

Exploring Ecosystem Richness: Meaningful Contextual Learning Innovations in Elementary Schools

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Abstrak

Abstrak: Pendekatan pembelajaran ekosistem yang bersifat kontekstual dan memiliki makna mendalam telah diterapkan di kelas 5 SDN Kasepuhan 04. Terdapat partisipasi sebanyak 29 peserta didik dalam sebuah program eksplorasi lapangan yang bertujuan untuk mendalami dan meresapi komponen-komponen dalam ekosistem, serta menyadari dampak dari pencemaran lingkungan. Penelitian ini diinisiasi dengan tujuan eksploratif, yaitu untuk menginvestigasi efektivitas metode pembelajaran yang mengusung pendekatan kontekstual dan mendalam, serta untuk menganalisis dampaknya terhadap pemahaman siswa tentang ekosistem dan tingkat kesadaran mereka terhadap isu-isu lingkungan. Metode penelitian yang diadopsi dalam penelitian ini adalah pendekatan kualitatif dengan jenis penelitian studi kasus. Data diperoleh melalui wawancara mendalam yang melibatkan guru sebagai fasilitator pembelajaran dan siswa sebagai peserta aktif dalam proses eksplorasi. Analisis data dimulai dengan tahap reduksi data, penyajian data, dan terakhir interpretasi data. Temuan penelitian ini menggambarkan adanya peningkatan yang sangat signifikan dalam pemahaman siswa terkait konsep-konsep dalam ekosistem dan juga mengindikasikan bahwa siswa menjadi lebih sadar akan permasalahan seputar pencemaran lingkungan sebagai hasil dari pengalaman pembelajaran yang mendalam ini.

Keywords: *Pembelajaran Ekosistem, Pembelajaran Kontekstual, Sekolah Dasar, Inovasi Pendidikan*

Abstract

The contextual and meaningful ecosystem-based learning approach was implemented in a 5th-grade class at SDN Kasepuhan 04 Elementary School. A total of 29 students participated in a field exploration program aimed at deepening their understanding of ecosystem components and raising awareness about environmental pollution impacts. The research aimed to investigate the effectiveness of this contextual and in-depth learning method and analyze its impact on students' comprehension of ecosystems and their awareness of environmental issues. The research methodology adopted was a qualitative approach with a case study design. Data were collected through in-depth interviews involving teachers as learning facilitators and students as active participants in the exploration process. Data analysis encompassed data reduction, data presentation, and data interpretation phases. The study's findings depict a highly significant improvement in students' understanding of ecosystem concepts, and it also indicates that students became more aware of environmental pollution issues as a result of this profound learning experience.

Keywords: *Ecosystem Learning, Contextual Learning, Elementary School, Education Innovation*

INTRODUCTION

Amidst the challenges of global climate change and alarming ecosystem imbalances, early understanding of ecosystems becomes crucial. Ecosystem learning is not merely the conveyance of information but also the cultivation of a mindset that cares for nature. Ecosystem education at the elementary level is not just a routine part of the curriculum but a profound foundation shaping the awareness of future generations about the fragility of ecosystems and the profound need for their

preservation.

In its implementation, the theory of contextual approach emerges as a learning solution that permeates into students' daily lives. John Dewey, a prominent educator in the early 20th century, introduced this concept. According to him, meaningful learning occurs when students can connect learning experiences with real-life situations in their daily lives. (Yuliani, 2018). This approach provides space for students to connect abstract concepts with concrete situations around them, deepening their understanding (Maryati, 2018). Contextuality creates opportunities for students to delve into the real world, bridging lessons with everyday reality, and enhancing their understanding of the learned concepts (Kalionga et al., 2023).

The contextual learning approach involves seven key elements to create a meaningful learning experience. Firstly, constructivism teaches students to build their knowledge through interaction with the environment and experiences. Secondly, questioning activities stimulate curiosity and exploration, delving deeper into understanding. Thirdly, through exploration and discovery, students are given the opportunity to learn through direct experiences and practice. Fourthly, in a learning community, students collaborate and discuss, expanding their understanding through collaboration. Fifthly, modeling provides concrete examples, visualizing complex concepts. Sixthly, reflection allows students to understand and manage their emotions, promoting emotional well-being. Finally, authentic assessment enables evaluation based on skills and knowledge applied in real-life situations, resulting in deep and relevant understanding. By integrating all these elements, the contextual learning approach creates a student-centered and meaningful learning environment (Ichwayudi, 2014).

In-depth exploration of contextual learning in the ecosystem subject has been significantly contributed by three previous studies. The first study, conducted by Dining et al., successfully developed Student Activity Sheets (LKS) based on the SETS approach for high school ecosystem material in the coastal region of Surabaya (Alina et al., 2016). Validation of these Student Activity Sheets (LKS) indicates the effectiveness of this approach in learning, providing a solid foundation for the implementation of contextual ecosystem concepts. The second study by Habibi yielded a contextual science learning strategy based on the mangrove ecosystem in Sumenep (Habibi, 2016). By combining contextual learning methods of the experiencing type and cooperative learning model of the STAD type, this study achieved significant student learning outcomes, as evidenced by positive pretest and posttest results. The third study by Yanto Sugiyanto et al. made another contribution by developing Student Worksheets (LKPD) based on the contextual approach to the ecosystem material for grade VII at SMPN Tanjung Jabung Timur (Sugiyanto et al., 2018).

The research results indicate a significant improvement in students' understanding after using these worksheets, affirming that the contextual approach has a positive impact on students' comprehension of ecosystem concepts. These three studies consistently provide evidence that the contextual learning approach in ecosystem materials has a positive impact on student understanding. The use of SETS-

based worksheets, contextual learning strategies based on mangrove ecosystems, and contextual-based student worksheets not only enhances student understanding but also encourages students to play an active role in protecting and preserving ecosystems.

In facing the complexity of environmental challenges, the contextual learning approach proves to be an effective solution in shaping a generation that cares about ecosystems and the environment. However, real challenges arise in adapting these findings to the dynamics of 5th-grade classrooms. A deeper contextual understanding is required to optimize the effectiveness of learning.

The contextual learning approach through social reconstruction forms a solid foundation in shaping students' understanding of ecosystems at the elementary level. (Khairunnisyah et al., 2020). The concept of social reconstruction originates from the framework of social constructivism theory, emphasizing the importance of social interaction in the learning process (Fauzi et al., 2019). Social constructivist theory, according to Vygotsky (Ritiau et al., 2021) emphasizes that students construct their knowledge by actively engaging in social interaction with others. Students' knowledge is influenced by the culture of the environment in which they live, including beliefs, customs, language, and skills taught in their living environment. Therefore, teachers should provide ample opportunities for students to build knowledge together through collaborative learning interactions in school (Syamsudduha & Rapi, 2012). In the context of learning about the ecosystem in the Kasepuhan Batang football field, social reconstruction means collectively building knowledge through direct observation and exploration, as well as sharing experiences and understanding among students, teachers, and the surrounding environment.

Engaging students in direct observation and social interaction on the football field creates unique opportunities for them to reflect on and discuss ecosystem concepts together. In this environment, students not only gain knowledge from the teacher but also learn from each other. Social reconstruction encourages in-depth discussions, active questioning, and collaborative problem-solving, helping students build a deeper understanding of biodiversity, interspecies interactions, and the impact of human activities on the ecosystem (Ilhami et al., 2021).

This holistic approach creates a learning experience far beyond conventional classroom learning (Miswanto & Halim, 2023). Students not only memorize facts about the ecosystem but also understand its context, relate it to real situations on the football field, and become aware of the implications of human actions on the environment. Through social reconstruction, this research not only explores students' knowledge but also builds essential social and critical skills crucial in shaping a caring and responsible attitude toward the ecosystem. Therefore, this approach not only meets students' needs in understanding the ecosystem but also helps shape environmentally conscious young citizens committed to protecting their surroundings. In the face of the complexity of environmental challenges, the contextual learning approach with social reconstruction is not only providing a deeper understanding of the ecosystem but also actively engaging students in the learning process, shaping

environmentally caring mindsets, and creating a solid foundation for the sustainability of our ecosystem.

This research aims to explore the extent to which a contextual ecosystem learning approach involving students in direct observation and exploration in the football field environment influences students' understanding of ecosystem concepts. Additionally, the study aims to measure its impact on students' awareness of environmental issues, especially in the context of environmental pollution they can identify through direct field observations. Considering its urgency, this research is expected to provide concrete and valuable guidance in developing effective ecosystem learning methods at the elementary education level. The primary goal of this research is not only to make students understand the ecosystem but also to encourage them to take real action in protecting and preserving the ecosystems around them. By actively involving students in direct observation and joint discussions, this approach not only creates a profound understanding but also builds essential social and critical skills crucial in facing increasingly complex environmental challenges.

METHODS

This research employs a qualitative approach with a case study design. The research method involves field exploration with the participation of 29 fifth-grade students from SDN Kasepuhan 04. Data is collected through in-depth interviews with the fifth-grade teacher (Mrs. Rakhmah Ely Yunusiah, S.Pd.) as the learning facilitator and fifth-grade students as active participants. Data analysis includes data reduction, data presentation, and data interpretation. The aim of this research is to investigate the effectiveness of contextual and in-depth learning methods on the ecosystem subject and their impact on students' understanding and awareness of environmental issues, particularly environmental pollution.

RESULTS AND DISCUSSION

Result

Table 1. Research Results

Approach	Impact
Contextual	Understanding the ecosystem as a living reality around students
	Direct experience with organisms and ecosystems
	Opportunity to observe the impact of human activities on the environment
	Linking theoretical concepts to practical situations
Social Reconstruction	Diverse perspectives: Learning from different viewpoints
	Reciprocal learning: Active interaction, listening, and responding to each other's ideas among students
	Development of social skills: The ability to communicate, listen, and appreciate others' perspectives
	Experiential learning: Emotional connection with the subject matter, and memorable firsthand experiences

Discussion

The Impact of the Contextual Approach

The contextual approach opens the door for students to understand the ecosystem not only as a subject in the classroom but as a living reality around them (Hadziq, 2018). In the ecosystem learning at the football field (artificial ecosystem), students are not only invited to understand ecosystem theories, but they witness ecological principles in action. Observing how green plants around the football field interact with various types of insects and birds is a firsthand experience that cannot be learned from textbooks.

During the learning process, students can see how various organisms, such as plants, insects, and birds, interact and form a balanced ecosystem. They can observe how plants affect the presence of insects, and how these insects, in turn, become food for birds. Through this direct observation, students can connect theoretical concepts such as the food chain and symbiotic relationships to real situations on the football field.

In the artificial ecosystem of the football field, students also witness the impact of human activities, such as plastic waste or organic waste, on the environment. They can understand how pollution and waste can harm the ecosystem and disrupt the natural balance. Seeing scattered plastic waste around the football field gives students the opportunity to reflect on the negative impact of human activities on the environment and consider ways to address these issues. The importance of the contextual approach in ecosystem learning on the football field lies in students' ability to see and feel for themselves how ecological concepts are applied in their daily lives. With these direct experiences, they not only comprehend the ecosystem theoretically but internalize its values. They can develop a sense of responsibility toward the environment and become change agents who care about ecosystem sustainability.

Direct observation provides a dimension of experience that textbooks or classroom presentations cannot offer. Through direct observation, students can engage all their senses in the learning process (Setiyorini, 2018). They observe the vibrant colors of plants, hear the melodious chirping of birds, feel the texture of the soil, smell the fragrance of flowers, and perhaps even sense the touch of the wind. All these senses are involved in the learning process, making the learning experience richer and ingrained in the students' memory.

Moreover, direct observation enables students to pose profound questions and encourages further exploration. When they encounter something that captures their interest, they immediately inquire with the teacher and groupmates or even other groups (Khanifah et al., 2012). This fosters students' curiosity and stimulates in-depth class discussions. These questions can also serve as a starting point for students' future research projects, expanding their understanding of ecosystems.

Thus, direct observation in the artificial football field not only provides a profound understanding of the ecosystem but also develops critical thinking skills, curiosity, and student engagement in the learning process. This is a crucial step in preparing a generation that cares for the environment and understands the complexity of natural ecosystems.

Impact of the Social Reconstruction Approach

The social reconstruction approach brings diversity of thought and experience into the learning process (Awwaliyah, 2019). In the context of learning ecosystems on the football field, this social interaction creates a learning environment abundant with advantages:

Diversity of Perspectives, Involving students in group discussions and collaboration enables them to see from various perspectives (Suniti, 2014). In this regard, some students may have knowledge about specific plants growing in their home environment, while others may have insights into the behavior of birds they frequently observe in their surroundings. By sharing this knowledge, students can gain a more comprehensive understanding of the ecosystem.

Reciprocal Learning, Group discussions are not only an opportunity to express ideas but also to listen and respond to others' ideas (Mubin, 2018). Through this interaction, students not only learn from the teacher or textbooks but also from their classmates. They can ask questions, provide responses, and engage in discussions, deepening their understanding collectively. This process creates a dynamic of reciprocal learning where knowledge is acquired through the exchange of ideas.

Development of Social Skills, Involving students in group discussions and collaboration develops their social skills (Milyartini & Haerani, 2014). They learn to communicate effectively, listen attentively, and appreciate different perspectives. This is not only crucial in the context of learning but also constitutes essential skills in daily life and future workplaces. Through active participation in group discussions, students also learn to collaborate in groups, appreciate teamwork, and respect others' opinions.

Experiential Learning, In social reconstruction, (Said, 2017), In the context of learning about ecosystems on the soccer field, this social interaction creates a learning environment abundant with advantages:

Diversity of Perspectives, Involving students in group discussions and collaboration allows them to see from various points of view. Each student brings their unique experiences and knowledge to the discussion, enriching the collective understanding of ecosystem complexity.

Reciprocal Learning, Group discussions not only provide an opportunity to convey ideas but also to listen and respond to others' ideas. Through this interaction, students learn not only from the teacher or textbooks but also from their classmates. They can ask questions, provide responses, and engage in discussions, deepening their understanding collectively. This process creates a dynamic of reciprocal learning where knowledge is gained through the exchange of ideas.

Development of Social Skills, Involvement in group discussions and collaboration develops students' social skills. They learn to communicate effectively, listen attentively, and appreciate different perspectives. These skills are not only important in the context of learning but also constitute essential skills in daily life and future workplaces. Active participation in group discussions teaches students to work together, appreciate teamwork, and respect others' opinions.

Experiential Learning, In social reconstruction, students not only hear about

ecosystems from the teacher but also experience it firsthand through direct observation on the soccer field. This experience creates an emotional connection to the subject matter, making learning more meaningful. By sensing and seeing the ecosystem with their own eyes, students are more likely to remember and understand ecological concepts.

Therefore, the social reconstruction approach is not just about transferring knowledge; it is also about building a profound understanding through social interaction, discussions, and direct experience. This creates students who not only comprehend ecosystems theoretically but also possess strong social skills and a deep sense of engagement with the environment. This approach prepares students to be future leaders who are caring, knowledgeable, and capable of collaborating with others to preserve the sustainability of the global ecosystem.

Building Environmental Awareness

One significant outcome of this research is the increased awareness of students regarding environmental issues, especially pollution. Through direct field observations on the football field, students become firsthand witnesses to the human impact on the environment. They can see how waste and pollution directly affect their surroundings. This creates a sense of concern and responsibility toward the environment. Students not only hear about pollution as an abstract problem, but they witness it with their own eyes. This is a crucial first step toward taking real action to protect the environment.

The Enhancement of Critical Thinking Skills.

The contextual and social reconstruction approach to ecosystem learning brings real challenges into the classroom, allowing students to reflect on environmental phenomena around them, such as pollution issues and plastic waste in the artificial ecosystem of a football field. Students are not only asked to memorize information but also encouraged to question and analyze in relevant contexts. For instance, they consider the long-term impact of plastic waste on the food chain and human health. Through these deep questions, students sharpen their critical thinking skills. They comprehend the complexity of environmental issues, helping them become wise decision-makers and environmentally conscious. With this approach, students not only gain a profound understanding of environmental issues but also acquire critical thinking skills needed to address complex environmental challenges in the future. This approach not only equips them with knowledge but also with the ability to analyze, draw conclusions, and act in the context of urgent global environmental issues. Thus, students become better prepared to play an active role in preserving the sustainability of our nature.

Implications for Future Education

The findings from this research have significant implications for future education. Implementing the contextual and social reconstruction approach in ecosystem learning is not just about imparting scientific facts but also about shaping attitudes, values, and skills necessary to care for the planet. Teachers need to be empowered with appropriate training to adopt these methods in their instruction.

Curricula also need adjustment to incorporate these approaches, providing room for deep and meaningful learning experiences.

CONCLUSION

The contextual learning and social reconstruction approach to ecosystem material at SDN Kasepuhan 04 is not merely a teaching method; it is an investment in the future. By providing students with a profound understanding of the ecosystem and shaping an environmentally conscious attitude, the school has paved the way for future generations who comprehend the value of sustainability and will act as guardians of nature. This approach serves as the foundation for sustainable environmental education and should be a focal point in shaping future educational curricula.

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