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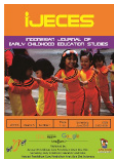

Planning of PAUD Learning with STEAM (Science, Technology, Art, and Math) Approach

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Abstract

The writing of this paper aims to explain how to answer the challenges of advancing science and technology more rapidly by preparing students to go ahead and develop with 21st Century learning planning namely STEAM-based learning (Science, Technology, Eingeneering, Art and Mathematic). Learning planning is a design for teachers in carrying out play activities to facilitate children in the learning process. The lesson plan must refer to the characteristics (age, social culture, and needs of the individual). 21st Century Learning is learning that integrates the abilities of knowledge, skills and attitudes as well as mastery of technology. This research is a qualitative research. Data collection techniques used in the form of interviews, field observations and reflective journals. Planning becomes the most important part in a learning process, which focuses more on 4C (Communication, Collaborative, Creatical Thingking, and Creativity). STEAM-based learning (Science, Technology, Eingeneering, Art and Mathematic) will help train children to be able to analyze existing problems using a variety of approaches, both science, technology, engineering, arts and mathematics so that it becomes a step for the survival of students in wading through changing times very quickly.

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INTRODUCTION

The curriculum is an important reference in the teaching and learning process in the world of education. As we all know that it is not uncommon to change the government system, so the curriculum planned by the government for the educational process will also change. This is indeed good as an update for the education system that is always developing to keep up with the times. Indeed a change will also change the system of approaches, learning and assessment in the curriculum. But in reality in the field there are still many teachers or educators as activists in the world of education experience difficulties in these changes. Recently, the world of education, especially in kindergartens led by the nadzim makrim education minister, sparked a learning model for early childhood, namely learning charged with STEAM (Science, Technology, Art, and Math). This is to answer the challenges of education that are currently inseparable from the world of Science and technology

The elements in the STEAM learning model are very useful for the development of early childhood education. Although in recent years learning with STEAM content has received widespread attention from all over the world including Indonesia, but research related to the STEAM charge curriculum is still limited, it is very rare even though STEAM has become a popular object for discussion. Some educational studies that discuss and write discussions related to STEAM, one of which was conducted by Agus Danang et al in 2015 with the title Implementation of STEAM-Based Learning (Science, Technology, Art, And Math) on the Curriculum. Where the focus of research is elementary school.

Furthermore, an article written by Irmayani et al in 2019 recently talked about STEAM-based PAUD learning planning which contains a design for teachers in carrying out activities using STEAM Models.

The STEAM Content curriculum itself is a learning approach (Science, technology, engineering, art and mathematic). STEAM itself is a development of STEM namely the exploration of elements of Art in the concept of learning. STEAM provides opportunities for children to get stimulation and can motivate children in high-level thinking which includes, problem solving, independent learning, collaboration, challenge-based learning, project-based learning and research. From some of the above learning, project-based learning (Project Based Learning) is learning in accordance with the STEAM approach, that is because Project Based Learning has the assumption that problem solving will not be complete if it is not reviewed from various aspects (Mentari, 2018 : 43)

Yakman also believes that the STEAM Approach is a form of contextual learning, children are invited to understand phenomena that are close to themselves or the environment. STEAM's approach can also encourage children to explore their abilities in their own way. Besides STEAM approach is done in groups, it can bring collaboration, collaboration and communication to each child and STEAM's approach can also bring up unexpected works from each individual or group (Tritiyatma 2017: 5)

Grouping in the STEAM approach also gives rise to a sense of personal and interpersonal responsibility in the learning process, thereby building children's understanding of the material being studied. A learning approach to stay in line with the learning objectives must be formed a learning plan. According to (Anisa, 2017: 3) learning planning is a school of learning arranged as a form of implementation of methods, or materials that have been determined and organized in the form of a series of activities or work procedures.

Signs in the planning of curriculum learning include: (1) referring to basic competencies consisting of attitudes, knowledge and skills as an embodiment to achieve the Standards of Achieving Child Development which include aspects of religious and moral, motor, cognitive, language values social-emotional and artistic. (2) linking the material in basic competencies with the theme, (3) choosing excitement in accordance with the learning material, (4) developing child-centered play activities, (5) thematic learning, (6) building a scientific mindset, (7) utilize the local natural environment and based on local culture as a medium for children's play. (kemendikbud 146 thn 2014:7).

The Early Childhood Education Curricula component consists of the standard level of achievement of child development, core competencies, basic competencies, time allocation, indicators of development achievements, learning programs (annual programs, semester programs, weekly learning implementation plans, Daily learning implementation plan. learning program identity, learning objectives, learning themes, learning materials, learning methods, learning resources, learning activities (initial, core and closing activities), learning media, learning tools and materials, and learning evaluation / evaluation.

One of the institutions of Early Childhood

Education that has implemented learning planning using the STEAM approach is KB Wadas Kelir Purwokerto, but it is not yet known with certainty the accuracy of the learning plan. Therefore this study is entitled "planning learning approaches STEAM (Science, technology, eingeneeting, art and mathematic) in KB Wadas Kelir Purwokerto. Based on the background of the above problems, it can be taken the formulation of the problem in this research is how to make learning planning using the STEAM approach in KB Wadas Kelir Purwokerto.

The purpose of this study is to assist students in planning learning that is appropriate to the needs of students, so that educators can then analyze the problems that exist by using a variety of good approaches, science, technology, art, mathematical or mathematical puzzles, these can then be used as strategies for maintaining the survival of children in the future.

METHODS

This research uses descriptive qualitative research methods. The instrument in this study is the person or human instrument, the researcher himself. To be able to become an instrument, the researcher must possess broad theories and insights so that he is able to ask questions, analyze photographs, and construct the social situation under study to become clearer and more meaningful. In this research data collection and collection were carried out by observation, interview, and documentation techniques. Observation technique is carried out to observe the use of loosepart media in developing STEAM content curriculum (Science, technology, art, and match). Interview techniques were carried out to obtain information about the learning process in using loosepart media in developing STEAM content curriculum (Science, technology, art, and match). The documentation technique is carried out to obtain data about the general Figure by looking at the results of children's learning activities, achieving child development and others.

RESULT AND DISCUSSION

Planning is a word that comes from the word plan that means decision making, which in this case is the planning of learning early childhood. So it can be understood that learning planning is a plan by setting goals and designing strategies / methods as a form to achieve these goals.

The aim of early childhood education is to develop the ability and shape the character and civilization of the nation to the civilized to suit the nation's dignified civilization in order to educate the life of the nation, aims to develop the potential of students to become human beings who believe in and fear God Almighty, noble, healthy, knowledgeable, capable, creative, independent, collaborative, critical thinking and responsible. The above stimulus is given so that children have readiness to enter further education. (permendikbud 146).

As a form of implementing the objectives above, it is necessary to have an appropriate learning approach such as the STEAM approach in which the elements in it aim to teach students to think critically and have techniques or designs to solve problems. Pembelajaran ini merupakan salah satu This learning is one of the answers to answer the challenges of the 21st century that requires people to have technological skills and be able to innovate, have a career and have a global awareness, and have the character to meet the high market demand related to products based on science and technology (Wijaya, Danang Agusta dkk 2015 : 85)

STEAM learning design that is implemented in KB wadas kelir when viewed from the plan include: Basic competencies. Basically, the choice of Basic Competence remains in accordance with the desired curriculum. The presence of STEAM is only to dig deeper and develop more broadly; Method. STEAM-based methods prioritize science, technology, eingeneering, art, mathematic, related to the concept of relationships, the use of available items and the ability of teachers to invite children to be interested in playing the materials that have been provided; Media. The media used is optimizing loose parts; Strategy. The strategy used in learning is central learning models; Evaluation. Evaluations are used in accordance with the daily learning implementation plan, making indicators that refer to the Basic Competencies that have been set.

Learning planning must be prepared by the teacher independently. Before conducting the study, there are three types of planning that must be prepared and prepared by the educator among them, namely: Semester program, Weekly Learning Implementation Plan, and Daily Learning Implementation Plan. The signs that must be considered in the preparation are: (1) understanding the Standards of Achievement of Child Development as the end result of the PAUD program (core competencies), (2) understanding core competencies as achievement of learning outcomes, (3) establishing learning materials as content for enrichment of children's experience.

The following are the steps for preparing a semester program, i.e: Establishing Basic Competencies in each theme. Determination of BC contains all aspects of the development of Religious and Moral Values, physical-motor, cognitive, language, social-emotional, and art. Basic Competencies can be explained in full or just write code no. Basic Competency can be used repeatedly on each different theme / sub-sub / sub-theme.

Making a one-semester theme list of learning activities starts with attention to the principles of theme development. The themes / sub-themes / sub-sub-themes that have been determined can change if there are certain conditions by involving children without having to change the basic competencies that have been set.

Develop themes into sub-themes or subthemes. The sub-themes and sub-themes developed are more specific and deeper topics. The specificity and depth of the sub-themes and subthemes pay attention to the age of the child, the readiness of the teacher, and the availability of supporting learning resources.

Determine the time allocation for each theme, sub-theme or sub-sub theme. The time of discussion of themes / sub-themes / sub-sub-themes is adjusted to the child's interests, breadth, depth and the resources / media provided.

A weekly learning plan is prepared for one week of learning outlined in the semester program. The weekly learning plan contains: Service identities include: (1) the name of the PAUD unit, (2) the age group of children according to the program target group, (3) which semester / month / week, (4) the theme / sub-theme / sub-sub-theme is taken from the theme / sub-theme / sub-themes arranged in the semester program.

The selected Basic Competencies include: (1) Basic Competencies determined in the Weekly Learning Implementation Plan in accordance with the Basic Competencies that have been set in the semester program or if deemed important can be changed according to conditions, (2) the composition of Basic Competencies can represent the entire development program (moral, physical-motor, cognitive, social-emotional, language and art religious values, (3) Basic Competencies for sub-themes or sub-themes can be taken entirely or only part of the Basic Competencies in the theme, (4) Basic Competencies that are selected can be repeated for use in other themes, (5) writing Basic Competencies can be written in numerical order or written in full, (6) placement of Basic Competencies can be entered into the column or written above after the program identity.

Learning material includes: (1) learning material taken from learning material that has been described in the curriculum, (2) the amount of learning material taken is adapted to the child's learning ability, (3) attitude development material is incorporated into the Standard Operating Procedures and becomes a habit that is applied daily days throughout the year, (4) attitude development material that has been incorporated into the Standard Operating Procedures continues to be applied even if it is not included in the Daily Learning Implementation Plan, (5) learning materials related to themes / sub-themes / sub-sub-themes, (6) learning materials for one theme / sub-theme / sub-sub-theme will be repeated according to the time allocation of the Weekly Learning Implementation Plan to strengthen children's abilities.

The planning of learning using the STEAM approach in KB Wadas Kelir is the design of a goal which must be planned as best as possible according to the stages of child development. Building a knowledge in children can use the STEAM approach. Children will learn to observe, investigate, and ask questions. Through this approach the teacher will invite children to think or observe the natural knowledge that is around us. The collaboration of teachers and children in each activity. Media that can support each of STEAM's activities..

The principles of planning compilation include: (1) plans that children will follow, (2) attract and allow children to choose their own play activities that have been prepared, (3) variation of planning activities in 1 week, so that children are not bored, (4) a minimum number of activities in one learning day at least 4 types of play activities, so that children have diverse learning experiences and feel attracted to play, (5) reflect a scientific approach, (6) pay attention to learning models: centers, groups, areas, angles , (7) provides real or direct experience such as: drama, blocks, nature etc., (8) time allocation on the type of activity or learning.

Plan for implementing weekly learning with different activities. The aim is for children to achieve optimal learning outcomes with interesting learning experiences so that it is not boring, (9) adapted to the theme, (10) to show the meaningful implementation of thematic learning, each end of the theme is strengthened by the peak activity of the theme, (11) the peak the theme can be in the form of activities such as making food, eating together, exhibiting the work, harvesting plants, and visiting.

The Daily Learning Implementation Plan is a reference for managing play activities in one day. The Daily Learning Implementation Plan is

prepared and implemented by the teacher. The format of the Daily Learning Implementation Plan does not have to be standard, but contains the components specified. The components of the Daily Learning Implementation Plan consist of (1) program identity, (2) material, (3) tools and materials, (4) opening activities, (5) core activities, (6) closing activities, and (7) assessment plans. The identity of a Daily Learning Implementation Plan contains: (1) the name of the PAUD unit that compiles the Daily Learning Implementation Plan, (2) what semester / month / week, (3) day / date, (4) theme / sub-theme / sub-sub-theme taken from the themes / sub-themes / sub-sub-themes arranged in the semester program, (5) the child's age group is filled with the target group.

There are several STEAM (Science, technology, art, and match) activities carried out at KB Wadas Kelir: First, science. Science or knowledge of the natural surroundings, yourself, and natural phenomena (Sigit. 2016). This activity children learn to explore or investigate. The activity of observing and investigating the process of natural phenomena, for example the rainbow experiment, prepare cooking oil in a glass bowl and prepare more water than oil. After everything is ready to mix the two and face the glass container to sunlight. From there a colorful rainbow will emerge.

Second, technology. In the world of technology education is very helpful for children in scientific transfer, as well as audio-visual can help children who are difficult to think abstractly because children learn visually (Tabi'in: 2019). As an example of activities in KB Wadas Kelir, this technology activity is usually called digital literacy, namely Knowing a technology that is around us, where children will be introduced to computers or laptops. For example children learn to type their own names. Get to know colors through power points, and video education

Third, art. Art is a process that produces a work that can be enjoyed by the beauty of Cacilia, (2016). Art in children is through the experience of children can pour their ideas into works of art. Examples of activities at KB Wir Kelir are coloring, pantomime, and storytelling. These activities train the child's right brain and left brain.

Fourth Eingeneerin (Engineering) is the knowledge to design or operate a procedure as a form of solving a problem. Or it could be said that Eingeneerin is a person's skill in running or designing something (Munawar: 2019). The ability of early childhood eingeneerin which includes the ability to compose or build certain forms with various media. As an example of Eingeneerin activities in KB Wadas Kelir, children are invited to build or arrange according to their wishes using wood, lego, plasticine and sand media.

The fifth Mathematic, in accordance with The Principles And Standards For School Mathematics (2000), which was developed by an education group from the National Council of Teachers explained that mathematics can be understood by children aged four and five years, namely mathematical concepts relating to numbers, measurement geometry and probability and make a graph. Examples of activities implemented at KB Wir Kelir are children invited to (1) count rocks, (2) distinguish small stones, (3) long-short (4) many small stones, (5) introduce stone patterns and (6) introduce numbers.

CONCLUSION

Based on the discussion above it can be concluded that the making of STEAM-based learning planning is very important to facilitate children in developing their own ten potentials and the success of the implementation of meaningful and quality learning. The learning planning is the Semester Program, Weekly Learning Implementation Plan and Daily Learning Implementation Plan prepared by educators.

Maturity in planning learning will help children in implementing 4C (Communication, Collaborative, Creatical Thingking, and Creativity). STEAM-based learning (Science, Technology, Eingeneering, Art and Mathematic) will also help train children to be able to analyze existing problems using a variety of approaches, both science, technology, engineering, art and mathematics so that it becomes a strategy to maintain sustainability Nagara's life is still able to survive in the fast-paced era at this time.

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