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## INCREASE CREATIVITY AND IMAGINATION CHILDREN THROUGH LEARNING SCIENCE, TECHNOLOGIC, ENGINEERING, ART AND MATHEMATIC WITH LOOSE PARTS MEDIA

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### Abstract

The purpose of this research is to describe STEAM (Science, Technological, Engineering, Art and Mathematic) learning with loose parts media which can increase children's creativity and imagination. The research method used is descriptive qualitative data collection techniques using observation, interviews and documentation. In the data analysis technique, the researcher uses qualitative analysis techniques by using data reduction, data display, and drawing conclusions. The research was conducted in 4 meetings in group B with 12 children. Research shows that learning STEAM with loose parts media can increase children's creativity and imagination, this can be seen from the observations made 4 times in the PAUD unit Rembulan, Air Kering village, Padang guci hilir sub-district kaur district, all children are progressing well. when studying with loose parts media. STEAM learning with loose parts media can be applied to early childhood education, both the paud unit of the children's play group program and the STEAM kindergarten learning program with loose parts media. STEAM learning with loose parts media is very good to be applied in early childhood education, this research not only increases children's creativity but also increases children's imagination, the loose parts media used is also unique and natural.

**Keywords:** STEAM Learning, Loose parts, Children's creativity and imagination

### 1. INTRODUCTION

The existence of early childhood education as well as non-formal and informal education is very urgent in the effort to achieve the goals of national education. Paud is a pre-primary education level that fosters early childhood from birth to 6 years of age. Which is given educational stimulation to help the growth and development of children both physically and spiritually in the face of further education. Early childhood education directs paud organizers to emphasize the growth and development aspects of children (religion and moral, physical motor, cognitive, language, social-emotional, and art) in accordance with the



uniqueness according to the development stages that early childhood goes through as stated in Permendikbud 137/2014 on the National Standard for Early Childhood Education.

In the era of the 21st century, we have entered the era of the Industrial Revolution 4.0 and an era of disruption that increasingly demands that we be more creative and innovative. Early childhood education is one of the education units that must be ready to make changes and respond to the challenges of the times. Early childhood is a golden period or golden age which is very decisive and very influential on the development of the next child, so that at this golden age the child must get the right stimulation or stimulation (Wiyani, 2019).

Starting from an early age, children must be given skills both hard skills and soft skills so that children are able to adapt to changes in their environment. Skills that need to be taught to children are critical thinking skills, creative thinking (creativity), cooperation, and communication. Besides of course, children learn about knowledge (physical knowledge, mathematical logic, and social), these skills must be integrated in the learning process n (Wahyuningsih, Pudyaningtyas, and Nurjanah 2020)

In preparing the golden generation with a scientific mindset and high reasoning abilities, children can be trained in Science, Technologic, Engineering, Art and Mathematic learning models. Learning by utilizing science, technology, engineering, art and mathematics in an integrated manner is centered on students that have been developed in various countries from pre-school to high school levels. In improving higher-order thinking skills and motor skills in early childhood, the approach of Science, Technological, Engineering, Art and Mathematic can be emphasized in the learning process through hands-on activities (Maiti and Bidinger 1981)

Learning with Science, Technological, Engineering, Art and Mathematic content is relevant to the content of the 2013 PAUD curriculum, namely the scientific approach inviting children to observe, ask, collect information, reason, and communicate. At the same time, learning Science, Technologic, Engineering, Art and Mathematic is important to help teachers combine various disciplines and introduce children's learning experiences that give children the freedom to explore, ask, research, find and practice innovative skills (Nurjanah 2020).

Media loose parts are one of the media used in the learning of Science, Technologic, Engineering, Art and Mathematic (Prameswari and Lestarinigrum 2020). Loose parts are open materials, materials that do not combine with other materials that can be combined, carried, assembled, used alone or combined with other materials (Wahyuningsih,



Pudyaningtyas, and Nurjanah 2020). Loose parts materials are easy to find in everyday life and even loose parts are often used and utilized. Loose parts in nature around us such as coral, river sand, sea sand, clay, leaves and twigs are very easy to obtain, loose parts from used materials such as plastic, metal, glass are also very easy to get, even it doesn't cost money to get it. the loose parts material. Loose parts materials can support children's development and help children to connect themselves with the child's environment (Prameswari and Anik Lestaringrum 2020)

Loose parts consist of 7 types: 1) Natural materials, which are natural materials such as: cassava leaves, corn kernels, bricks (Ubaidillah 2018), 2) Plastic materials, materials made of plastic such as: shirt buttons, used bottles, plastic straws, bottle caps, pieces of paralon, plastic buckets and pans (Budiarti, Susilowati, and Farida 2018), 3) Metal, is a material made of metal, such as: tablespoons, used paint cans, zinc, kitchen utensils, screwdrivers, hammers, keys, knives, pans (Chairunnisah, Sulaiman, and Fitriani 2019). 4) Wood and bamboo, are materials from wood and bamboo that are no longer used: pen holders, wooden blocks, puzzles made of flute wood and others. 5) Yarn and cloth, are materials made from fiber materials such as: handkerchiefs, cotton, patchwork, ropes, ribbons, rubber and others. 6) Glass and ceramics, are materials from glass and ceramics, such as: glass, glass bottles, mirrors, beads, marbles, ceramics, and others (Palupi 2019). 7) Former packaging, is used packaging materials such as: cardboard noodles, tissue rolls, cake wrappers, egg containers, bread containers and others (Agustina, Nasirun, and Delrefi 2018).

Early Childhood Education educators and parents have assumed that good toy materials to stimulate children's development are materials obtained from buying or manufactured materials, even though there are so many materials around us that can be used as learning materials. while playing early childhood in accordance with the creativity and imagination of children. Every object played by children can be used according to imagination, creativity and innovation to stimulate children to think about science with the materials that have been provided (Prameswari and Anik Lestaringrum 2020)

In early childhood cognitive development, visualization is still needed in transferring knowledge, this learning process requires interesting media or tools to stimulate children's motor development. Media loose parts are one step that can be developed as an educational game with Science, Technological, Engineering, Art and Mathematic (Puspita 2019). Playing children's activities using play materials or assistive media can make early childhood more



creative and free to imagine according to children's wishes (Anita Damayanti, Sriyanti Rahmatunnisa, and Lia Rahmawati 2020)

It is important to develop one's creativity from early childhood because creativity becomes the foundation for productive thinking and has the opportunity to discover new things. Creativity is a person's mentality that generates effective new ideas, processes, methods or products that are imaginative, aesthetic. Flexible. Integration, succession, discontinuity, and differentiation that are useful in solving a problem (Imamah and Muqowim 2020)

<sup>5</sup> Loose parts are an opportunity for children to express their creativity through the use of materials that can be manipulated, modified and made through self-guided play (Journal et al. 2019). At an early age children play, create and imagine, develop children's imagination is an effort to stimulate, grow and increase the potential for intelligence as well as creativity in their infancy. develops along with the development of the child's imagination the ability to speak and language. (Rofi'ah, Setyowati, and Idhayanti 2018)

Previous research only emphasized the learning of Science, Technologic, Engineering, Art and Mathematic with loose parts in improving the creativity of early childhood (Nurjanah 2020), the effect of Science, Technologic, Engineering, Art and Mathematic methods on children's creativit (Wahyuningsih et al. 2019), Science, Technologic, Engineering, Art and Mathematic learning strategies by playing loose parts to achieve 4 C skills (Prameswari and Anik Lestaringrum 2020). So it is important to do research on how to increase children's creativity and imagination through STEAM (Science, Technological, <sup>2</sup> Engineering, Art and Mathematic) learning with loose parts media.

Based on the results of direct interviews with several Early Childhood Education educators in Kaur Regency, there are still a lot of Early Childhood Education educators who do not understand Science, Technological, Engineering, Art and Mathematic learning, educators also do not know what media are used for learning Science, Technologic, Engineering, Art And Mathematic. Educators also do not know the benefits of <sup>2</sup> learning Science, Technological, Engineering, Art and Mathematic with loose parts media in early childhood learning. So far, most educators have used worksheets as student learning media, while the learning media used by educators in children's learning activities while playing are using manufactured materials. This results in children's creativity, collaboration, communication, critical thinking underdeveloped, even though in the era of this 4.0 revolution, from an early age children must be given stimulation that makes children think





critically, be able to communicate well, be able to work together and be creative. Due to the problem, the target of this research is early childhood aged 4-5 years in the Rembulan Early Childhood Education Unit, Padang Guci Subdistrict Downstream, Kaur Regency. This research will observe STEAM (Science, Technological, Engineering, Art and Mathematic) learning with loose parts media that can increase children's creativity and imagination.

### RESEARCH METHODS

The research method used in this research is to use descriptive qualitative research methods. Through this approach, it is hoped that researchers can produce descriptive data in order to reveal the causes and processes of occurrence in the field. A qualitative approach is an approach by looking at the object of study as a system, meaning that the object of study is seen as a unit consisting of interrelated elements and describes the existing phenomena.. (Anggito and Setiawan 2018)

The research method used in this study is a qualitative method of descriptive theory with qualitative data analysis, the research is a naturalistic research which is carried out in natural conditions of natural setting. (Utami 2019). In general, data collection techniques in qualitative data analysis consist of four types, namely observation, interviews, documentation, and combination / triangulation ". Triangulation is checking data from various sources in various ways, and at various times (Yayuk and Sugiyono 2019)

The implementation of this research was in the first semester of the 2020/2021 school year in the Moon Early Childhood Education unit. The implementation time was carried out 5 meetings which refer to the educational calendar in the Moon Early Childhood Education unit. Data collection was carried out through observation to students and educators and documentation when learning Science, Technological, Engineering, Art and Mathematic with Loose Parts media itself. In this descriptive method and qualitative data analysis, the researcher will discuss whether "Learning Science, Technological, Engineering, Art and Mathematic with Loose Parts media can increase the creativity and imagination of Group A children (4-5 years) in the Moon Early Childhood Education unit? " The subjects of this study were 12 children, 7 boys and 5 girls group A in the Moon Early Childhood Education Unit. The object used for research is the children's artistic abilities and language skills.

The data analysis used is qualitative data analysis in the form of words. Then the results of the observations were poured into the descriptive method. Then the researcher



began to analyze qualitative data through interviews with the objects observed, one of which was, "How did you feel when studying with Loose Parts media?"

## RESULTS AND DISCUSSION

### RESULT

The design of the Science, Technologic, Engineering, Art and Mathematic learning media for group A 4-5 years in the Rembulan PAUD unit in terms of planning the Science, Technologic, Engineering, Art and Mathematic method can increase the creativity and imagination of children aged 4-5 years. The results of the study can be seen from the child's ability to optimize the use of available loose parts so that children are interested in playing with the materials that have been provided. This method puts forward science, technology, engineering, art and mathematic. Learning center model is used as a strategy in learning Science, Technologic, Engineering, Art and Mathematic.

One of the lessons of Science, Technological, Engineering, Art and Mathematic with loose parts media is to make cow sheds from wood, twigs, cardboard and make numbers and letters from seeds and buttons. There are still many other children's works that are made from loose parts because this material is easy to get and they live around them.

At the meeting on the first day of learning Science, Technological, Engineering, Art and Mathematic with Loose Parts media, the development of children's creativity had begun to appear and the children had started to explore loose parts materials. It can be seen at the first time that the teacher prepares a lesson plan and prepares the media in the form of loose parts, the enthusiasm and joy of the children have begun to appear. In the next lesson, the children have started to look more cheerful and happy with learning with loose parts media in the form of materials that are around.

At this meeting, 5 out of 12 group A children studied in the Rembulan Early Childhood Education unit were very happy and excited when the teacher had started learning activities while playing. The five children can complete the task according to the theme determined by the educator well and proudly

Then in the second meeting, the teacher chose loose bamboo and wood parts (blocks, wooden puzzles, bamboo pieces, bottles) to be used as interesting home toys. From the beginning of the lesson to the end, 8 out of 12 group A children were observed to be able to finish their toys with great pleasure and pride.



Furthermore, in the third meeting, the educator explained the kinds of loose parts and their uses. Educators provide various tools and materials for Loose Parts. Then the children are given the freedom to make works according to the imagination and wishes of each child. At the third meeting, the various forms of work made by children were increasingly visible. The children were busy with their respective works.

After making observations and entered into this descriptive method. Then the researcher analyzed the qualitative data by interviewing the object observed with questions and producing satisfactory answers from the results of his observations.

Based on the results of learning research on Science, Technological, Engineering, Art and Mathematic with Loose Parts media which was carried out 4 times, carried out when the child was playing educational game tools with loose parts materials, showing that children's creativity and imagination increased.

## DISCUSSION

Based on the results of the discussion that the use of instructional media is very influential on the quality of learning in schools. The learning chosen by the researcher is Science, Technological, Engineering, Art and Mathematic learning with loose parts media for early childhood, an early childhood educator must be creative and always innovate to use the learning media that will be given to their students.

According to researchers, Learning Science, Technological, Engineering, Art and Mathematic with loose parts media is a suitable learning to be applied in early childhood education units. (Nurjanah 2020). Educators must adjust the condition of the child with the media that is prepared. Loose parts are provided with various choices such as language elements, art elements and mathematical elements. every child has different abilities. High artistic and language skills of children will develop even if they only use simple materials, such as using loose parts in their neighborhood.

Learning is carried out in the form of playing chili learning activities which are recognized by the Science, Technological, Engineering, Art and Mathematic learning approach which aims to encourage children's knowledge through observing, questioning and investigating. Learning in early childhood education will be interesting and fun for children and educators if the learning media is designed attractively. by learning Science, Technologic, Engineering, Art and Mathematic with loose parts media, it is able to increase the creativity and imagination of early childhood.





The results of this study are in line with research conducted by Novita Eka Nurjanah in 2020 by revealing the results, learning Science, Technological, Engineering, Art and Mathematic based on loose parts can increase children's creativity.

## CONCLUSION

Based on the results of this study, it can be concluded that the research was conducted in 5 meetings, at the first meeting the creativity and imagination of the children was not seen when learning with loose parts media, at the second meeting the creativity and imagination of the children had begun to appear, at the next meeting the children looked more happy. and happy when learning with loose parts media. In the research the researchers found that learning Science, Technological, Engineering, Art and Mathematic with loose parts media can increase the creativity and imagination of children aged 4-5 years in the Rembulan Early Childhood Education unit.

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