

# Parents' Roles in STEAM Learning in Early Childhood

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## ABSTRACT

This study aims to describe the role of parents in STEAM learning in early childhood. The research method used in this study is a qualitative research with the method of observation, interviews and documentation about the role of parents in implementing STEAM learning in children aged 5-6 years. The results showed that the role of parents in STEAM learning is very necessary. Parents have an important role in the upbringing of children. Parents have a very important role as the child's main teacher, because parents as teachers are able to motivate children, are able to encourage the formation of new skills at home, and provide valuable information for others who work with children. The understanding of parents in understanding STEAM is good, with this learning parents can learn from the things that are around them. There are five components of STEAM learning, namely engage, explore, explain, elaborate and evaluate.

**Keywords:** *Parents' Roles, STEAM learning, Early Childhood.*

## 1. INTRODUCTION

The Covid-19 pandemic has indirectly changed the way of life in the world of education. This pandemic is able to accelerate education 4.0. The learning system is carried out remotely (PJJ) by utilizing information technology. Since the stipulation of Covid-19 as a pandemic on March 11, 2020, the government issued a circular letter from the Ministry of Education and Culture No. 4 of 2020 which stipulates the rules for learning from home for school children and working in PAUD units. For the world of education in Indonesia, this condition is an unexpected thing for teachers, parents and children must find ways to keep the learning process going even though they are at home for an indefinite period of time.

The role of parents is very important in pandemic conditions like this, considering that the main and first madrasa for a child are parents. However, the reality is that parents are not fully prepared for this condition. [1] shows that many parents also have obstacles in assisting PJJ children, namely: lack of understanding of the subject matter, difficulty in growing children's interest in learning, not enough time to accompany children to study because they have to work, impatient to accompany children to study, have difficulty operating gadgets and internet coverage constraints. [2] on the role of parents in early childhood learning at home, concludes that parents feel that learning at home runs effectively, because the tasks given by the teacher can be helped by parents at home and parents also agree that during learning at home,

parents help to do the assignments given by the teacher. This shows that many parents are not ready and do not understand their role in early childhood learning at home.

This is also experienced by the guardians of students at Al Bashiroh Kindergarten, Ponorogo, people who usually hand over their children's education completely to teachers, must try to accompany children to learn from home. Based on the results of interviews with teachers, many parents complained about the difficulties in accompanying children to study because they had to work. Children are not eager to learn when in school. However, there are also guardians of students who are very happy with the existence of online learning because they can learn with children, they can be closer to children. Parents are very enthusiastic in accompanying learning from home that has been provided by the school. From this, the role of parents is very important in the learning process.

Learning in children is the most important thing that comes from the family. The role or support of parents and the environment has a major influence on the development of children. In accordance with the opinion of [3] that parents are a part of the microsystem in which there is direct interaction between children, parents, and peers. To be able to support this understanding, parents must provide appropriate stimulation based on the concept of early childhood education. The urgency of early childhood education is to develop all aspects of child development, including cognitive, language,

physical, motor, social and emotional development [4] development or known as Developmentally Appropriate Practice (DAP). DAP according [5] is education based on knowledge of the typical development of children according to the age range (age accuracy) and the uniqueness of the child (individual accuracy).

Learning must provide understanding support in stimulating children's development. One form is through STEAM, which is a learning approach that integrates six fields of science, namely Science, Technology, Engineering, Art (arts/beauty) and Mathematics (Math). STEAM can stimulate a systematic mindset starting from observing, asking, predicting, researching and discussing, which becomes a framework for recognizing problems in order to find problem solving solutions. As the opinion of [6], that students who learn through the STEAM approach are expected to be able to: 1) solve problems that become puzzles, 2) have the power to carry out investigations in solving a problem, 3) recognize discoveries that fit the needs and be creative in designing and determine the solution, 4) independent and able to develop themselves to gain confidence and work within a certain time, 5) think logically, and 6) master skills and be able to develop them appropriately.

This learning approach was developed to meet the learning needs of the 21st century, where children are expected to have the ability to think analytically, creatively, communicatively and able to collaborate with others. In this approach, children are encouraged to develop curiosity and ask questions, so that children can build knowledge around their world, by exploring, observing, discovering and investigating how things work. This learning can be done by studying something that happens every day and by using materials available around the child. In this approach, the role of teachers and parents is needed to encourage children to explore the knowledge around them.

Based on the explanation of the problems above, the researcher will examine how the role of parents in STEAM learning in early childhood at Al Bashiroh Kindergarten Ponorogo. The purpose of this study was to describe the role of parents in STEAM learning, especially children aged 5-6 years at Al Bashiroh Kindergarten Ponorogo.

## **2. THEORETICAL REVIEW**

### ***2.1. The Role of Parents***

Parents have a very important role in developing all aspects of development in early childhood. This is because parents are the first and foremost people in the family, a small group that has leaders and members who both have duties, roles and positions as well as rights and obligations [7]. Quoting the opinion of [8], the term parents according to language are father and mother,

while according to the term it is the first adult who bears the responsibility of education, because naturally in the early days of life are in the midst of father and mother. Meanwhile, according to [9], what is meant by the role of parents is the method used by parents in relation to the view of the tasks that must be carried out in raising children. The role here is described as the way used by parents in nurturing, providing guidance, education, direction for their children.

The role of parents in this STEAM approach is to assist children in exploring and building their own knowledge. When learning is done face-to-face, this assistance is carried out by the teacher in classroom learning. On the other hand, when this learning is done online, the task lies with the parents. Parental involvement cannot be separated from the world of early childhood education, especially in online learning as it is today. According to [10], schools can foster good communication with parents about various activities at school. This is also supported by research by [11], that parents have an important role in the task of child development and all aspects of its development.

Shearer and Shearer in [12] revealed that the Portage Model emphasizes the importance of the role of strong parents and provides opportunities for parents to be the main interventionists and teachers as partners in the program. The rationale for implementing the Portage Model in relation to parents and families is as follows: (1) Learning occurs within the family and children, (2) Home interventions allow direct and persistent access to behavior as it occurs naturally, (3) Learned behavior is more likely to be generalized and maintained if it has been learned in the child's home environment and taught by the child's natural motivating agent, the family, (4) Home teaching offers more opportunities and full family participation in the teaching process, (5) Home provides access to a variety of behaviors. Many of them cannot be targeted for change in the classroom, (6) Train parents as natural motivating agents, giving parents the skills needed to deal with new child behaviors, as they occur (7) Individualization of teaching goals for parents and children is an operational reality because home teachers work with children.

Parents have a very important role as the child's primary teacher, according to Bailey, et al., in [12] because parents as teachers are able to motivate children, are able to encourage the formation of new skills at home, and provide valuable information. for others working with children. The potential for greater and lasting effects on the child increases as more time and opportunities are spent with parents. The centralization of the teaching process at home according to Shearer and Shearer in [12] is a point where all components come together and the intervention is successful.

Based on some of the opinions above, it can be concluded that the role of parents is very important in the

learning process of children at home. Parents have a role in nurturing, providing guidance, education, direction for their children. In STEAM learning, parents act as teachers for children. Parents must be able to motivate children, be able to encourage the formation of new skills at home, and provide valuable information to others who work with children. In addition, parents must also accompany children in exploring and building their own knowledge so that the development and growth of children can run optimally.

## **2.2. The Role of Parents**

STEAM is a learning approach that integrates five fields of science, namely science, technology, engineering, art/beauty, mathematics. STEAM in addition to developing knowledge content in the five fields of science, can also grow skills such as problem solving ability. This is in accordance with [13] opinion that STEAM-based learning can make children think critically, comprehensively, and stimulate children to solve problems.

Educational [14] explains how STEAM integration for early childhood includes: (1) Science encourages children to find out, answer questions and often children can do experiments, (2) Technology refers to the use of simple tools such as: scissors, crayons, markers, rulers, and others, (3) Engineering (technique) refers to the process when children work or test something, (4) Art encourages children's creativity and allows children to describe the concepts they find. (5) Mathematics deals with numbers, patterns and shapes.

STEAM learning can occur naturally every day when children do play activities. By trying new things the child continues to perfect the game from his own point of view. Parents or teachers can support children's development by understanding and applying the five (5) components of the STEAM model [15] namely: (1) Engagement, where parents or teachers invite children to be further involved in playing activities that contain STEAM content based on previous experience, (2) Exploration, namely parents or teachers provide opportunities for children to be able to build their own understanding so that they can look for tools and materials provided, (3) Explain (explain), namely parents or teachers facilitate children to be able to express what has been learned and understand its meaning, (4) Detailed (elaborate), namely parents or teachers facilitate children to be able to deepen understanding of concepts and adapt to practical skills and behaviour, (5) Evaluation, where parents or teachers invite children to evaluate playing activities.

From the understanding and explanation above, STEAM learning is learning that integrates five fields of science, namely science, technology, engineering, art/beauty (art), mathematics (mathematics) so that

children are able to think critically, comprehensively, and stimulate children to solve problems.

## **3. METHOD**

This is qualitative research. [16] said that qualitative research is research that uses a scientific background with the intent to interpret the phenomenon that occurs and is done by involving various methods that exist. The research method used in this research is qualitative research. This type of research is descriptive. This study was conducted with the aim of describing the role of parents in STEAM learning applied by parents at Al Bashiroh Kindergarten Ponorogo. Data collection techniques used are observation, interviews and documentation. The data analysis used in this study is the Analysis Interactive Model from Miles and Huberman, which divides the steps in data analysis activities into several parts, namely data collection (data collection), data reduction (data reduction), data presentation (data display), and drawing conclusions or verification (conclusions).

## **4. FINDING AND DISCUSSION**

### **4.1. Observation results the role of parents in STEAM learning**

The role of parents in the learning process using STEAM to stimulate aspects of the development of children aged 5-6 years is very necessary to continue the right stimulus at home. The first stage carried out is for parents to understand the meaning of the learning process using STEAM and how to implement it. The five (5) components of the STEAM model used are: a. Engagement, namely parents or teachers invite children to be further involved in playing activities that contain STEAM content based on previous experience, b. Exploration, namely parents or teachers provide opportunities for children to be able to build their own understanding so that they can look for tools and materials provided; c. Explain (explain), namely parents or teachers facilitate children to be able to express what has been learned and understand its meaning. d. Detailed (elaborate), namely parents or teachers facilitate children to be able to deepen understanding of concepts and adapt to practical skills and behavior; e. Evaluation, where parents or teachers invite children to evaluate playing activities.

Based on the results of observations made on 3 guardians of students who have children aged 5-6 in Al Bashiroh Kindergarten who understand and apply STEAM learning, the following results were obtained: when the observation was carried out the theme was healthy food with the sub theme of my favorite fruit. First, the guardians of AL students in implementing STEAM learning at home in guava juice making

activities invite children to be directly involved in the learning process and provide facilities that support the learning process. First, children are asked to tell their experiences about fruit juices they have ever drunk, after children tell about juices that their children like, parents invite and ask children to prepare what tools and materials are used in the process of making guava juice. In this case, parental involvement and exploration activities have been carried out well. After the tools and materials were ready, the parents together with the children made guava juice together, the children were very enthusiastic in putting the guava into the blender, then pressing the button. The activity of making juice together was completed by drinking Al's favorite guava juice together. After finishing drinking guava juice, parents asked Al to tell him how to make guava juice earlier? With enthusiasm, Al told the process from start to finish in making guava juice and its taste. From this activity, it appears that explaining activities, elaborate have also appeared in this activity. Of course, the role of parents in explaining the addition of children's stories is very necessary. Based on the results of observations, it appears that Al's parents provide an explanation of the benefits of guava juice for Al and the vitamin C content in guava juice. The last stage is evaluation, where parents ask Al how did Al feel that day? And Al loudly answered "I'm very happy, ma" a simple form of evaluation but very touching for children.

The second is the parents of MF in implementing STEAM learning at home, on the sub-theme of my favorite fruit, in contrast to Al's parents, the guardian of MF inviting MF to make MF's favorite dragon fruit bread. MF really likes dragon fruit and sweet buns. Here, MF's parents prepare all the ingredients to make dragon fruit bread. MF is involved in the bread-making process. After all the tools and materials were ready, Mama MF explained what would be done in making bread and what size it was. Here children listen to explanations from parents. Furthermore, together with making dragon fruit bread, MF was very enthusiastic in measuring all the ingredients that his mother had prepared, MF was also very active in asking what and what size it was, such as his chattering "Make more dragon fruit, ma'am so it's delicious and red" MF also helped mom in his favorite bread mixer. In this activity, parents' involvement in the learning process has been seen, explaining, exploring and elaborate. Although in this case, MF's parents are more involved in explaining. In the evaluation activity, parents asked MF to tell about his experience in making cakes, decorating cakes together and telling the taste of dragon fruit bread that had been eaten.

The third is the guardian of the FD in implementing STEAM learning, my favorite fruit sub-theme is making a car from the peel of a grapefruit. Unlike the two guardians, FD's guardians tend to be loose parts. Because FD really likes to play with toy cars, FD's parents took the initiative to apply STEAM loose part to my favorite

fruit theme, FD also really likes oranges. Citrus fruits that have been eaten together the skin is not removed but is used in learning. FD's parents explained and demonstrated how to make a car from orange peels that were no longer used. After listening to and seeing FD's father making cars, FD tried to make cars from oranges with his creations. If FD's father's car is very simple consisting of a triangular car body and is given four wheels, FD makes it better than his father like a car. From this activity, FD shows that his creativity has started to show. The 4E activities have been carried out well here, namely engage, explore, explain and elaborate. In the evaluation activity, FD's father asked him to tell all the activities that had been carried out and the experiences that FD had obtained.

Based on the results of observations on three parents and guardians of students, it was concluded that the role of parents in STEAM learning has been implemented well, this can be seen from the 5 E activities, all of which can be implemented.

#### ***4.2. Interview results on the role of parents in STEAM learning***

Interview activities were carried out on the three parents of students aged 5-6 years who applied STEAM learning. The purpose of this interview is to support the data from observations and documentation. The results of the interviews are as follows: first an interview was conducted with parents and guardians of students from Al, parents are very happy with this STEAM learning, since the teacher introduced this learning. We are very happy with the model used, it is easier for children to learn while playing, we are also happy because of this very close to our daily activities such as making juice, baking cakes, and playing with easy media that are around us. "We really enjoy it, the children are also happy with this learning" they don't feel learning when they are actually learning. We parents only facilitate, the school explains here the role of parents as facilitators. And when we apply it, it turns out to be fun. Our form of involvement as parents in this learning is to provide facilities, as well as support programs from the school. Like today, for example, in the sub-theme of our favorite fruit, we prefer and are more flexible in carrying out learning activities according to children's interests. Al really likes to drink juice, every day he regularly drinks juice. From his preferences, children can learn many things. Better understand how the process is made, and he is also very enthusiastic about doing it.

The second interview was conducted with parents and guardians of students from MF, along with parents from Al, they were very grateful to be invited to implement STEAM learning that was fun for both children and parents. "Here we don't feel burdened, we do our duty as parents as well as learning media for children" MF really likes this learning, from here he learns many things. From

making your favorite cake, learning about ingredients from nature found around the house. MF who previously didn't ask many questions, now he asks a lot. Like when making a cake, "why mom, don't increase the dragon fruit so it's delicious?" We as parents are very happy that our children can ask questions like that. It turns out that the child has extraordinary potential that can be developed. From here we parents learn a lot about how to be a teacher for our children, which at first. We were hesitant to be a facilitator for children, thank God the parents were able to enjoy it.

The last interview with FD's parents, FD's parents had a new experience of being able to carry out STEAM learning. At first it was difficult and lacked confidence, because we were not educators. We explain according to our language as parents, such as when making cars from orange peels, I will tell you: "When you were little, you used to play cars from orange peels with your friends." Parents tell the process of how to make cars while showing children about how to make. "I prefer stories of my experiences" FD's parental role motivates him through stories about his parents' experiences.

Based on the results of interviews with the three guardians, it can be concluded that the role of parents in STEAM learning is as a facilitator for children, namely in 5E activities that have been implemented. In addition, parents are also teachers for children, real teachers who are able to provide experience, strengthen and assist in learning. In addition, parents also act as motivators who always motivate their children in various ways according to their abilities.

#### **4.3. Documentation**

The results of the documentation in this study are image documentation and written documentation. Image documentation in the form of photos and videos related to the role of parents in STEAM learning. The written documentation is in the form of SOPs for taking PPBDR, Guidelines for Home Study Assistance (PPBDR), liaison books and proof sheets for sending assignments.

PPBDR is a guide for parents in assisting children's learning at home. In this case, what is used in this study is the theme of healthy food. This PPBDR is made by the classroom teacher by referring to the Weekly Learning Implementation plan and given to parents. This guide contains themes, sub themes, groups, activity objectives, variety of activities, follow-up and deposit of activity results.

From the results of the liaison book, it can be seen that parents are very active in filling out this book, parents tell the activities their children do while studying at home. The proof sheet for sending assignments from these three children is very good, it can be seen that the children always collect the assignments given by the teacher on time, besides that the results of the children's

assignments assessed from the teacher show good results, namely developing very well.

Based on the results of the documentation shows that the role of parents is needed in this STEAM learning. Parents have a very important role in implementing STEAM learning, parents must always accompany their children in the learning process. In this case, it is proven that children who have good mentoring, the results are also good children.

#### **4.4. Discussion**

Based on the research method consisting of observation, interviews and documentation as described by the researcher about the facts of the findings in the field, the follow-up of this research is to analyze the data that has been collected. Next, the researcher describes the findings clearly and in detail. The results of this study indicate that the role of parents in STEAM learning is very necessary. This is because parents are the first and foremost people in the family who have the duty and obligation to educate and guide children [7]. The following is the role of parents in STEAM learning for children aged 5-6 years at Al Bashiroh Kindergarten Ponorogo.

Parents have an important role in the upbringing of children, Urie Bronfenbrenner argues that parents are the first hands in parenting involved in the daily lives of children in the home environment. As one of the important factors that influence the development of children, parents must have an understanding in educating children. Based on the results of the study, parents have the view that children will develop by themselves. Parents do not provide interventions to further optimize child development and allow children to develop over time and as they are.

Almost all parents who were research subjects said that they let their children develop as they were without being given any intervention or stimulation to optimize their child's development. Meanwhile, according to [12] Parents have a very important role as the child's primary teacher, because parents as teachers are able to motivate children, are able to encourage the formation of new skills at home, and provide valuable information for students. others who work with children. The potential for greater and lasting effects on the child increases as more time and opportunities are spent with parents.

The understanding of parents in understanding STEAM is good, with this learning parents can learn from the things that are around them. In this study there is a main study, namely parents in understanding the components of STEAM learning. According to the Early childhood National Center, there are five components of STEAM learning, namely engage, explore, explain, elaborate and evaluate. Through the STEAM learning component, parents can gradually understand learning

that can stimulate children's development at home as continuous learning from school. So that the child's development gets a stimulus that is consistent and in harmony with the stages of the child's developmental age.

## 5. CONCLUSION

Based on the findings and discussion of research on the role of parents in STEAM learning in early childhood, the following conclusions are drawn: (1) The role of parents in STEAM learning is very necessary. This is because parents are the first and foremost people in the family who have the duty and obligation to educate and guide children, (2) Parents have an important role in the upbringing of children. Parents have the view that children will develop by themselves. Parents do not provide interventions to further optimize child development and allow children to develop over time and as they are, (3) Parents have a very important role as the child's primary teacher, because parents as teachers are able to motivate children, are able to encourage the formation of new skills at home, and provide valuable information for others who work with children, (4) The understanding of parents in understanding STEAM is good, with this learning parents can learn from the things that are around them. There are five components of STEAM learning, namely engage, explore, explain, elaborate and evaluate. Through the STEAM learning component, parents can gradually understand learning that can stimulate children's development at home as continuous learning from school.

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