

The implementation of the scientific approach in environmental education for kindergarten students

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ABSTRACT: In early childhood education the introduction of the scientific process is done by involving the child directly in the activities of conducting and experiencing information seeking by asking questions, finding answers to understand the world with amazing ideas. Pleasant learning will depend on the selection of activities that match the needs and characteristics of the child. In order to implement scientific approach optimally, a thorough understanding of teachers is required so that every stage of the scientific approach can be performed optimally and suitable with the needs and characteristics of the child. In every stage of the scientific approach there are some character values that will be appears along with the learning process. This discussion will be focused on how the scientific approach can be implemented by teacher in order to develop the character values of children in daily learning activities.

1 INTRODUCTION

Environmental issues demand attention from various sectors including education. Early environmental education is expected to develop a positive attitude toward environmental sustainability. Environmental education has a very important role to overcome environmental problems that arise today. Seefeldt (1989) states that the current needs for environmental education appear in critical level. Environmental issues and diminishing resources are becoming a thought that leads to the concern and concern for environmental education. Various strategies and approaches in learning can be an alternative effort to achieve the goal of environmental education which raise awareness of the importance of the environment in human life and make various efforts to maintain its sustainability. Curriculum as a tool to achieve the goal of education ideally is a reference for teachers in carrying out learning activities in accordance with characteristic and the needs of young children. Application of Curriculum 2013 in early childhood education in Indonesia is a necessity that implies changes in mindset, governance, learning process and assessment. From the point of the learning process, the emphasis is on how to provide appropriate stimulation to the child according to the needs and characteristics of its development.

In the guidance of the implementation of the curriculum 2013 Early Childhood Education is

disclosed that the Indonesian Curriculum 2013 Early Childhood Education aims to encourage the development of the potential of children to have readiness to take further education, requiring capabilities to support the success of children at higher levels of education include attitude skills, knowledge And skills. These capabilities will be realized through a meaningful learning experience. In the implementation of the use of scientific approach as an alternative in helping the children to develop their abilities considers the rules of learning appropriateness for early childhood.

The scientific process or scientific approach is aimed to build a systematic thinking pattern in a continuous series of processes from the most concrete developed into real work as a result of high-level thinking. Scientific thinking skills are applied in the learning process through the stages of observing, questioning, gathering information, reasoning, and communicating ideas and understanding of new knowledge and concepts that are poured into various works.

This paper will explore more about Environmental Education in early childhood based on scientific approach, so that obtained the description of alternative learning model other than those that have been developed previously.

2 ENVIRONMENTAL EDUCATION

In the early 1980s when early childhood education began to emerge and applied in the several form of child institutions, the concepts associated with understanding the physical environment that exists in are often mentioned. One of them as proposed by Spodek (1978) who stated that one of the basic purposes of school is the transmission of significant portions of this knowledge to the young. This allows each generation to grasp what we know at present about the world, so that they can deal effectively with it, building upon what is already known and, in time, accumulating greater knowledge about it.

Similar with Spodek, Hildebrand (1981) stated that understanding the physical world is lifetime pursuit that begins in early childhood. In other part she stated that each time the child is responding to the physical world. Each responds contain some learning experience and motivation that will serve the teacher as the incidents are used to help children understand what is taking place in their world.

Spodek (1978) also mentioned that science, mathematics, and the social sciences have been viewed as the result of intellectual processes by which the physical and social world can be explored. Science is not the only method we have for exploring the world, but it is an important one. Sciences deal with the physical properties of the world. It orders these properties, identifies relationship among them, and establishes theories that can be empirically tested to explain the relationships identified.

Spodek (1978) also mentioned about a close relationship between science and environment. He stated that science was one of the later subjects to be included in the curriculum of early childhood education. In many of the pioneering approaches we do find nature study-the observation of natural phenomena primarily for the sake of appreciation rather than comprehension. Teachers were admonishing to keep a section of their outdoor play space reserved for a garden to be cultivated by the children. Small animals were kept as classroom pets, and the children learn for them. Interesting natural objects such as rocks and leaves were brought into the classroom and arranged on a table for the children to observe. Nature stories were read and pictures exhibited to further children's learning. All this activity had as its prime purpose the development of children's reverence for the outdoors and appreciation of the wonders of nature to be found around them.

In term of investigating environment The United States Department of Agriculture (1978) stated that the participant can investigate it by collecting, recording, and interpreting information about different

part of the environment, applying these interpretation by analyzing physical, social and economic impact on the environment in a variety of situation.

Stapp(1979) States that environmental education is a process which aims to develop a conscious and caring world population as well as environmental issues, and forthose who have the knowledge, attitude, motivation, commitment and skills to work individually and collectively to the solution of the current problems and the prevention of new problems.

In line with that, Eco Schools Program (1998) states that in essence, environmental education programs in schools aim to bring changes in students' attitudes and values as human beings in interacting with all components of the environment. When schools establish a practical environmental sound program, students will be able to participate actively in improving the quality of the school environment. In most of these cases, the best results will be obtained if done with community support and cooperation, including government departments and non-governmental organizations. When students see that they make a realistic contribution to the environment, they learn to be more purposeful, their motivation increases and their self-esteem is raised.

Kinsella (2008) states that in today's society we are becoming increasingly concerned about global warming, climate change and the well-being of this planet and the habitat for future generations. As parents and caregivers, we often worry about the future of our children, and many of us feel we can do more in our daily lives to contribute to the solution rather than the cause of the environmental problems posed. On the other hand Kinsella (2008) also mentions that our homes and communities are the places where we raise our children, so it makes sense to want to keep our homes safe and healthy for them to grow and learn. We know that children learn from relationships with their families, caregivers and the environment, so that, through what we do in our daily lives, we can start engaging children in learning about caring for the world around them.

Environmental education instilled early expected to develop positive attitudes and environmental sustainability. Likewise that the introduction of the surrounding nature through environmental education to children from an early age for children is the first step in respecting the environment (Sutrisno, et al., 2005). Kindergarten is a place where children spend most of their time at a very important time in their lives, so that kindergarten is considered as a place that fosters knowledge of a child's environment (Meiboudhi, et al., 2011).

Some studies reveal the importance of environmental education, as stated Chen and Cheng in his study (2008) that the Environmental Education is a very important tool in providing knowledge, positive attitudes towards the environment and to build skills to protect and improve the environment

Republic of Indonesian Laws, No. 23 of 1997 on Environmental Management, stated that Environmental Education (EH) is defined as an effort to change the behavior and attitudes made by various parties or elements of society that aims to increase knowledge, skills and awareness of the community Environmental values and environmental issues that can ultimately mobilize the community to take an active role in conservation and environmental safeguards for the benefit of present and future generations.

3 SCIENTIFIC APPROACH IN THE INDONESIAN EARLY CHILDHOOD CURRICULUM 2013

The curriculum is a set of plans and arrangements concerning the content, and the lesson materials and ways used as guidelines for the implementation of learning activities to achieve certain educational goals (UUSPN No. 20 of 2003). In the guidance of the implementation of the curriculum 2013 Early Childhood Education is disclosed that the Curriculum 2013 Early Childhood Education aims to encourage the development of potential children in order to have readiness to take further education, required skills needed to support the success of children at higher levels of education include attitude skills, Knowledge and skills.

It is further disclosed that the ability of attitudes that include spiritual attitudes and social attitudes aims to build a sense of the child that he is a creature of God and an individual who is part of his social group. The development of attitude ability is done through the activity of habituation. Meanwhile, the ability of knowledge is done through the introduction of the concept of the child and his environment. The introduction of concepts is done through the stages of remembering, applying, analyzing, evaluating and creating. Skill skills are developed to support attitude and knowledge skills. Skills to support attitudes are applied through habituation. While skills to support knowledge are applied through the Scientific process.

In the Indonesian Curriculum Implementation Guideline 2013 Early Childhood Education (Pedoman Implementasi Kurikulum 2013) stated that the scientific process or scientific approach aims to build a systematic thinking pattern in a series of

continuous processes from the most concrete development into a real work as a result of high-level thinking. Scientific thinking skills applied in the learning process through the stages as follows:

1. Observations by using all the senses to feel the sensation of the objects observed
2. Asking as the process of giving space to the child to cultivate the curiosity of the object observed. Curiosity drives the child to take the next step.
3. Gathering information as a way to answer the curiosity. The process of gathering information is done by involving all learning resources that are in the environment around the child, and not just limited to teachers.
4. Reasoning is processing the information that has been collected to answer the questions that arise early, The reasoning process is an important part in order develop new knowledge associated with knowledge that has been owned by the previous child. The result of the reasoning process is the child will have a new understanding of a concept.
5. Communicating ideas and understanding of new knowledge and concepts that are poured into various works.

4 CHARACTER VALUES

Movement Strengthening Character Education (SCE) other than is Continuation and continuity of the National Movement of Education. The Nation Character of the Year 2010 is also an integral part of Nawacita. In this case item 8 of the Nawacita: The Revolution of the Nation's Character and Movement 8 Concepts and Guidelines for Strengthening Character Education

Ministry of Education and Culture Mental Revolution in education that is about to push the whole Stakeholders to make a paradigm shift, Namely the change of mindset and how to act, in managing the school. To that end, the SCE Movement places the character value as a dimension. The deepest educations that civilized and civilized the people.

SCE Movement. The five main values of the national character in question area follows:

1. Religious. The value of religious character reflects faith in God. The One Supreme manifested in the conduct of teaching. Beliefs and beliefs, respect for religious differences. Uphold the tolerant attitude towards the implementation of religious worship and Other beliefs, living in harmony and peace with other believers.
2. Nationalist, The value of a nationalist character is a way of thinking, acting, and doing that shows loyalty, caring, and appreciation. High on language, physical environment, social, culture, economy, and

the politics of the nation, placing the interests of the nation and state in of self-interest and group.

3. Independent. Independent character values are attitudes and behaviors not rely on others and use all the energy, mind, time to realize hopes, dreams and dreams.

4. Mutual cooperation. The value of *the gotong royong* (Voluntary collaboration) character reflects the acts of appreciation Spirit of cooperation and shoulder to shoulder to solve the problem. Together, establish communication and friendship, provide assistance /help to the needy

5. Integrity. The value of the integrity character is the underlying value of the behavior that based on making himself a person who always trustworthy in words, actions, and work, has a commitment and loyalty to humanitarian and moral values(Moral integrity)

These are character values with the description included which will be integrated through character education (Kemendiknas, 2010) are as followed:

Table 2.1 Values and Description of Character Educations

No	Character values	Description
1	Religious	Obedience attitude and behavior in performing religion teaching, tolerance and harmony towards other
2	Honesty	a behavior as an effort to build individual to become a trustworthy individual in their statement, attitude, and services.
3	Tolerance	Attitude and behavior which is respectful towards other race, religion, ethnic, opinion, behavior and attitude.
4	Discipline	Attitude which shows order and obedient towards provision and regulation.
5	Hard Working	Attitude which shows earnest against learning and duty obstacles, and do the best in every task given.
6	Creative	Thinking and performing everything to produce innovative ways.
7	Independent	Attitude and behavior to complete the task independently.
8	Democratic	A way of thinking, behaving, and acting which shows an equality between rights and obligation towards themselves and others.

9	curiosity	An effort to understand deeper and wider from something they learn, observe, and hear.
10	Patriotic	A way of thinking, behaving, and acting which puts national interest against the interest of individual and even group.
11	Homeland Loyalty	A way of thinking, behaving, and acting which shows loyalty, carefulness, and high appreciation towards language, physical environment, social, culture, and national politics.
12	Achievement Appreciation	Attitude and behavior to encourage themselves to produce useful means for the society, to admit and to respect other achievements.
13	Friendly/Communicative	Attitude which shows talkative, easy going, and cooperative individual.
14	Peace Loving	Attitude, statements, and measures of action which create safe and joy over the individual.
15	Intensive Reading	A custom to spend the time with a lot of reading activities.
16	Environment Involvement	Measures of action and attitude to prevent environmental damage and developing certain efforts to preserve environment.
17	Social Involvement	Measures of action and attitude to provide aids towards the society and those who in needs.
18	Responsibility	Attitude and behavior of individual to perform the task and mandatory who have been done towards themselves, society, environment (nature, social, culture), nation, and the Almighty God.

Humans have a very close relationship with its environment because humans are part of the environment itself. Environmental education given at an early age is expected to develop into a positive attitude towards the environment and will carry over into adulthood. Thus, environmental education should be an essential part of early childhood curriculum. However, the application needs to use strategies appropriate to their developmental stage. Early childhood should be provided with learning experiences that is direct and challenging so it will be fun and meaningful for young children. The scientific ap-

proach as one of the characteristics of the 2013 Early Childhood Curriculum, ideally implemented on a variety of early childhood learning experiences. Early age is the right age to instill character values. The

scientific approach applied in learning indirectly will have a positive impact on the value of the character in early childhood.

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