

LITERATURE STUDY: THE ROLE OF THE SCIENTIFIC APPROACH TO EARLY CHILDHOOD EDUCATION

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Abstrak

The scientific approach is a learning approach that is able to develop logical thinking in children. This article aims to conduct a literature study on the role of a scientific approach in early childhood science learning. In this article, we will analyze previous research that has been conducted in this area and explore the benefits, challenges, and implementation strategies that can be used to increase the effectiveness of early childhood science learning with a scientific approach. In this article we use the literature study method, by analyzing articles that are relevant to the research. From the research results it was found that a scientific approach in learning science in early childhood has a positive impact on children's growth and development, both in understanding scientific concepts and developing scientific skills.

Kata Kunci: *Scientific Approach, Early Childhood.*

A. INTRODUCTION

Early childhood is a bridge for the nation to advance the country and continue the fate of the nation which will be given responsibility to early childhood as a hope of achieving a golden age for the life of the nation and state. Where to achieve this, there needs to be care and learning that emphasizes the principles and characteristics of early childhood in order to be able to prepare the child's future. According to Suryana (2014), early childhood children have unique characteristics because they are in a very rapid growth and development process and are fundamental for their next life.

Referring to the latest curriculum, namely the 2013 curriculum, the learning process at each level of education is carried out in an integrative thematic manner. In the PAUD curriculum there is an approach/skill, namely a scientific approach that allows students to learn effectively and meaningfully. The scientific approach is a scientific approach.

According to the 2013 PAUD Curriculum, it states that "The scientific approach is a learning process that is designed in such a way that students actively build competence in attitudes, knowledge and skills through the stages of observing, asking questions, gathering information, reasoning and communicating. Fun learning is science learning. , in science learning children have a high curiosity.

In line with this, Siti (2018, p. 5) stated that "Science games in early childhood are fun and interesting learning activities that are carried out while playing through observation, investigation and experimentation to find out or find answers about the realities that exist in the world. around". Science is the activity of exploring, observing and conducting experiments.

In science learning, it is hoped that it can be a vehicle for students to learn about themselves and their natural world around them as well as the process of further development. However, the scientific approach is also very good to teach to children from an early age, so that children are trained to think scientifically and make it easier for children in their mastery process. A material concept that defines each child's abilities as a benchmark for classification abilities that are built through a series of activities that use concrete objects (toys).

Various explanations about science, in linguistic terms science means "to know", whereas according to the term science is natural science which studies nature and all its contents, science can discuss living things, inanimate objects, and changes that occur in nature (Aryandi in Soviani & Nuraini, 2019)

The application of a scientific approach in early childhood science learning has the advantage of playing an important role because children can experience it naturally in science learning and children can participate in experimenting in science activities. The aim of science learning is in line with the school curriculum, namely developing children's cognitive, affective and psychomotor aspects. in full.

B. METHOD

The method used is literature study, according to (PILINDIA, 2020) a literature study involves gathering material obtained from previous research related to the scientific approach to science learning in early childhood. The main stages are selecting a discussion topic, then determining keywords to search for relevant references. The keywords searched in this study are learning approaches in early childhood. This study uses a qualitative approach, with 10 articles in Indonesian selected based on the subject to be searched according to rules that match the main issue.

RESEARCH FINDINGS

Table 1. Analysis results

No	Titel	Author and year	Method	Result
1.	Application of scientific approaches to improve children's science knowledge and skills	Dianti & Maulani (2019)	Classroom action research method	The science ability in children is positively influenced by the application of the scientific approach, where in cycle I it increased by 43.81% to 53.33%, from cycle I to cycle II it increased by 24.29% to 68.10%, and from cycle II to cycle III it increased by 20% to 88.10%.
2.	Analysis of the Implementation of a Synthetic Approach in Improving Science Skills of Early Children	Ni Luh Putu Nina Sriwarthini, Ika Rachmayani, Filsa Era Sativa (2022)	Qualitative Descriptive Research Approach	The research findings indicate that the implementation of the scientific approach in both kindergartens is still at a low level, as evidenced by the average emergence of

No	Titel	Author and year	Method	Result
				science process skills being below 3. The main obstacle to the low implementation of the scientific approach in both kindergartens is due to the lack of training for teachers to develop varied and science-based learning activities.
3.	Application of scientific approach through learning in natural material centers to increase children's creativity	Kiki Supriyanti, Yusria, Sandi Maspika, Ridwan & Fiqi Nurmanda Sari (2021)	Classroom Action Research Method	The findings show that the scientific approach can enhance children's creativity through learning in natural materials centers by 88.33% at the highest increase.
4.	Implementation of a Synthetic Approach as a Builder of Early Childhood Science Process Skills	Maria Melita Rahardjo (2019)	Qualitative Descriptive Research Approach	From the research findings, it is revealed that time allocation, the quantity of provided objects, and teachers' questions are three key factors influencing the quality of implementing the scientific approach.
5.	Scientific Skills of Group B Children in Science Games at RA Baiturrahman Natural Material Center	Eka Sutisnawati, Edi Hendri Mulyana & Sumardi (2020)	Qualitative Descriptive Research Approach	The research results indicate that the majority of teachers demonstrate excellent performance in managing natural resources centers and science games, with the highest achievement reaching 90%. Teachers consistently achieve the highest results (100%) in managing science games such as volcanic eruptions, water filtration, and static electricity. The scientific skills of children in science games show fairly good achievement, with the majority achieving skills at an expected level (80%).
6.	Science Learning with a Scientific Approach Based on Environmental Materials TK Kartika Wirabuana 51 Baubau City	Henny & St. Asmawati (2022)	Qualitative Method	The findings indicate that the implementation yields optimal results.

7.	Implementation of Scientific Approach in Learning in ECCE	Felisitas Ndeot	Metode penelitian Deskriptif	The findings indicate that the implementation of the scientific approach requires the creation of maximal activities in making daily lesson plans
8.	Increase children's science knowledge through a scientific approach in group B	Mentari Soviani Agung & Lenny Nuraeni (2019)	Quasi-Experimental Method	The analysis results indicate that the use of the scientific approach in science learning produces better performance compared to conventional learning methods
9.	The Influence of Scientific Approach on the Ability of Early Science for Children of Group B3 of Sila Chandra I Batubulan Kindergarten	Ni Wayan Eka Klarissa, Luh Ayu Tirtayani & Komang Ngurah Wiyasa (2018)	Experimental Research Method	The findings indicate the influence of the scientific approach on the initial science abilities of children in group B3 at TK Sila Chandra.
10.	The influence of learning using a scientific approach on the development of the ability to recognize colors in children	Putu Esy Suastiningsih, I wayan Wirata, Luh Ayu Tirtayani (2017)	Quasi experiment	Learning using the Scientific Approach influences children's ability to recognize colors in Group B.

C. DISCUSSION

The Scientific Approach involves the processes of observing, questioning, gathering information, reasoning, and communicating (PAUDNI, 2014). It can be conducted directly or indirectly in the development of science learning in early childhood. The scientific approach and science learning are closely related because they can develop scientific skills as stated by (Dianti & Maulani, 2019). The application of the scientific approach positively influences children's science abilities. The learning process uses various activity designs to engage children in the child-centered scientific approach process, in line with the opinion of (Sriwarthini et al., 2022). The implementation of the scientific approach can be developed by creating daily and weekly execution plans that are varied and science-based.

Early childhood science learning can be conducted through natural materials, where teachers can help children understand by discovering new knowledge, solving problems, thinking critically, and fostering creativity through natural materials (Supriyanti et al., 2021). This aligns with the findings of (Melita Rahardjo, 2019), which stated that there are three main factors that can influence

the implementation of the scientific approach in children: time allocation, the number of objects provided, and questions from teachers. Teachers can implement natural materials concepts and science games, such as volcanic eruptions, water filtration, and static electricity, which can be tailored to the age and abilities of the children (Sutisnawati et al., 2020). This is further supported by the findings of (Henny & Asmawati, 2022) that the scientific approach has a significant impact on early childhood science learning.

The implementation of the scientific approach in science learning can be achieved through designing engaging activities, one of which involves experiments that can stimulate children's ability to directly observe objects, study, and provide opportunities for children to explore the subject matter. The application of activity designs can be enhanced by the use of media that can be directly seen, explored, and experimented with by the children (Ndeot, 2019). With proper implementation, it will be demonstrated that the use of the scientific approach in science learning has a positive impact on child development (Ageung & Nuraeni, 2019).

The scientific approach is a learning process designed to train students to actively build their understanding and grasp various materials using a scientific approach tailored to the needs and interests of children for early science abilities with enjoyment so that children do not feel afraid to try new things during science learning (Klarissa et al., 2018). Activities for introducing science to children with pleasure can utilize color recognition through fun playing methods, such as color mixing with media that support learning in early childhood education (Putu Ery Suastiningsih, I Wayan Wiarta, 2017)

D. CONCLUSION

A literature study of the role of scientific approaches in early childhood science learning shows several important conclusions :

- 1) **Active and Interactive Learning:** The scientific approach encourages young children to be actively involved in the science learning process through experimentation, observation, and questioning. It helps them understand science concepts in a more profound way than simply listening to information.
- 2) **Development of Critical Thinking Skills:** Using a scientific approach, young children are taught to observe, ask questions, plan experiments, collect data, and draw conclusions. This helps them develop critical thinking skills and scientific thought processes that are essential for a deep understanding of science.
- 3) **Development of a Scientific Attitude:** A scientific approach also helps to form positive scientific attitudes in early childhood, such as high curiosity, perseverance, and openness to new ideas. This builds a solid foundation for their interest in science in the future.
- 4) **Experiential Learning:** Early childhood learns science effectively through hands-on experience and interaction with their surroundings. The scientific approach facilitates this experience-based learning, enabling them to investigate natural phenomena and understand science concepts through practical experience.

- 5) Increase in Learning Achievement: Many studies show that learning science with a scientific approach can improve early childhood achievement in science. They not only gain a better understanding of the concepts of science, but also develop cognitive skills and thought processes that are useful in various aspects of life.

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