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Enhancing Science Knowledge in Early Childhood through Environmental Exploration-Based Learning Management

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Abstract:

The introduction of the surrounding natural environment in the surrounding environment can attract the attention or interest of children with the media around them. This study aims to analyze and find out how nature-based learning management with an exploratory approach can increase scientific knowledge in students. The research method in this study uses a qualitative method with a case study type. This research was conducted at the Harapan Insan Kamil Kindergarten institution, located on the coast of Randutatah village, Probolinggo Regency. To get an overview of the object, the researcher made observations at the location and interviewed several components of the school, including the principal, two teachers at Harapan Insan Kamil Kindergarten, and two student guardians. The study results show that the management concept of the surrounding environment exploration approach in increasing scientific knowledge is carried out using program planning, implementation, and evaluation systems. The implications obtained through an exploratory environmental management approach can develop students' scientific knowledge, displayed through imaginative pictures and storytelling. Hence, this research improves students' science, carried out with environmental exploration techniques.

Keywords: *Education Management, Environmental Exploration Approach, Science Knowledge*

Abstrak:

Pengenalan lingkungan alam sekitar di lingkungan sekitar dapat menarik perhatian atau menarik minat anak dengan media yang ada di sekitarnya. Penelitian ini bertujuan untuk menganalisis dan mengetahui bagaimana manajemen pembelajaran berbasis alam dengan pendekatan eksploratif bisa meningkatkan pengetahuan sains pada anak didik. Metode penelitian dalam penelitian ini menggunakan metode kualitatif dengan jenis study kasus. Penelitian ini dilakukan pada lembaga TK Harapan Insan Kamil yang terletak di pesisir pantai di desa Randutatah, Kabupaten Probolinggo. Guna mendapatkan gambaran terhadap objek, peneliti melakukan observasi pada lokasi dan menginterview beberapa komponen yang ada disekolah diantaranya; kepala sekolah, dua guru yang ada TK Harapan Insan Kamil serta dua wali murid. Hasil penelitian menunjukkan bahwa bahwa konsep manajemen pendekatan eksplorasi lingkungan sekitar dalam meningkatkan pengetahuan sains dilakukan dengan cara; system

perencanaan, implementasi dan program evaluasi. Implikasi yang diperoleh melalui manajemen pendekatan eksplorasi lingkungan mampu mengembangkan pengetahuan sains anak didik yang ditunjukkan dalam bentuk imajinasi gambar dan bercerita sehingga penelitian ini memberikan kontribusi untuk peningkatan sains anak didik yang dilakukan dengan teknik eksplorasi lingkungan.
Kata Kunci: *Manajemen Pendidikan, Pendekatan Eksplorasi Lingkungan, Pengetahuan Sains*

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INTRODUCTION

In an era of rapid and complex global development, early childhood education has become a significant focus on preparing future generations to face increasingly complex challenges (Setyowahyudi, 2020; Watini, 2019; Watini, 2019). Education at an early age is not just the initial phase in the learning journey but a necessary foundation that will shape children's mindsets, attitudes, and skills (Zamroni et al., 2021; Syam & Damayanti, 2020; Saleha et al., 2022). Amid environmental changes and technological developments, understanding science and science is becoming increasingly important as a tool to understand an ever-evolving world (Rahayu & Samta, 2022; Pristikasari et al., 2022).

Stimulating early childhood education must be done fun so that children are more interested in participating in the learning activities. Development in children is also very rapid at an early age, shown by high curiosity, and it is straightforward to accept stimuli from the environment (Yantik et al., 2022). Early childhood education experts conclude that children are active and dynamic beings. One alternative application of learning that can be used to model the nature of children's learning is nature-based learning (Ross, 2020; Mann et al., 2021). A relaxed environment can be used as an alternative teaching and learning activity for understanding scientific mastery of knowledge (Ebenezer et al., 2020; Al-Samarraie et al., 2020).

Science education at an early age has a significant long-term impact on children's intellectual and emotional development. Children in this period are naturally curious and sensitive to their surroundings (Astuti & Aziz, 2019; Hewi, 2020). Therefore, a learning approach that combines real experience with conceptual understanding is crucial. The environmental exploration approach is a response to this need. The environment around children is an infinite source of learning and a laboratory that inspires curiosity and experimentation. Through direct interaction with nature, physical objects, and natural phenomena, children can build a solid foundation of scientific knowledge while living meaningful experiences (Suryani, 2020; Amorim†Orcid et al., 2018).

Environmental exploration allows children to experience scientific wonders firsthand. They can develop sharp observation, critical thinking, and problem-solving skills by independently touching, seeing, hearing, and trying. This approach also fosters an intense curiosity, helping them learn to ask questions, identify problems, and find solutions (Pomegranate, 2019). In addition to cognitive benefits, environmental exploration approaches promote social and emotional development. Children learn to work together in groups, share experiences, and

respect the views of others as they explore the world together. This gives them valuable opportunities to develop communication, teamwork, and empathy skills (Danti et al., 2022; Fauzi et al., 2022)

In this context, effective learning management is the key to optimizing children's potential in learning science through an environmental exploration approach. Teachers and educators need to design learning experiences that are structured and inspiring, facilitating positive interactions between children and their environment. Educators need to understand the characteristics of child development at this stage and adjust learning methods according to individual learning styles and interests (Saleha et al., 2022; Adhari, 2021).

Nature or environment-based learning in early childhood involves children in the scientific thought process, learning to understand phenomena, and answering questions found in the information about a conclusion obtained by children (Laila & Candraloka, 2019). This model tries to harmonize learning material and nature as a true educator. Nature is a learning medium and can be used to carry out the teaching and learning process. So do not be surprised if many kindergartens make nature a source-inspiration-to-learn. Children are treated to nature from an early age and invited to the fields, fishing, and going to the forest. Using learning materials that can be taken from the surrounding environment can help the learning process. According to Sally Haughey, founder of Fairy Dust Teaching, separate parts are materials that can be opened, separated, reassembled, transported, joined, moved, or joined singly or combined with other materials. It can be natural or synthetic. According to Haughey, when children play with loose pieces, they can play with them as they please (Siantajani, 2020).

Organizing environment-based education is one of the crucial aspects in ensuring that the quality of learning in elementary schools is maintained (Nurhikmah & Hasanah, 2021). In addition to planning, organizing, and evaluating good learning can be achieved by utilizing the surrounding environment as a contextual learning background close to students' daily lives (Sutanto et al., 2019). For this reason, environment-based learning management needs to be truly understood and applied by all parties in the school, especially the principal as a policy maker and teachers as the classroom's captain.

Science learning emphasizes the process of seeking knowledge rather than knowledge transfer. Children are seen as learning subjects that need to be actively involved in the learning process, while the teacher is only a facilitator who guides and coordinates children's learning activities (Suryani, 2020). Science also trains children to use their five senses to recognize various phenomena of objects and symptoms of events. Children are trained to see, feel, smell, and hear. The more sensory involvement in learning, the more the child understands what is being learned. When simple science becomes fun, great energy flows in children.

Science learning in schools has yet to develop students' thinking skills to solve the problems they face. Rahayu conveyed the same statement as Samta (2022) that learning exposes more facts, knowledge, and laws than is usually memorized, not relating to empirical experience in real life in the environment and society.

From the results of observations made at TK Harapan Insan Kamil, children's cognitive abilities still need to improve, especially in science process skills. Teachers more often assign assignments using children's worksheets and illustrated magazines so that it does not attract children's interest in science. The lack of optimal and effective science learning is also due to learning that is still teacher-centered; the science concepts taught are still abstract and challenging to understand because children do not do it directly, and the learning methods and strategies provided are less varied.

Based on the phenomenon that occurs in the students of TK Harapan Insan Kamil, learning is designed in such a way as to make it easier for students to receive the material, namely through the application of environment-based learning management. This is shown to facilitate learners in learning so that students have high insight and knowledge as well as understanding by looking directly at concrete objects from nature. The learning design of the environmental exploration approach can be the proper stimulation forum for developing students' scientific knowledge; this is based on several previous studies, including;

Suryani (2020) said that one suitable method is an environmental exploration approach that involves students finding broad and deep information about the material learned by applying the principle of "nature is developed into a teacher" and learning from various sources to foster children's scientific thinking to develop. Then Pomegranate (2019) The surrounding environment can be used as an approach to learning. This is because, in the learning process, the surrounding environment can be used as a source and means of learning for children.

Rohmat Dewi, Gading, and Magta (2019) revealed characteristics in the exploration approach, including involving students looking for broad and deep information about the topics/themes of the material to be studied and learning from various sources. The actual environment is the most contextual learning resource that can be used to create a fun learning process, close to the lives of students, and have an impact on both individuals and groups (Kusumawardani & Kuswanto, 2020)

Introduction to the surrounding natural environment in the surrounding environment can attract the attention or interest of children with the media around them because early childhood learning does not have to be learned in the classroom but also needs learning in the environment to be attractive early childhood. Providing lessons on the processes in the surrounding natural environment and recognizing environmental problems can provoke children's science knowledge to develop (Zulwati et al., 2022).

By embracing environmental exploration approaches in early childhood learning management, we encourage the birth of a generation that is not only knowledgeable about science but also has critical skills, creativity, and a deep understanding of the complex relationship between humans and the universe. Thus, education at an early age becomes a solid foundation for building a scientifically minded and sustainable society.

Departing from several previous studies on the importance of environment-based learning encouraged researchers to conduct research entitled "Enhancing

Science Knowledge in Early Childhood through Environmental Exploration-Based Learning Management." The research focuses on enhancing science knowledge in early childhood through environmental exploration-based learning management.

RESEARCH METHODS

The research method used in this study is qualitative research. According to Sugiyono (2018), qualitative research methods are research methods based on the philosophy of post-positivism, used to examine natural objects (as opposed to experiments) where research is the key instrument. This study aims to identify how nature-based learning management applied through an exploratory approach increases science knowledge in kindergarten students.

The study was conducted on early childhood learning activities at 4 to 6 years old. The place research was conducted at an early childhood education institution, namely TK Harapan Insan Kamil, the location of TK Harapan Insan Kamil in rural areas close to rice fields and coastal areas located in Randutatah Village, Paiton District, Probolinggo Regency. This location near nature shows the potential for applying nature-based learning management in kindergarten. Researchers collect data through several stages, such as observation and observing directly at the place of research. Interviews, interviewing several informants who were in the place of research. Observation, making visits to the research site. Study documentation and analyze documents related to research. Some informants provide an overview of field conditions.

The source of information was obtained from five informants, including the principal of TK Harapan Insan Kamil, teachers of TK Harapan Insan Kamil, and parents of students considered capable of providing research information. Data collection techniques are carried out by The initial stage of data collection, then the reduction of data is sorted in the form of records, then the display data understands the data, which is then concluded from the data studied.

RESULTS AND DISCUSSIONS

Early childhood is a child who has a unique character with a very high curiosity, science learning is able to provide passion for children to be more active and innovative in recognizing a learning. Thus, science needs to be instilled from an early age to stimulate children to develop more. Science knowledge can be applied with various strategies, one of which is environmental exploration, this is also done by TK Harapan Insan Kamil in developing scientific knowledge for students. In managing ECCE learning management through an environmental exploration approach to foster scientific knowledge in students, several steps are carried out including;

Planning System

All educational institutions have mature management in processing a program to produce the desired output called the planning process (Kresnawaty & Heliawati, 2019). A process carried out in an effort to determine goals and

achieve targets with the use of effective methods in achieving a goal is called a planning system, Planning is also said to be a function that includes the process of setting targets(Arsana et al., 2020). Planning has a great influence on the success of a learning activity, implementing learning activities in accordance with previously designed plans, and making learning scenarios and indicators of developmental aspects chosen to be in accordance with tem a (Sufiati & Afifah, 2019).

It was revealed by one of the teachers at the institution that the institution carefully planned the learning management that would be applied to the heads of students adjusted to the environment of the institution; the plans had been neatly arranged in the institution's curriculum and elaborated on the annual program (PROTA) then described the semester program (PROSEM) continued on the weekly learning implementation plan (RPPM) and more detailed on the daily learning implementation plan (RPPH). In the daily learning implementation plan, an exploratory learning process has been contained in the environment that can guide teachers in implementing learning in students. Environmental explorative learning planning is carried out one day a week, precisely on Saturdays. Meanwhile, other days, it is carried out with varied methods to avoid boredom in the naka didik.

By having a mature planning system, an institution will more easily achieve the desired vision and mission. Indeed, it is an obligation for all institutions to plan their learning management to produce the expected output. Likewise, what was done at TK Harapan Insan Kamil, based on observations in the field, researchers found all giant programs in the management with planning supported by all components of the institution. Coordination of all aspects in the institution is carried out with monthly meetings, semester meetings and annual meetings attended by parties, principals, teachers and parents. In addition, the environmental conditions of TK Harapan Insan Kamil are also very supportive because it is close to the location of DUTA beach, one of the modified recreational beach destinations with mini pine forests and also the rice field area of residents in front of the institution, this is very beneficial for the institution in utilizing the support of the surrounding environment with an exploratory approach to develop the knowledge of students.

Next informant emphasized that the beginning of planning an exploratory approach was obtained through small talk talks between teachers and principals, then the principal continued by holding internal meetings attended by foundations, committees, principals and teachers. The results of the internal meeting of all components of the institution agreed to use an environmental exploratory approach because it is in accordance with the natural conditions of the institution which is very supportive, because there are indeed interesting spots to be explored in the institution's environment such as rice fields, beaches and mini pine forests.

Furthermore, The teacher at the institution reinforced his friend's statement that the natural environmental conditions of TK Harapan Insan Kamil which are very supportive of kai make the best use of it in order to develop students' science knowledge oriented to six aspects of child development, namely; knowledge of

religious and moral values, physical, motor, cognitive, language, social-emotional and art. Of course, this activity is carried out with planning and preparation by accompanying teachers including; Method preparation, preparation of teaching materials, teaching aids from environmental materials so that students are not saturated and want to continue playing and learning with accompanying teachers.

Carefully planned stimulation will make it easier for students and educators to carry out teaching and learning activities (Zamroni et al., 2021) A good stimulation will make learning more fun and invite children to want to know more and be exploratory (Widat et al., 2022). Good learning activities are carried out continuouslyand systematically, the learning activities have been structured following learning principles in accordance with applicable planning corridors (Nasirun & Yulidesni, 2018). In other words, planned learning can facilitate children to better understand the learning provided.

The activity planning system is carried out in a structured manner by involving the curriculum in preparing all environmental exploratory approach planning including annual programs (PROTA), semester programs (PROSEM), weekly learning implementation plans (RPPM) and learning implementation plans daily (RPPH) which is then implemented to students

Environmental Exploration Approach in Improving Children's Science Knowledge

With science can train children to use their five senses to recognize various symptoms of objects and symptoms of events. Children are trained to see, feel, smell, taste and hear (Ya Bunayya, 2019). Science stimulation carried out with an environmental exploration approach is easier to understand and in demand by early childhood because by exploring the environment children can get to know directly the surrounding natural conditions (Arifin, 2020).

Revealed by this environmental exploration approach is also carried out by TK Harapan Insan Kamil in stimulating students' science knowledge. Here are some places that are used as objects of environmental exploration by the TK Harapan Insan Kamil institution including;

Beach Environment

The location of TK Harapan Insan Kamil is indeed close to Duta beach, where this beach is one of the tourist destinations in the area. Supportive coastal conditions are used by institutions in growing children's knowledge on science. IF1 as the principal said that the environmental conditions that support the stimulation of children's growth and development are well managed, we collaborate with the head of Randutatah village in the context of utilizing the beach as one of the objects of environmental exploration. The form of cooperation carried out is certainly beneficial for both parties where both parties benefit from the results of the cooperation carried out. Furthermore, after obtaining a cooperation contract, we carried out coastal environmental exploration activities.

Environmental exploration carried out on the beach is by inviting children to jump directly at the location of the ambassador beach. By diving directly children can interact directly with amazing marine life ranging from fish, shellfish, jellyfish, starfish and so on that inhabit the shallow sea and can be seen directly by

children. In addition to marine biota, children can also explore with sand, mangrove plants and fishing boats that lie on the shore. This activity provides a broad understanding of thinking skills in early childhood, where at this time children have great curiosity and want to get accurate and authentic information. Exploring the environment becomes a place for children to concrete their imagination so that children's scientific skills can be formed optimally

Pine forest environment

In addition to being close to the beach, another supporting exploration environment is the exploration of the pine forest environment which is close to Pandai Duta. The cool scenery, shady pine forest and beautiful scenery give a calming effect to people who come to it. The pine forest environment that is maintained and still natural can certainly be used as an exploratory place for students in developing their high curiosity.

Based on observations made by researchers in the field, researchers found enthusiasm, pleasure and conducive when students play and learn in the pine forest. Games that are carried out can foster six aspects of student development (religious and moral values, art, cognitive, motor, social emotional and language). The development of religious and moral values when students read prayers is guided by the teacher. Furthermore, in accordance with the direction and guidance of the teacher, students explore and produce works of art with natural basic materials in the pine forest such as drawing, pasting and crocheting. In cognitive development, students can also learn to count using pine flower media (children collect some pine flowers then count with teacher guidance). Furthermore, children can also hone social emotional skills by sharing and helping friends do activities. In motor development, students can play running, climbing, climbing and jumping. Finally, language development is honed by the interest and curiosity of students expressed by asking, telling and telling.

Field Environment

Furthermore, environmental exploration is also carried out in rice fields, rice fields owned by the community close to the TK Harapan Insan Kamil institution are quite productive and produce various kinds of agricultural products that can be consumed and sold by the community. It was revealed by IF3 that environmental exploration in developing students' scientific skills is carried out by scientific methods, namely students make direct observations on rice fields which will be used as learning practices according to the themes in the daily learning implementation plan (RPPH)

Based on field findings found by researchers, students made observations on Mr. Ahmad's rice fields located around ... meter ladi institution. The rice fields visited by students have fertile soil constructs and produce abundant harvests, namely tomato plants, students also learn how to pick tomatoes and taste the taste of tomatoes. From the results of observation, students are very enthusiastic and very happy to carry out exploratory learning activities in the environment, teachers are also very innovative and creative in conditioning students so that the learning indicators to be achieved produce maximum results.

A teacher at the institution revealed that the environmental exploration activities applied at TK Harapan Insan Kamil are very beneficial for our child's development because, with the explorations carried out by our children, we can apply to everyday life the understanding gained at school. Furthermore, Informant also revealed that this environmental exploration activity develops children's scientific skills and strengthens their social-emotional development because children can interact directly with the environment and explore their curiosity.

Activities carried out in various exploration activities are adjusted to the daily learning implementation plan (RPPH) prepared by the teacher. Some of the activities carried out include; Observe, question, analyze, conclude of course with stimulation and strategies from the Pendaming teacher, because children's abilities are very unique and have differences between one child and another. Exploration activities have also been scheduled according to the theme to be discussed so that teachers are easier to implement learning for students.

Evaluation Program

In order to realize the desired program according to the goals of an organization, a form of evaluation program is needed to see how much influence the program that has been running on the desired goals of the organization. Evaluation program as a form of observation of activities that have been carried out several times. By conducting an evaluation program, the institutional component is able to find out the extent of the level of achievement obtained by the institution against the program that has been implemented. From this evaluation program, the next plan step can also be carried out to cover the shortcomings of the previous program.

Theevaluation program is carried out as objectively and systematically as possible on a planned intervention either ongoing or completed. From the evaluation program, it can be found to compare the realization of inputs, outputs, and outcomes against plans and standards. Evaluation results are obtained during monitoring activities. Moreover, evaluation also assesses the results or products that have been produced from a series of programs as a basis for making decisions about the level of success that has been achieved and the next actions needed.

Based on an interview with one of the teachers, the management evaluation of the application of environmental exploration in increasing students' scientific knowledge was carried out at the end of the semester. At the end of the semester, we conducted an evaluation meeting on all programs carried out at TK Harapan Insan Kamil by bringing in foundations, committees, principals, teachers, and representatives of parents. With several members present, we coordinate the existing programs and ask for opinions from all members about existing programs. As for the form of ideas, inputs, and complaints, we pack with deliberation, and from the results of the deliberations, we will implement further program improvements.

This was also emphasized by an informant who said that during the implementation of our final semester meeting, the teachers already had several records of the ineffectiveness of the program that was running. However, so far, the environmental exploration program implemented in stimulating the

development of science skills in students is very suitable with the natural environment of TK Harapan Insan Kamil and has proven to be able to increase science knowledge in students as evidenced by students' understanding of the types Marine biota, the benefits of pine forests, types of rice plants and students can reason and imagine about them in environmental exploration activities that are outlined in the form of pictures or stories.

Based on the evaluation program conducted by the Haran Insan Kamil Kindergarten component, the environmental exploration program is very effective and efficient in stimulating the development of science knowledge in early childhood. A good program is based on the support of school components and the right teacher strategy, vision, and mission to develop students' knowledge.

CONCLUSION

Stimulating students' abilities needs to be done continuously to produce maximum results, especially in early childhood, which has unique characteristics; it is necessary to form fun learning strategies. No less important is the adjustment to the institution's climate to make it easier for teachers or students to adapt to the learning system implemented. The implementation of fun strategies and adjustments to the natural climate of the institution is also applied to TK Harapan Insan Kamil, which adopts an approach to exploring the surrounding natural environment to stimulate scientific knowledge in students. The exploration is adjusted to the natural climatic conditions of institutions on the coast. It utilizes environmental elements such as the coastal environment, mini pine forest environment, and rice field environment. Based on the evaluation carried out by the institution, the environmental exploration approach can increase the science knowledge of students, which is shown by the responsiveness and enthusiasm of students in environmental exploration activities and the increasing ability of children's imagination shown in the form of pictures or stories. This research can reference other institutions with the same climate and can be used as a reference for future researchers by adjusting the conditions of the institution's natural environment.

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