Implementation of the Science-based Learning Model MaHMud (Fun, Warm and Easy) in PAUD SIAGA of Cimahi City

I F Zahro¹, F Sumirat ², Rohmalina ²

¹Early Childhood Education Study Program IKIP Siliwangi Cimahi
²Elementary Teacher Education Study Program Universitas Islam 45 Bekasi
²Early Childhood Education Study Program IKIP Siliwangi Cimahi

¹ifat-fatimah@ikipsiliwangi.ac.id, ²fannysumirat.unisma@gmail.com, ²Rohmalina@ikipsiliwangi.ac.id

Abstract. Science education teaching at early age is highly essential, a number of early education communities lately have applied various methods of teaching science. The MaHMud Model (Fun, Warm and Easy) is a new way of learning in early childhood education level. The purpose of this paper is to explain and describe the MaHMud learning model starting from the Daily Lesson Plan (RPPH), the development of teaching materials, and teaching strategies that the teachers use during the teaching practice and during the evaluation. The research method used in this paper is descriptive method which is used to describe the application of MaHMud learning model in PAUD Siaga of Cimahi City. The results of the study show that the teachers made the lesson plans based on the 2013 PAUD Curriculum. MaHMud Model on science learning is being implemented through a scientific approach. The theme was being adjusted by using plants as the theme, the method used in the study is the demonstration method. When they were learning by planting a certain vegetables, they used hydroponic techniques. Science learning with the MaHMud Model is meant to foster children's critical thinking skills and help children understand the world around them.

1. Introduction

In order to improve the quality of basic education to embrace the era of industrial revolution 4.0, education has undergone many changes in accordance with the science and technology that is developing today. One of the changes in basic education is the development of science-based learning innovations in Early Childhood Education (ECE) by emphasizing direct and experimental learning experiences tailored to their age. Therefore, in essence, ECE students learn by using their sensory abilities as an effort to interact, explore their curiosity and interest in nature.

To facilitate and respond to ongoing changes, the researcher feels challenged to study and examine an innovative learning model that can be applied in ECE as a pilot model of science-based learning, namely the MaHMud learning model (Fun, Warm and Easy) as a reinforcement of innovation in basic education relevant in responding to the challenges of change in the era of industrial revolution 4.0.

The MaHMud learning model has been applied in PAUD SIAGA of Cimahi City for eight years. Learning activities that are consistent with the scientific characteristics that aim to find the right...
technology have delivered the PAUD SIAGA of Cimahi City as a Pilot School Laboratory of PP-PAUD and Dikmas Regional I Bandung. Thus the purpose of this study is to find out and describe the application of the MaHMud learning model starting from the Daily Lesson Plan (RPPH), the development of teaching materials and strategies used by the teacher in the implementation of learning and evaluation of learning.

The MaHMud Model (Fun, Warm and Easy) is a new way of learning in early childhood education. MaHMud is based on fun learning process, warm teaching delivery, and easily implemented materials. Early Childhood is in the period of concrete operational development, so this learning model adapts to the period of development. In practice, this model applies active learning strategies and uses a scientific approach. This learning model can be implemented in all Early Childhood Education institutions that wish to introduce science to Early Childhood Education students.

1.1. How Children Learn Science?

Involving the scientific learning process, children's knowledge, attitudes and potency will measure in the experiments and discovery. With the existence of evidence to enable change of children's perceptions in science, learning science processes also can develop scientific inquiry. Accordance with Ausubel's learning theory, is children better learn through discovery so that learning becomes more meaningful. Andersson states that learning strategies that use stages beginning with the discovery phase, followed by a pilot phase can bring curiosity, are easy to understand and emotionally able to challenge ECE, so they can make scientific understanding. The ways of discovery learning to assessment how make the children create their idea with scientific proses skills and grow positive attitude. Hence, meaningfulness of science learning is the selection of science essential material by connecting the concepts with the real-world phenomena and hand-on experiments.

1.2. Concrete Level

The early childhood education (ECE) accordance by Piaget cognitive development theory their in a concrete level. Piaget briefly consider about the specific concept and processes are presented as more of an integrated whole reflecting more accurately the nature of developing thought processes. Accordance Good (1977) had described about characteristics of concrete operations, there are: 1) Classifications and serial ordering are employed in a step-by-step fashion, without relating all of the links into a system. 2) Well-mixed variables in an investigation cannot separated. 3) Chance or probability ideas are influenced by previous results. 4) Proporsions are not as yet available except in the simplest sense. 5) Experimental contradictions cannot be pursued in a systematic manner. Thus, conceptual understanding should be develop to encourage the children ideas in diferent of circumstance (Watters,et.all: 2001). Fun learning is a learning process that involves positive emotions, involving feelings in this situation can greatly affect the quality and quantity of one's learning. Based on the theory of Triune Brain from Meier (2000), it is stated that the human brain has three parts of the brain consisting of the neocortex, rephillian brain, and lymbic system. The three parts of the brain each have a different function, Neocortex, the largest part of the human brain that uses 80%-95% of its function for language, abstract thinking, problem solving, future planning, regulating subtle movements, and developing creativity. Rephillian brain, the main part of the brain that regulates automation, such as; heart rate, blood circulation, instinct, and routine behavior and survival. Lymbic system, part of the midbrain that has a big role in emotion and is a social and emotional brain, if optimized it will function to improve long-term memory.

In this case, it can be understood that in order for learning to be more interesting and enjoyable, the teacher as a facilitator needs to function emotions from the lymbic system, hoping to improve the quality and quantity of children's learning. Emotional involvement during the learning process is considered important, because if the children’s feelings are relaxed and open, the quality of their learning will improve and use the neocortex function as the learning brain, but vice versa if the feeling of the child is reduced to a learning level that is not learning, but rather for survival (Suderajat, 2013).
In line with the opinion of McDonald (2018), it shows that how developmentally appropriate practice (DAP) can improve the achievement of learning through playing. Therefore, DAP focuses children on the learning process and not on learning outcomes / values. Constructivist Theory states that knowledge is not something that needs to be absorbed by children, but that must be constructed or built by the child itself through the process. In other words, learning is creating meaning or building new meaning.

2. Research Methods

This research is based on natural setting. The research method used is descriptive research, which is a form of research aimed at describing or describing the application of Mahmud learning model in PAUD Siaga of Cimahi City. The sample was chosen because of its rich information about the topic of study. Data collection is done through (1) Observation, carried out by a direct observation to obtain data on how the teachers prepare learning activities with a scientific approach, classroom management, material selection, media use, and evaluation. How do teachers stimulate students to engage in creative activities. The researcher will record the process and the work of students in learning; (2) Interviews are conducted to the teacher, referring to the question regarding the planting learning strategy with hydroponic techniques in early childhood; and (3) Documentation studies, focused on learning designs that the teacher prepares, sources, and learning media, along with photos, videos, relevant data and interview notes.

3. Results and Discussion

3.1. MaHMud Learning Model Planning

In formulating planning learning activities in PAUD Siaga, the teachers refer to the 2013 PAUD Curriculum and later the plan will be developed with a superior curriculum (Kemdikbud, 2015). Some science lesson planning activities are combined with other learning, including planning themes and sub-themes, semester programs, Weekly Lesson Plans (RPPM) and Daily Lesson Plans (RPPH) which includes determining the material and learning activities in accordance with the themes / sub-themes for achieving the basic competencies chosen along with the assessment plan.

Planting learning activities using hydroponic techniques are written in RPPH as follows:

1. Themes / sub-themes : Plants / Vegetable plants
2. Basic Competence : 3.8. To get the students to know the natural environment
                          4.8. Presenting various works related to the natural environment.
3. Material :
   - To know various shapes and colors of leaves and roots.
   - How to plant and care the plants.
4. Tools and Materials: used plastic bottles, small cups, flannel, sponge, fuel husk, liquid nutrients, water, and vegetable plant seeds
5. Opening activities
6. Core activities: Activities of observing, asking, gathering information, reasoning, and communicating.
7. Closing activity
8. Assessment plan

3.2. Implementation of the MaHMud Learning Model

The strategy applied in implementing science learning at PAUD Siaga is the MaHMud Model through a scientific approach, which is a fun learning approach and will foster children's thinking skills. The scientific approach is the process of building a way of thinking so that children have reasoning abilities obtained through the stages of observing, asking questions, gathering information, reasoning, and communicating the results of their thoughts. The scientific approach is used when children are involved in science learning activities and other activities.

Based on the results of observations, the application of the MaHMud Model is carried out in several stages, namely:
3.2.1. Stage of environmental management
It is the preparation of materials and media and arranging a supportive classroom environment. The teacher prepares materials and media that are easily available, namely using natural materials and used goods, for example bottles of used plastic and plant material.

3.2.2. Implementation Phase
The stages of the opening process are through marching, rhythmic exercises, going to class, circle time, praying before learning and asking questions about the theme of plants. The process of implementing science learning is carried out with a scientific approach through fun learning activities that allows children to experience firsthand, so the children can be happy with these kinds of activities. The method used in implementing vegetable planting with hydroponic techniques is the demonstration method, the most important component in the demonstration method is showing doing and telling. Through the following stages:

a. Observing, this activity is carried out together in the classroom. The teacher encourages children to use their senses to observe materials and media that will be used for planting with hydroponic techniques.

b. Questioning, the teacher gives enough time so the children ask questions either through words, facial expressions or gestures. Examples of expressions of asking children, “what is this?” while pointing to plant media.

c. Gathering information, the teacher demonstrates planting with hydroponic techniques so that the children continues to explore the method of planting.

d. Reasoning, the teacher clarifies the knowledge obtained by the children by comparing, such as planting done with soil and with hydroponic techniques. The teacher can group the types of plants planted by children by measuring the amount of leaf nutrition according to the dosage.

e. Communicating, the teacher gives the child the opportunity to communicate what has been known regarding planting with hydroponic techniques and the child shows the results of his work.

3.2.3. Closing Activities, including: the teacher provides an opportunity for children to convey experiences before their friends. Reward will be given for the children who take part in the activity.

3.3. Evaluation of MaHMud's Learning Model.
The teacher makes observations on science learning and other supporting activities while conducting learning activities by recording them in the RPPH column, also observing the children's works. The note is used by the teacher to compile reports on child development.

4. Conclusion
The MaHMud Model (Fun, Warm and Easy) based on science is an innovative learning model that has pleasant concepts in the learning process, it has warm delivery and is easy to implement. PAUD Siaga of Cimahi City uses this model with a scientific approach that is through the stages of observing, asking, gathering information, reasoning and communicating. One example of learning activities is planting with hydroponic techniques, with natural materials in the form of plants and used goods. The results of science learning with the MaHMud Model to foster children's critical thinking skills and help children understand the world around them.
5. References

[1] Good R 1977 How Children Learn Science: Conceptual Development and Implication for Teaching. USA: Macmilan Publishing

[2] Kementerian Pendidikan dan Kebudayaan 2015 Pedoman Pengelolaan Pembelajaran Pendidikan Anak Usia Dini

[3] Meier D 2000 The Accelerated Learning Handbook McGraw Hill New york

[4] McDonald P 2018 Observing, Planning, Guiding: How an Intentional Teacher Meets Standard Through Play [Online]. [https://www.naeyc.org/resources/pubs/yc/mar2018]

[5] Suderajat H 2013 Pembelajaran Berbasis KBK Bandung: CV. Sekar Gambir

[6] Watters, et. all 2001 Enhancing science education for young children: A contemporary initiative. Australian Journal of Early Childhood 26(2): pp. 1-7. [Online] [https://eprints.qut.edu.au/1759/1/1759a.pdf]