



Analysis of The Application of STEAM-Based Learning

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analysis; learning; STEAM

Abstract

This study aims to see how the application of STEAM-based learning in the learning process. Knowing the description of the process of implementing STEAM-based learning. This research method uses descriptive research in the form of a survey method. This research uses data collection techniques through non-test techniques conducted at RA Perwanida Praya. The results of the study were analyzed through the Editing, Coding, and Scoring stages, which describe STEAM-based learning activities. The simple result is that the application of STEAM has appeared in the learning activities that have been applied but the teacher still does not fully understand STEAM learning related to its elements and aspects.

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INTRODUCTION

Permanasari, (2016: 87), argues that STEM education is a learning innovation that combines science, mathematics to be able to think logically and rationally, so that they can understand phenomena logically and critically. Now STEM learning has switched to STEAM learning which is aligned with the 2013 curriculum, where students are required not only cognitively but also affective and psychomotor to work actively so that there is a combination of attitudes, intelligence, and skills. The STEM approach (Putri, 2019: 64) develops learning in the existence and relationships between the components of science, technology, engineering, and math, while STEAM has the addition of an "Art" component in it. There are many opinions that the application of STEAM for early childhood education is difficult because the child's mindset is still simple. This assumption is not entirely true because early childhood can be said to be a natural scientist because he has high curiosity and is often marked by the emergence of many questions.

The introduction of STEM / STEAM in early childhood can be done by creating a safe and fun learning environment. Providing opportunities for children to explore, find, build, carry out experiments, predict, seek temporary answers and link knowledge into real life are key activities that can be carried out in implementing STEAM (Putri, 2019: 65). Researchers made observations at RA Perwanida Praya. RA stands for Raudhatul Athfal. Taken from an Arabic term. Raudhah means garden, while Athfal means children. RA is under the auspices of the Ministry of Religion. Researchers made preliminary observations at RA Perwanida Praya. The results of preliminary observations found the indirect application of STEAM in the learning process in RA. This is shown by several learning activities that include knowledge such as experiments related to mixing colors, then math elements when children start counting. Researchers want to investigate further the application of STEAM in RA.

In this research, the researcher will see whether the teacher understands in theory how the application of STEAM-based learning is applied to children, so that the teacher can provide direction and stimulation in developing children's potential through STEAM elements. Early childhood requires quality education and learning services so that they can develop holistically in all aspects of their Therefore, the researcher wants to propose research on the analysis of the application of STEAM-based learning (Descriptive study

at RA Perwanida Praya).

Learning is the empowerment of the potential of students into competencies. This empowerment activity cannot be successful without someone helping. Learning is a two-way communication process, teaching is carried out by teachers as educators, while learning is carried out by students (Qoesmedia 2017: 106). Learning (Prawiradilaga, 2015: 42) is an optimal effort designed so that the learning process takes place effectively. In Law No. 20 of 2003 concerning the National Education System article 1 verse 20 that learning is the process of interaction of students with educators and learning resources in a learning environment. Learning is a process that is quite complex and not simple, it requires thought to design goals, strategies, field implementation that must be done carefully, directed and measured so that it will function as the latest in assessing learning outcomes (Rukayat, 2018: 19). So learning is a two-way communication activity from teacher to student which is deliberately designed as a process of interaction between students and educators which is complex and requires thinking in planning so that there is a change in behavior in students, where the change is to get new abilities that are in accordance with a relatively long time and because of business.

The benefit of this method is to make children have creativity, critical and logical thinking skills, and problem solving abilities. Also teaches children to have awareness of their environment. The problem with teachers sometimes is that many think that STEAM is all about art integration, because many teachers have no artistic training, or may not be sure how to put "A" into STEM. It is a broader and more inclusive view of STEAM that encompasses the scientific discipline we need, with entry points across all contexts. This suggests that STEAM's related views include the integration of art, which focuses more on several principles: interdisciplinarity, creativity, original or real-world learning, and project-centered thinking (Henriksen, 2017: 8).

The acquisition of basic skills in literacy and numeracy enables everyday inquiry. Therefore, the initial STEAM experiences involve children in order to acquire and use these basic skills appropriately, in meaningful contexts that are relevant to their daily lives (Soylu, 2016: 6). The STEM / STEAM learning approach is an issue about the latest learning strategies currently recommended by experts to be applied at every level of education from early age to college, this is because STEM / STEAM can develop skills such as problem solving, creativity, critical analy-

sis, group work, independent thinking, initiative, communication and digital literacy. These various skills need to be possessed by students to face the current of globalization (Putri, 2019: 64).

Of course, all of this is through mentoring and guidance from the teacher, they are trained to think critically about every problem, then together look for solutions or solutions (Muis 2019: 148).

According to Mentari, STEAM is a development of STEM education by adding elements of art (Art) to its learning activities. STEAM stimulates children's curiosity and motivation regarding higher-order thinking skills which include problem solving, collaboration, independent learning, project-based learning, challenge-based learning and research (Limbong, 2019: 207).

There are several aspects that need to be considered in implementing STEM / STEAM for early childhood. These aspects consist of (Putri, 2019: 65-66): 1. Questioning: asking questions about objects or events that occur around them; 2. Exploring and observing: active exploration activities through observation using various senses; 3. Developing skills and processes: building, creating and designing using various materials and techniques, using numbers, taking measurements and making shapes, identifying and trying to enable solutions to problems, collecting, comparing, sorting, classifying, interpreting, describing observations; 4. Communication: developing various language skills and communicating with others, working individually or in groups and sharing and discussing ideas through conversing, listening and writing; 5. Playing: learning takes place by applying the principles of play.

The introduction of STEM / STEAM in early childhood can be done by creating a safe and fun learning environment. Providing opportunities for children to explore, discover, build, experiment, predict, seek temporary answers and link knowledge into real life are key activities that can be carried out in applying STEAM.

METHOD

This research uses descriptive research. This research is intended to describe the application of STEAM-based learning (Science, Technology, Engineering, Arts, and Mathematics) conducted by teachers at RA Perwanida Praya. The approach used by researchers in this study is a descriptive approach in the form of a survey method. This study uses data collection techniques through non-test techniques. And the non-test technique is obtained by using several methods,

namely: observation, questionnaires, interviews. Then do the data processing. Research instruments, observation sheets, questionnaire sheets, interviews. The results of the study were analyzed through the Editing, Coding, and Scoring stages, which describe STEAM-based learning activities.

RESULT AND DISCUSSION

Researchers can describe a little about the results of the research that has been carried out so far, there are many obstacles, especially related to the Covid-19 outbreak which has limited researchers to make observations at school because there is no teaching and learning process at school due to lockdown. And a very limited learning process is only done online and offline, even that there are still many obstacles, the first is that parents complain that there is no quota, signals, even many children are reluctant to do assignments because they are too many tasks. But teachers still do their job despite many obstacles in the field, they do the things they can. From the results of data collection that the researchers obtained, only a few activities resulted in STEAM in learning activities such as playing simple floating and sinking science, drawing, mosaics, coloring. Children are also taught the Koran, even in this epidemic condition the teacher still visits students' homes to distribute student learning equipment and ensure that students are okay and excited to learn.

The STEAM aspect that appears in observations related to Questioning of color mixing activities carried out by children asks a lot about the approximate colors that appear when two colors are mixed. Furthermore, exploring and observing the children are given the freedom to mix the colors they want but with the limitation that they are only allowed to mix two colors, the child's developing skills and processes can also identify the shape and size of the grains used in the collage activity. This communication activity shows their understanding related to the task given by the teacher and the independence of the child in doing the assignment given by the teacher. The last one is playing, all learning activities given by the teacher are packaged in fun activities without burdening the children.

Learning activities that took place during the pandemic have undeniably had a big impact on the teaching and learning process at all levels of education including at the early childhood education level. Teachers in this situation make lesson plans with parents. The teacher creates a WhatsApp group to be used as a communicati-

on medium to facilitate the teaching and learning process. Every day the teacher sends videos / assignments that must be done by the child and accompanied by the parents, after the parents and children have done the assignments they have been given, they will send back the results of the assignments that have been done, one example of making a simple experiment is to make eggs float and sink.

Analysis of the application of STEAM which is applied in RA Perwanida Praya is related to the understanding of teachers applied in STEAM-based learning from the results of teacher interviews that are still familiar with the term STEAM, learning activities are applied even though they contain STEAM elements, the teacher does not understand the purpose of STEAM itself, it only makes activities that bring up science and mathematics to make a variety of play activities in children. Furthermore, the intervention given by researchers to teachers is to provide related understanding of STEAM-based learning that can be applied to children with activities that are usually carried out but have aspects that must be met, namely Questioning, Exploring and observing, Developing skills and processes, Communication, Playing. The application of STEAM can be applied to all aspects of child development, it remains to be tailored to the needs related to child development. The process of implementing STEAM-based learning at RA Perwanida Praya from the results of observations made by the researcher, there are several activities that lead to STEAM activities in the learning process such as playing collages, simple science experiments of sinking floating eggs, mixing colors, coloring.

CONCLUSION

In simple terms, the application of STEAM has appeared in the learning activities implemented in RA Perwanida Praya, but teachers still do not understand STEAM learning perfectly. After being given an overview related to the ele-

ments and aspects developed in the application of STEAM-based learning, it is hoped that the teacher can be more creative in making learning activities that can stimulate children optimally, because STEAM application is considered more fun and gives children the opportunity to think more critically in every activity.

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