question that arises is expected associated with the objects that have been observed by the child. Kids are encouraged to ask questions, either about the objects that have been observed as well as other things he wants to know. From the results of research conducted there are three children who have not developed the indicators ask that they needed guidance and direction from teachers. Teachers can also ask stimulating activities for children in advance using the methods of conversing on the subject being taught is so that children can understand more clearly the theme taught and children can do activities ask if there are things that are poorly understood by children. The result of the above discussion is supported by the theory that asking questionsis one measure to determine the level of understanding of the child after learning (Usman, 2010: 96).

Gathering Information

Gathering information is an activity undertaken by a variety of ways, for example: to do, to try, to discuss and summarize the results from various sources. Learning to use a scientific approach will involve the children in an activity to investigate the phenomenon in an attempt to obtain the correct information. From the results of research conducted on learning activities with a scientific approach to gathering information specifically indicators already developed very well with a number of 14 children, growing as expected with the amount of 3 children, began developing and underdeveloped 0 amounted to 3 children. In order to get the results of indicators to gather information for a child that has developed on indicators collected information amounts to 17 children from 20 children, the teacher gives kesempaan to children to try their own experiments made or mimicked, infer what children see and discuss with teachers and with peers about what children know.

The result of the above discussion is supported by the theory that the repeated observations of the several objects and events with

interpretationcommunicate, the child looks very pleased with the media given by the teacher, the child is very excited to create a work according to his desire. Teachers provide opportunities for children to be creative in accordance with the imagination, but still refers to the themes that are taught, in the event a child is very active role so that all aspects of the existing development in children is clearly visible.

Reasoning

Reasoning is the ability to link the information already owned with the new information obtained so as to get a better understanding about something. From research conducted obtained results of research on learning scientific in children in group B on the learning activities of scientific, especially indicators of reasoning has been developing very well with the number of 12 children, growing as expected with the amount of 3 children, began to grow with the number 2 children and underdeveloped totaling 3 child. So that the results obtained from the indicators make sense for children who thrive on making sense of the indicator amounted to 17 children from 20 children.

Comunicatting

Communicating is an activity to pass things that have been studied in various forms, for instance through stories, movement, and by showing the results of his work in the form of images of various shapes from dough, dolls from papier-mache, crafts from recycled materials and the results of webbing. The results were obtained data on the activities of communicating, the child looks very pleased with the media given by the teacher, the child is very excited to create a work according to his desire. Teachers provide opportunities for children to be creative in accordance with the imagination, but still refers to the themes that are taught, in the event a child is very active role so that all aspects of the existing development in children is clearly visible.

CONCLUSION

Based on the results found in this study can be summarized as follows: 1) From the data on observation shows that children are able to perform learning science by using scientific learning approaches such as the activity observed, ask, gather information, reason and communicate the child is already well developed in accordance with the child's age and developmental level of the child's learning needs. 2) Using a scientific approach to learning science starters very influential on children's knowledge, the value of spiritual / religious character of the child and the child to think scientifically and critically.

In closing this research report some suggestions need to be presented are as follows: a) The scientific approach to teaching science in the beginning, teachers should use teaching media in the form of objects / objects are concrete or in the form of pictures related to the theme being taught. b) Teachers need to motivate to conduct learning activities in particular on the activities of communicating produced in the form of a work so as to produce works that "innovative" and can provide a whole array of tools / materials used by children and the need for assistance in learning activities science starters with the application of scientific learning approach so that children are able to think scientifically.

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