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### Model for Development of Natural Sentra Learning Through Scientific Approach Teluk Tomini Region Based in Kindergarden in Gorontalo District

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**Abstract:** This study aims to (1) provide an appropriate picture of the implementation of the development of natural resource learning models through a scientific approach to a valid, practical and effective, and (2) To obtain a product that is a learning model of a natural material center through a valid, practical Scientific Approach and effective. This Research and Development ADDIE model consists of 5 stages, namely: (1) Analysis, (2) Design, (3) Development, (4) Implementation (5) Evaluation. Data collection techniques using online questionnaires with consideration of the condition of the pandemic covid 19. The learning model of natural resource centers through the scientific approach developed is: (1) validity, where the Guidance Book Model of Learning Centers of Natural Materials through the Scientific Approach in Children has an average validity of 3,40 (valid category), Semester Program has an average validity of 3,51 (very valid category), Weekly Learning Implementation Plan has an average validity of 3,47 (valid category), Daily Learning Implementation Plan has an average validity of 3,76 (very valid category), (2) The practicality of the learning model, analyzed using the observation sheet the ability of teachers to manage learning obtained percentage of agreement of 100%, the average value of 4 teacher centers is in the category of "good" while for the observation sheet of teacher activities in the center of natural materials are in the category of "good" and (3) Effectiveness, where the Guidance Book Model of the Center for Natural Materials through Scientific Approaches to the Semester Program, Weekly Learning Implementation Plan, and Daily Learning Implementation Plan according to the teacher's assessment is said to be effective because a 80% of teachers give positive responses "very good" that is 100% teachers.

**Keywords:** Learning Centers, Natural Materials and Scientific Approaches

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#### INTRODUCTION

Various learning strategies can be carried out without ignoring the stages and child development. (Mastih in Solehudin, 2007). Hosnan (2014) said the learning activities in the 2013 curriculum were directed at empowering all potentials of students so that they could have the competencies expected through efforts to grow and develop; attitude, knowledge and skill. The use of the 2013 curriculum as well as the use of a scientific approach to learning models in which early childhood children make the learning process more important than the results because children are high-level researchers and thinkers. Hosnan (2014) says there are stages that develop from the process of ability to remembering, understanding, applying, analyzing, evaluating and creating. Scientific approach is expected to be more meaningful learning outcomes. The term "Sentra of Natural Materials" in the Sentra Method can be said to be Indonesian (not translation) from the Sensory Center, in which there are opportunities for children to play messy. The materials and tools used at the Center for Natural Materials enable the child's sensory organs to work to recognize, explore and discover knowledge or concepts relating to objects in their surroundings.

Kindergarten age children are always curious, keep on researching and need concrete experiences. The Center for Natural Materials facilitates them through a variety of play activities. Children can play water-pouring contents to and from jerry cans, both with glasses and funnels and with hand-pumps, produce soap bubble bubbles with a shaker, or move water with a sponge. Children can also play finger painting with materials from cornstarch, playing, experimenting with geometric shapes or any shape in their imagination with playdough, painting with brushes, playing sand with experiments with measuring

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instruments and others. Inside the Center for Nature there is a harmony building the basic muscles of early childhood life, which should not be missed during the golden age period. Therefore, the development of the basic muscles of life is essentially the construction of brain structures, which 80 percent are completed at an early age period. Play activities like the one above can be repeated at any age, but there is never a second chance to build brain structure.

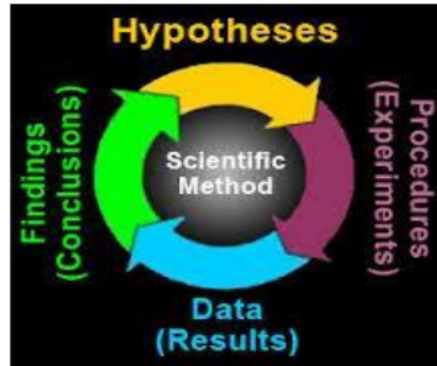
The scientific approach is a learning model that uses scientific principles that contain a series of data collection activities through observation, asking questions, experimenting, processing information or data, then communicating (Kemendikbud, 2014). The purpose of the scientific approach in learning include to improve students' thinking skills, form the ability to solve problems systematically, create learning conditions so that students feel that learning is a necessity, train students in expressing ideas, improve student learning outcomes, and develop student character. The learning process using a scientific approach is directed so that students are able to formulate the problem (with many questions), not just solve the problem by answering it. The learning process is expected to be directed to train analytical thinking (students are taught how to make decisions) instead of mechanistic thinking (routinely with the power of listening and memorizing only (Majid, 2014). Rusman (2015), a scientific approach is a learning approach that provides opportunities for students at large to explore and elaborate the material being studied, in addition to providing opportunities for students to actualize abilities through learning activities designed by the teacher Hosnan (2014), a scientific approach is a learning process designed so that students actively construct concepts, laws , or principles through observing activities, formulating problems, proposing / formulating hypotheses, collecting data with various techniques, analyzing data, drawing conclusions, and communicating.

Karar and Yenice (2012), a scientific approach is a learning process that is designed so that learners actively construct concepts, laws or principles through stages of observing (to identify or find problems), formulate problems, formulate hypotheses, collect data with various techniques , analyze data, draw conclusions, and communicate found concepts, laws or principles. According to Hosnan (2014) the scientific approach has the following characteristics: 1) Student-centered; 2) Involving science process skills in constructing concepts, laws or principles; 3) Involve potential cognitive processes in stimulating intellectual development, especially students' higher-order thinking skills, and; 4) Can develop student character. The purpose of learning by using a scientific approach is to develop student character. In addition, it is also to improve students' thinking abilities so that students have the ability to solve every problem they face and have high learning outcomes.



**Figure 1.** *Scientific Approach Learning*

The application of a scientific / scientific approach to the learning process requires changes in the setting and form of learning that is different from conventional learning. Some learning methods that are considered in line with the principles of a scientific / scientific approach, include methods: (1) Problem Based Learn<sup>2</sup>; (2) Project Based Learning; (3) Social Inquiry / Inquiry; and (4) Group Investigation. These methods try to teach students to recognize problems, formulate problems, find solutions or test answers while a problem / question by conducting an investigation (finding facts through sensing), in the end being able to draw conclusions and present them both orally and in writing.



**Figure 2.** Learning with the principles of a scientific approach

Can a scientific approach with the steps as stated above be applied at all levels of education? The answer will certainly be a scientific debate, but I hold one theory that we already know is the Cognitive Development Theory from Piaget which says that from the age of 11 years to adulthood (formal-operational stage), an individual has the ability to coordinate both simultaneously and in two sequences a variety of cognitive abilities, namely: (1) Capacity to use hypotheses; the ability to think about something specifically in terms of problem solving by using basic assumptions that are relevant to the environment in which he responds; and (2) Capacity to use abstract principles; the ability to study abstract subject matter widely and deeply. Thus, it seems that the scientific / scientific approach to learning is very likely to be given starting at this stage of age. Of course, it must be done in stages, starting from the use of hypotheses and simple abstract thinking, then along with the development of the ability to think can be improved by using hypotheses and abstract thinking that is more complex.

One important aspect that needs to be developed in kindergarten children learning is cognitive development. Children's cognitive development is the ability of the child's brain in obtaining information. One of the lessons that can develop children's cognitive abilities is science learning. Science learning has an important role in improving the quality of education, especially in producing quality students, namely humans who are able to think critically, creatively, and logical. The term "Sentra Natural Ingredients" in the Sentra Method can be said to be an Indonesianization of the Sensory Center, in which there is an opportunity for children to "play messy" (messy play). The materials and tools used at the Center for Natural Materials enable the children's sensory organs to work to recognize, explore and discover knowledge or concepts relating to objects in their surroundings. (Montolalu, et al. 2008). Children have the opportunity to recognize the properties of objects, observe, touch, touch, feel their textures, also find concrete experiences about events and cause-effect relationships through interactions with materials and tools. The Center for Natural Ingredients is indeed provided to facilitate the child's curiosity on objects. Early childhood since its earliest period of life is a researcher. Even though it is only a week old baby, invite to speak in a comfortable and pleasant tone of voice. Explain a lot of information about what he is holding. Along with the process of perfecting the functions of the five senses, body parts and organs, the child's ability to absorb information and learning continues to improve in quality. This instinctual capital for research and study by Swiss thinker Jean Piaget, is called a schema, which increases through the process of assimilation and adaptation.

Within the Center for Natural Ingredients (Anggani, Sudono. 2000) there is a harmony building the basic muscles of early childhood life, which should not be missed during the golden age period (golden age). Therefore, the development of the basic muscles of life is essentially the construction of brain structures, which 80 percent are completed at an early age period. Play activities like the one above can be repeated at any age, but there is never a second chance to build brain structure.

This learning emphasizes skills by utilizing the science process in presenting teaching material. The teacher functions as a facilitator and coordinator, the rest of the learning process actively involves students. Students are no longer as learning objects but as learning subjects. Thus students can find their own knowledge through these scientific activities. The scientific approach emphasizes the discovery of own meaning by students through the experience they get. This learning has the potential to increase students' competence in mastering their skills, attitudes, thinking, and behavior. In accordance with the characteristics of Indonesian Language and Literature as part of natural science, Indonesian Language and

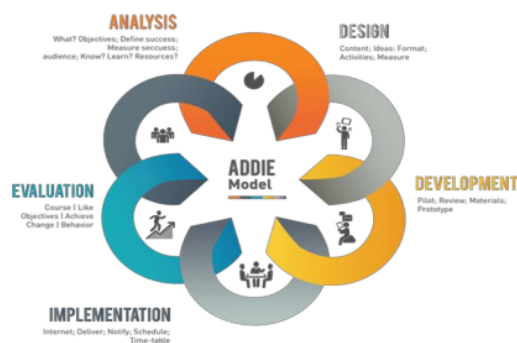
Literature learning must reflect the competence of scientific attitudes, scientific thinking, and scientific work skills.

Learning center is a learning model that has been developed by the Creative Center for Childhood Research and Training (CCCRT) based in Florida, United States, for 25 years and has been accredited by the National Association of Early Young Childhood (NAEYC) as a recommended learning model that can be applied in United States of America. The Directorate of Early Childhood Education has translated training materials for the center learning model and has obtained copyright from CCCRT for five years (2004-2009). The center and circle learning model is the development of the Montessori, High Scope and Reggio Emilio methods, which focus children's activities in centers or areas to optimize all children's intelligence (nine multiple intelligences).

Based on the discussion on the background of the problem, the research problem can be formulated as follows: how is the learning model of natural resource centers through a scientific approach based on the tomini bay area in kindergarden Gorontalo District which is valid, practical and effective amid the Covid 19 pandemic?

## METHODS

This model development research activity was designed by applying a research and development approach. Borg and Gall (1989: 624) argue that Research and Development is a strategy that aims to improve the quality of education. Research using the R & D approach aims to develop and validate educational outcomes and to discover new knowledge through basic research. This research is also intended to answer specific questions about practical issues through 'applied research' which is used to improve educational practices.



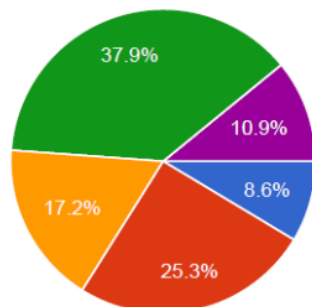
**Figure 3.** Model Analysis-Design-Development-Implementation-Evaluation

The ADDIE model was developed by Reiser and Mollenda. One of the functions of ADDIE is to be a guideline in building effective and dynamic training program tools and infrastructure and supporting the training performance itself. This model was chosen because the ADDIE model is often used to describe a systematic approach to instructional development. In addition, the ADDIE model is a general learning model and is suitable for development research. This term is almost identical to the development of instructional systems. When used in development, this process is considered sequential but also interactive, where the results of the evaluation of each stage can bring the development of learning to the previous stage. The final result of a stage is the initial product for the next stage. The Addie Framework is a cyclical process that develops over time and is continuous throughout the instructional planning and implementation process. The five stages comprise a framework, each with its own distinct goals and functions in the development of instructional design.

Research data were collected through interviews, observations, questionnaires, documentation studies, and focus group discussions. While the questionnaire is used to measure the model. The questionnaire developed in this study was a list of statements that revealed the compatibility of the respondent with the contents contained in each statement. The instrument in this study was developed in accordance with its purpose which is to capture data and supporting data to validate the models developed in relation to the development of the model. This data collection technique uses an online questionnaire approach because the research conditions are being a pandemic covid 19 in Indonesia.

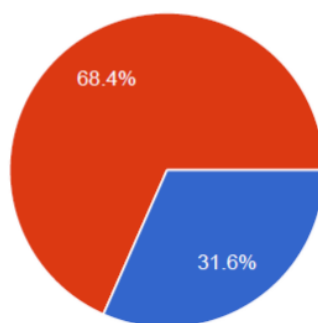
## RESULTS

To carry out the above stages it is carried out in the form of an online questionnaire which produces information that signal strength is one of the determinants.



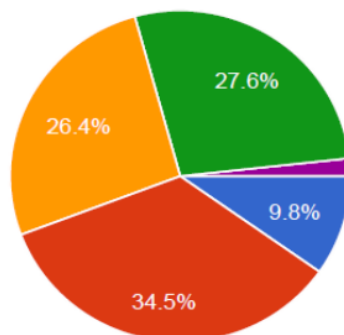
**Figure 4.** *Signal Quality of Online Survey Locations*

In developing science based on existing conditions and the development of information technology, online learning can be an alternative, but in its implementation it faces several obstacles as shown below:



**Figure 5.** *Teacher Responses*

In addition to the challenges there are also opportunities that exist, to the expectations that can be implemented in the application of science as shown below:



**Figure 6.** *Effectiveness of Online Learning*

The general way to get a product that is the learning center model of natural materials through a scientific approach that is valid, practical and effective in the area of Tomini Bay can actually be applied based.

A scientific learning approach is a learning process that takes students to a scientific or scientific based learning experience. There are five learning experiences that students must go through during the learning process, such as observing, asking questions, gathering information, associating, and communicating. In Permendikbud No.22 of 2016 it is stated that in order to strengthen the scientific approach, it is necessary to apply disclosure / research based learning (inquiry / discovery learning). In addition to the scientific approach, other learning models can be applied, including project-based learning, problem-based learning. So there are 4 (four) learning models that can strengthen the application of a scientific approach in the learning process in the classroom.

## DISCUSSION and CONCLUSIONS

Learning center is a learning model that focuses on children. The learning centered on the play center and when the child is in a circle. Play centers are zones or play areas for children which are equipped with a set of play tools, functioning as the environmental footing needed to support children's development in three types of games, namely playing sensorimotor (functional), playing roles and playing development. Whereas the circle is when the educator sits with the child in a circular position to provide a foothold for the child which is done before and after playing. The center of natural materials has the aim to provide experiences for children to explore various materials. In this center, children play while learning to be able to show ability, recognize, compare, connect and differentiate. By exploring and experimenting children will have ideas and sensitivity to knowledge and the environment so that motivation and confidence in learning can grow. Teaching Children Early Childhood Education Based on the Natural Environment. We need to know that nature-based learning can utilize media and learning resources in a variety of ways and support optimal and conducive learning activities. Learning center role play more emphasis on the stimulation of naturalistic intelligence. Naturalistic intelligence needs to be taught and instilled early on in order to form the child's natural character and love for nature. Children's characters are abstract. Character is a personal characteristic inherent in every human being. If the positive character of the child has been formed since childhood, a competent person will be formed later. From the learning model of naturalist intelligence stimulation, the child's characteristics will be formed. Keywords: Naturalistic Intelligence and Learning Center of Natural Materials.

Children have the opportunity to recognize the properties of objects, observe, touch, touch, feel their textures, also find concrete experiences about events and cause-effect relationships through interactions with materials and tools. The Center for Natural Ingredients is indeed provided to facilitate the child's curiosity on objects.

Early childhood are always curious, continue to research and need concrete experiences. The Center for Natural Materials facilitates them through a variety of play activities. Children can play water-pouring contents to and from jerry cans, both with glasses and funnels and with hand-pumps, produce soap bubble bubbles with a shaker, or move water with a sponge. Children can also play finger painting with materials from cornstarch, playing ublek, experimenting with geometric shapes or any shape in their imagination with playdough, painting with brushes, playing sand with experiments with measuring instruments and others.

In the Center for Nature there is a harmony building the basic muscles of early childhood life, which should not be missed during the golden age period (golden age). Therefore, the development of the basic muscles of life is essentially the construction of brain structures, which 80 percent are completed at an early age period. Play activities like the one above can be repeated at any age, but there is never a second chance to build brain structure. Many things are far more important than just the ability of calistung in early childhood. Because, if the golden opportunity is missed and the basic muscles of their lives are not built in an integrated and comprehensive manner, then our sons and daughters will experience great difficulties in facing various challenges in their adult life. Learning center of natural materials in practice children play around using natural materials. For example playing sand, water, plasticine, playdough, and others. The function of this natural center learning method is to develop fine motor skills in order to strengthen three fingers in preparation for writing and the introduction of science to children.

The expectation of this natural material learning center is that children can be optimally stimulated by fine motor aspects and the ability to analyze early and introduce literacy. Through play to develop fine motor experiences in order to strengthen three fingers in preparation for writing as well as the introduction of science to children. Game facilities are provided in the form of games that can develop and expand fine motor experiences by giving children plenty of opportunities to explore natural materials needed for



writing readiness, hands-on skills and stimulating the brain's working system. Expected effect: children can be optimally stimulated fine motor aspects and the ability to analyze early and introduce literacy.

At the center of natural materials, children play with objects that are natural. For example playing water, plasticine, sand, seeds, playdough, clay, etc. Besides the variety of play that is presented at this center allows children to understand a scientific concept and process. Activities at this center are fun and are among the favorite centers for students. This is because in addition to interesting activities, children are also given the opportunity to play outdoors.

This study provides an appropriate description of the implementation of the development of natural center learning model through a scientific approach to a valid, practical and effective. The learning center model of natural materials through the scientific approach developed is: (1) validity, where the Guidance Book Model of Learning Centers of Natural Materials through the Scientific Approach in Children has an average validity of 3.40 (valid category), Semester Program has an average validity 3.51 (very valid category), Weekly Learning Implementation Plan has an average validity of 3.47 (valid category), Daily Learning Implementation Plan has an average validity of 3.76 (very valid category). (2) The practicality of the learning model, analyzed using the observation sheet the ability of teachers to manage learning obtained percentage of agreement of 100%, the average value of 4 teacher centers is in the category of "good" while for the observation sheet of teacher activities in the center of natural materials are in the category of "good" and (3) Effectiveness, where the Guidance Book Model of the Center for Natural Materials through Scientific Approaches to the Semester Program, Weekly Learning Implementation Plan, and Daily Learning Implementation Plan according to the teacher's assessment is said to be effective because  $\geq 80\%$  of teachers give positive responses "very good" that is 100% teachers. Science in early childhood can be interpreted as things that stimulate them to increase curiosity, interest and problem solving, so as to bring up thoughts and actions such as observing, thinking, and linking between concepts or events. Science is a problem-solving activity carried out by humans motivated by curiosity about the world around them and their desires. To understand nature, and the desire to manipulate nature in order to expand his desires or needs.

Based on the results of this study, the researcher suggests the teacher to use this result to develop the concept of habituation learning, especially social learning through the play of natural resource centers.

1. So that children have the ability to solve the problems they face through the use of scientific methods, so that children are helped and become skilled in solving various things that they face.
2. So that children have a scientific attitude. The basic things, for example: not being quick in making decisions, being able to see things from various points of view, being careful of the information they receive and being open.
3. So that children are more interested and interested in living the science that is and is found in the environment and surrounding nature.

#### ACKNOWLEDGEMENT

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