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Implementation of Contextual Teaching and Learning Model in Nature-Based Learning to Improve Morals and Concern for the School Environment at SMP S Alam Leuser

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Abstract: This classroom action research examines the implementation of the Contextual Teaching and Learning (CTL) model in nature-based learning to enhance students' morals and environmental awareness at SMP S Alam Leuser. The study aims to determine how CTL strategies, which emphasize meaningful and experiential learning, can foster students' ethical values and ecological responsibility. Conducted in two cycles, this research follows the Kemmis and McTaggart action research model, consisting of planning, action, observation, and reflection. Data were collected through observations, student reflections, teacher journals, and interviews. The findings indicate that integrating CTL with nature-based learning significantly improves students' moral values, such as honesty, responsibility, and cooperation. Furthermore, students demonstrate increased environmental awareness through active participation in sustainable practices, including waste management, tree planting, and water conservation efforts. Each cycle of the research reveals progressive improvement in student engagement and behavioral changes, emphasizing the role of contextual learning in character building. The study highlights the importance of teacher facilitation in connecting learning materials to real-life environmental issues, making the learning process more relevant and impactful. The results suggest that CTL-based nature learning is an effective pedagogical approach for developing both cognitive and affective competencies in students. This study recommends further exploration of CTL implementation in various educational settings to assess its broader impact on student character development and environmental consciousness.

Keywords: Contextual teaching and learning, nature-based learning, environmental awareness.

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INTRODUCTION

education plays a crucial role in shaping students' character and environmental awareness. according to tilaar (2012), education is not merely about transferring knowledge but also about instilling values and attitudes that can be applied in daily life. in the indonesian education context, character development and environmental awareness

are fundamental aspects of the *merdeka curriculum*, which emphasizes experiential and contextual learning (kemendikbud, 2022).

one of the relevant instructional approaches to achieving these goals is contextual teaching and learning (ctl). johnson (2002) describes ctl as a learning model that connects academic material with real-life experiences, encouraging students to actively participate in the learning process. by making learning more meaningful and applicable, ctl allows students to internalize knowledge more effectively and apply it in real-life situations.

on the other hand, nature-based learning has been proven to enhance environmental awareness and character development (louv, 2005). the natural environment provides an authentic and interactive learning space, enabling students to experience firsthand the interconnectedness between humans and ecosystems. through direct interaction with nature, students develop a sense of care and responsibility for the environment (capra, 1996).

the integration of ctl with nature-based learning presents an effective strategy for fostering students' morals and environmental awareness in schools. when learning is linked to real-world experiences and the surrounding environment, it becomes more meaningful and sustainable, reinforcing positive attitudes and behaviors (rusman, 2017). therefore, this study aims to implement the ctl model in nature-based learning to enhance students' morals and environmental awareness at smp s alam leuser.

based on this background, the study seeks to answer the following key research questions: how is the contextual teaching and learning model implemented in nature-based learning at smp s alam leuser? to what extent does the ctl model improve students' moral values in the context of nature-based learning? how does the ctl model impact students' environmental awareness within the school setting?

this study aims to describe the process of implementing contextual teaching and learning in nature-based learning at smp s alam leuser, analyze the influence of ctl on students' moral development, and evaluate the impact of ctl in enhancing students' environmental awareness in school. the findings are expected to provide several benefits. for educators, the study offers insights into the application of ctl in nature-based learning as an effective strategy for character building. for students, it contributes to fostering environmental awareness and shaping better moral values through meaningful and contextual learning experiences. for schools, it serves as a reference for curriculum development and innovative nature-based learning methodologies. additionally, for future researchers, this study lays the groundwork for further exploration of character education and nature-based learning.

the application of contextual teaching and learning (ctl) in nature-based learning is based on the theory that meaningful learning occurs when students can connect academic material to real-life experiences (dewey, 1938). in the context of character education, nature-based learning provides firsthand experiences that reinforce values such as responsibility, care, and cooperation (lickona, 1991). according to rusman (2017), ctl consists of seven key components: constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment. in nature-based learning, these components can be applied through environmental exploration, group discussions, ecological projects, and reflections on learning experiences.

furthermore, previous studies have shown that ctl enhances student engagement and strengthens moral values (rahmawati & hidayat, 2019). this study aims to examine how ctl in nature-based learning contributes to improving students' morals and environmental consciousness. based on theoretical reviews and previous research, this study proposes the following hypotheses: the implementation of the contextual teaching and learning model in nature-based learning improves students' moral values. additionally, the ctl model in nature-based learning enhances students' awareness and responsibility towards the school environment.

this research follows the classroom action research (car) approach developed by kemmis and mctaggart (1988). the study is conducted in two cycles, following the stages of

planning, action, observation, and reflection. the research subjects are seventh-grade students at smp s alam leuser, and data collection techniques include observations, interviews, student reflections, and documentation of activities. the instruments used in this study include student engagement observation sheets, character assessment rubrics, and student reflection journals. data analysis is performed qualitatively by comparing pre- and post-implementation results of the ctl model.

this study is structured into several sections. the introduction discusses the background, research questions, objectives, significance, and conceptual framework. the literature review explores theories related to contextual teaching and learning, nature-based learning, character education, and previous research findings. the methodology section explains the research design, participants, instruments, and data analysis techniques. the results and discussion present the study's findings and their interpretation. the conclusion and recommendations summarize the study's outcomes and provide suggestions for future research and educational practice. with this structure, the study is expected to provide a comprehensive understanding of how ctl in nature-based learning can contribute to character building and environmental awareness among students.

METHODS

This study employs Classroom Action Research (CAR) based on the model proposed by Kemmis and McTaggart (1988). CAR is chosen because it enables systematic and reflective implementation of instructional strategies while continuously improving teaching and learning practices. The research is conducted in two cycles, each consisting of four stages: planning, action, observation, and reflection. The study takes place at SMP S Alam Leuser, a school that integrates nature-based learning into its curriculum. The participants are seventh-grade students, selected based on their engagement in nature-based learning activities. The research focuses on how the Contextual Teaching and Learning (CTL) model enhances students' moral values and environmental awareness through experiential learning in natural settings.

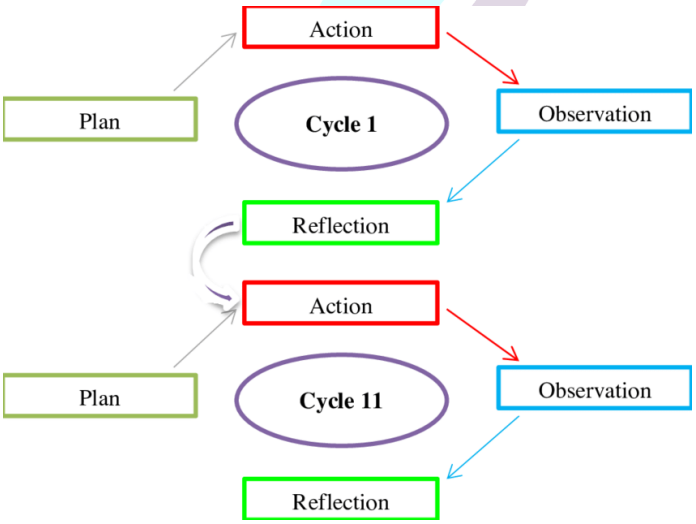

Figure 1. *Research Design*

In the planning stage, lesson plans are designed to incorporate CTL principles into nature-based learning activities. These lessons emphasize experiential and inquiry-based learning, allowing students to relate academic concepts to real-world environmental issues. The research instruments, including observation sheets, interview guidelines, and student reflection journals, are prepared to facilitate data collection. During the action stage, CTL-based lessons are implemented in natural environments, where students

participate in activities such as ecosystem exploration, environmental conservation projects, waste management, and sustainability discussions. Teachers act as facilitators, guiding students in making meaningful connections between theoretical knowledge and practical applications.

The observation stage involves collecting data through classroom observations, student reflections, and interviews with teachers and students. Observers take notes on student participation, engagement, and behavioral changes related to moral values and environmental responsibility. Student reflection journals are analyzed to assess their understanding and personal insights on learning experiences. After each cycle, the reflection stage is conducted to evaluate the effectiveness of CTL in achieving the study's objectives. The results from the first cycle are examined to determine necessary modifications for the second cycle. Reflection is carried out collaboratively between teachers and researchers to refine teaching strategies and enhance student engagement in subsequent lessons.

Data collection is conducted using multiple qualitative instruments to ensure a comprehensive analysis of the learning process and student development. Observations assess student engagement, participation, and behavioral changes during CTL-based nature learning. Student reflection journals are collected at the end of each lesson to understand students' perspectives, moral development, and awareness of environmental issues. Interviews with both students and teachers provide deeper insights into their experiences and perceptions of the learning process. Additionally, documentation, including photographs, field notes, and lesson materials, is used to support the analysis of learning implementation.

The collected data is analyzed using qualitative descriptive analysis, following Miles and Huberman's (1994) framework, which consists of data reduction, data display, and conclusion drawing. Data reduction involves categorizing information based on key themes related to moral development and environmental awareness. Data display is carried out by organizing findings into tables, charts, and descriptive summaries to illustrate student progress over the two cycles. Finally, conclusions are drawn based on comparisons between the results of the first and second cycles, identifying the impact of CTL on student learning outcomes.

To ensure data validity, the study applies triangulation techniques by comparing information from different sources, including observations, student reflections, and interviews. Member checking is conducted, where participants review preliminary findings to confirm the accuracy of the interpretations. Peer debriefing with fellow educators is also used to maintain objectivity in data analysis. Ethical research standards are maintained throughout the study, with informed consent obtained from students and teachers before data collection. Participants' identities are kept confidential, and the data is used solely for research purposes. The research follows ethical guidelines to ensure transparency, respect, and fairness in data collection and reporting. Through this Classroom Action Research, the study aims to provide valuable insights into the application of Contextual Teaching and Learning in nature-based education, highlighting its role in fostering students' moral character and environmental responsibility.

RESULTS

The results of this study demonstrate that the application of Contextual Teaching and Learning (CTL) in nature-based learning significantly enhances students' moral values and environmental awareness. The research was conducted in two cycles, with each cycle consisting of planning, action, observation, and reflection. Data were collected through classroom observations, student reflection journals, and interviews with students and teachers. The findings indicate that there was a noticeable improvement in students' engagement, moral behavior, and environmental responsibility from Cycle 1 to Cycle 2.

During the first cycle, students initially faced challenges in adapting to the CTL approach in an outdoor learning environment. Observations revealed that only 58% of students actively participated in discussions and environmental exploration activities. Some students showed passive engagement, and their reflections indicated that they struggled to relate theoretical concepts to real-world environmental issues. Additionally, the moral assessment results showed that only 52% of students exhibited responsible behavior, such as picking up trash or showing concern for nature. Teachers also reported that students had difficulty understanding the connections between learning materials and their daily lives.

After reflecting on the challenges of the first cycle, several modifications were made in the second cycle, including more structured guidance, clearer learning objectives, and greater integration of real-life case studies to enhance student comprehension. As a result, the second cycle demonstrated significant improvements. Observational data showed that 82% of students actively engaged in learning activities, asking critical questions and participating in group discussions. Student reflection journals also indicated a better understanding of ecological issues, with many students expressing a sense of responsibility toward their school environment. Moreover, the moral assessment results improved to 78%, indicating that more students demonstrated caring attitudes and responsible behavior.

Interviews with students and teachers further confirmed these findings. Many students stated that learning in nature made the subject matter more relatable, and they felt more motivated to participate. One student mentioned, "I never realized how important the environment was until we studied it outside. Seeing the impact of waste in our school garden made me want to do something about it." Teachers also observed positive changes, noting that students became more attentive, reflective, and proactive in addressing environmental concerns. They reported that after the implementation of CTL, students were more likely to take initiative in school clean-up activities and demonstrated greater empathy and teamwork in class discussions.

Findings suggest that the CTL model effectively enhances students' moral values and environmental awareness when applied in nature-based learning. The comparison between Cycle 1 and Cycle 2 clearly indicates that structured guidance, experiential learning, and real-world connections play a critical role in improving student engagement and moral responsibility. The final reflection suggests that CTL can be a sustainable pedagogical approach to fostering character education and ecological consciousness in students, particularly in schools that integrate nature-based learning into their curriculum.

DISCUSSION

The findings of this study indicate that the implementation of Contextual Teaching and Learning (CTL) in nature-based learning significantly enhances students' moral values and environmental awareness. These results align with previous studies that emphasize the effectiveness of contextual learning in improving student engagement and real-world application of knowledge (Johnson, 2002; Rusman, 2017). The observed improvement from Cycle 1 to Cycle 2 demonstrates that when students are actively involved in hands-on learning experiences, they are more likely to develop a deeper understanding of moral and environmental responsibility. This supports the argument made by Dewey (1938), who emphasized that education should be rooted in experience to be meaningful and transformative.

The increase in student engagement and moral behavior in Cycle 2 can be attributed to the refined instructional approach, which included more structured guidance and real-world applications. According to Lickona (1991), character education is most effective when students are provided with direct experiences that reinforce ethical values. In this study, the use of real environmental problems, such as waste management and ecosystem

preservation, helped students internalize moral values and ethical responsibility. This is consistent with Vygotsky's (1978) theory of social constructivism, which posits that learning occurs best when students engage in collaborative and meaningful experiences guided by their peers and teachers.

The data also support the claim that learning in a natural environment enhances environmental awareness. The significant increase in students' engagement and responsibility toward the school environment mirrors findings from Louv (2005), who argued that direct interaction with nature fosters a sense of care and responsibility. Similarly, Capra (1996) emphasizes that when students understand the interconnectedness of ecological systems, they develop a sense of ecological literacy, which is essential for long-term sustainability. The reflection journals analyzed in this study suggest that students who participated in nature-based CTL activities were able to recognize their role in environmental conservation and take active steps toward sustainability efforts.

Furthermore, the study highlights the importance of inquiry-based learning in the CTL approach. The findings indicate that students became more inquisitive and reflective as they engaged in discussions and problem-solving activities related to their environment. This supports the research of Rahmawati & Hidayat (2019), which found that CTL improves critical thinking skills and encourages students to apply their knowledge beyond the classroom. By integrating inquiry-based learning with real-life environmental issues, students not only gained knowledge but also developed a sense of ownership in solving ecological problems within their school.

Another key factor contributing to the success of this study is teacher facilitation. The role of the teacher in guiding discussions, posing critical questions, and modeling environmental responsibility was crucial in helping students make meaningful connections between their learning and everyday life. According to Shulman (1987), effective teaching involves pedagogical content knowledge, where educators not only deliver subject matter but also contextualize it in ways that are relevant and engaging for students. This study confirms that when teachers act as facilitators of experiential learning, students are more likely to engage deeply and internalize moral values.

Despite the overall positive outcomes, some challenges were encountered, particularly in Cycle 1, where students struggled to adapt to the CTL approach. This aligns with findings from previous studies that suggest that students accustomed to traditional, lecture-based learning environments may initially find student-centered learning approaches challenging (Slavin, 2006). However, as seen in Cycle 2, scaffolding and structured interventions helped bridge this gap, allowing students to gradually become more comfortable with active and experiential learning. This reflects Bruner’s (1966) notion of scaffolding, where learners benefit from gradual support until they achieve independence in their learning process.

The results of this study have several implications for educational practice and policy. First, it reinforces the importance of integrating contextual and nature-based learning in school curricula to enhance character education and environmental consciousness. Second, it highlights the need for teacher training programs that equip educators with the skills to implement CTL-based experiential learning effectively. Lastly, the study suggests that schools should provide more opportunities for outdoor and inquiry-based learning, as these methods have been shown to significantly improve student engagement, moral behavior, and ecological awareness.

This study contributes to the growing body of research supporting the effectiveness of Contextual Teaching and Learning in fostering moral development and environmental awareness. The findings affirm that learning becomes more meaningful when students engage directly with their environment, reinforcing the importance of experiential, student-centered, and inquiry-driven approaches in education. Future research could explore how long-term implementation of CTL in nature-based learning influences students’ lifelong attitudes and behaviors toward environmental sustainability.

CONCLUSION

This study has demonstrated that the implementation of Contextual Teaching and Learning (CTL) in nature-based education significantly enhances students' moral values and environmental awareness. Through two cycles of Classroom Action Research (CAR), the findings reveal that structured guidance, real-world applications, and teacher facilitation play crucial roles in fostering student engagement, ethical responsibility, and ecological consciousness. The transition from Cycle 1 to Cycle 2 showed marked improvements in student participation, critical thinking, and proactive environmental behavior, confirming that experiential and inquiry-based learning strengthens students' connection to real-world challenges. These results align with educational theories emphasizing that meaningful learning occurs when students actively construct knowledge through real-life experiences. Furthermore, the study highlights the role of nature-based education in providing an effective setting for character development, where direct interaction with the environment enhances students' sense of responsibility and sustainability awareness. The findings also reinforce the importance of teacher facilitation in guiding ethical decision-making and fostering social responsibility. Based on these outcomes, it is recommended that schools integrate CTL-based nature learning into their curricula to strengthen character education and environmental literacy, while teacher training programs should emphasize strategies for implementing student-centered and inquiry-driven learning. Additionally, policymakers should support the development of outdoor and experiential learning opportunities to enhance holistic student development. Future research should explore the long-term impact of CTL on students' ethical and environmental behaviors beyond the classroom and examine how contextual learning strategies can be adapted to various educational settings. By creating meaningful connections between learning and real-world experiences, education can play a pivotal role in shaping responsible, ethical, and environmentally conscious future generations..

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