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Integration of Ecotheology Literacy Games Through Deep Learning to Increase Environmental Awareness for Students in IPAS Learning

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Abstract

This study aims to analyze the use of ecotheology literacy games through in-depth learning to increase environmental awareness among students in science subjects at Medani State Elementary School. The method used in this study is qualitative, with a case study design. Data collection was conducted through participatory observation, in-depth interviews, and document analysis. The results of the study show that the use of ecotheology literacy games can increase student involvement, strengthen understanding of ecological concepts, and encourage the internalization of environmental care values. Of the 16 students involved, as many as 15 demonstrated excellent ecological awareness, as evidenced by behavioral changes, critical reflections, and concrete actions taken to maintain cleanliness and preserve the school environment. The deep learning approach helps students connect in-game experiences to everyday life, fostering more meaningful ecological understanding and attitudes. Thus, the integration of ecotheology literacy games into social studies learning has proven to be an innovative pedagogical strategy that is both relevant and appropriate for strengthening environmental education from an early age.

Keywords: *literacy games, ecotheology, environmental awareness*

Abstrak

Penelitian ini bertujuan untuk menganalisis penggunaan game literasi ekoteologi melalui pembelajaran mendalam dalam meningkatkan kesadaran lingkungan bagi siswa pada mata pelajaran IPAS di Sekolah Dasar Negeri 1 Medani. Metode yang digunakan dalam penelitian ini adalah metode kualitatif dengan desain studi kasus. Pengumpulan data dilakukan melalui observasi partisipatif, wawancara mendalam, dan analisis dokumentasi. Hasil penelitian menunjukkan bahwa penggunaan game literasi ekoteologi mampu meningkatkan keterlibatan siswa, memperkuat pemahaman konsep ekologi, serta mendorong internalisasi nilai-nilai kepedulian lingkungan. Dari 16 siswa yang terlibat, sebanyak 15 siswa menunjukkan kesadaran lingkungan yang sangat baik, terlihat dari perubahan perilaku, refleksi kritis, dan tindakan nyata dalam menjaga kebersihan serta pelestarian lingkungan sekolah. Pembelajaran mendalam yang diterapkan membantu siswa menghubungkan pengalaman dalam game dengan konteks kehidupan sehari-hari sehingga terbentuk pemahaman dan sikap ekologis yang lebih bermakna. Dengan demikian, integrasi game literasi ekoteologi dalam pembelajaran IPAS terbukti menjadi strategi pedagogis inovatif yang relevan dan tepat untuk memperkuat pendidikan lingkungan sejak dini.

Kata Kunci: game literasi, ekoteologi, kesadaran lingkungan..

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INTRODUCTION

Environmental awareness is a critical competency that students at the basic education level must possess. Environmental awareness is an individual action to protect the environment (Lukacs et al., 2023, Ganie et al., 2024). Students with environmental awareness will take care of the environment by using environmentally friendly products, recycling, and reducing waste (Pramita, Fenny et al., 2023,Kumari, 2024). In today's global context, various environmental problems such as climate change, pollution, biodiversity decline, and ecosystem destruction have become issues that are not only addressed in the scientific realm (Makhtar et al., 2021), but also in the realm of education. Schools, as formal educational institutions, have a strategic role in forming a generation with concern and responsibility for the environment from an early age. Various environmental problems, such as floods and landslides, need to be overcome, starting with building environmental awareness from an early age. Students should be given an understanding that is in accordance with the context of the environment and the needs of students. Therefore, environmental awareness is not just knowledge about nature, but also involves real attitudes, values, and actions in preserving the surrounding environment.

At the basic education level, IPAS (Ilmu Pengetahuan Alam dan Sosial) learning in the Independent Curriculum is designed to provide students with a holistic understanding of the relationship between humans, nature, and the social environment. Social studies learning requires students not only to understand scientific concepts cognitively but also to relate these concepts to daily life and to encourage the emergence of pro-environmental behavior. However, the implementation of social studies learning in schools still faces several complex challenges.

One of the main challenges is how to present contextual, engaging, and meaningful learning to encourage students to internalize the values of environmental concern. Most elementary school students find it easier to understand abstract concepts when they are presented in visual, interactive, and practical forms. Lecture-based learning or reliance on textbooks is often less effective at fostering deep ecological awareness. Students may understand the definitions of environmental pollution or recycling, but may not necessarily understand broader ecological connections or realize their role in protecting the environment.

This is where the concept of ecotheology literacy becomes very relevant. Ecotheology literacy exists as an approach that combines ecological knowledge with an understanding of moral, spiritual, and ethical values in human relations with nature. In primary education, ecotheology literacy can help students understand that nature is not only an object to be studied, but also a living partner that must be valued and preserved. Ecotheology encourages students to see the environment as integral to life, fostering responsibility, simplicity, harmony, and gratitude for the gifts of nature.

This concept aligns with the goals of the Independent Curriculum, which emphasize the formation of graduate profiles, particularly the dimensions of faith and piety toward God Almighty, independence, and collaboration. Ecotheological values help strengthen

learners' ecological spirituality, leading them not only to understand the environment scientifically but also to interpret nature's existence as part of their identity and moral responsibility. Thus, integrating ecotheology literacy into science learning is very important for building a harmonious relationship between humans and nature from an early age.

On the other hand, the development of educational technology provides new opportunities for presenting more interactive learning. One of the increasingly popular approaches in education is game-based learning. This approach utilizes game media as a tool to increase student involvement, motivation, and understanding of a learning material. Game-based learning can transform passive learning into an active, challenging, and enjoyable experience. When students engage in educational games, they are encouraged to think critically, work together, solve problems, and make decisions, thereby making these competencies indispensable for learning IPAS.

The main strength of game-based learning lies in its ability to create an immersive and meaningful learning environment. Students not only receive information but also experience the learning process firsthand through simulations, challenges, storylines, and the game's consequences. In the context of environmental education, games can simulate ecological phenomena, provide exploratory experiences, and present environmental problems that students must solve creatively and collaboratively. Thus, students can better understand the cause-and-effect relationship in ecosystems and feel the impact of human behavior on the environment.

The integration of ecotheology literacy into game-based learning is an innovative step that can combine the cognitive, affective, and spiritual aspects of students within a single learning experience. Games designed with ecotheological values can help students understand ecological concepts scientifically while fostering moral awareness of the importance of preserving nature. For example, games featuring forest rescue missions, waste management, or ecosystem restoration can be combined with value reflection, environmental ethical messages, and a strengthened sense of responsibility.

In the context of the Independent Curriculum, a learning approach that integrates ecotheology literacy games is highly relevant, as it aligns with the principles of deep learning. Deep learning emphasizes strong conceptual understanding, high-level thinking skills, the connection of learning materials to authentic experiences, and a continuous reflection process (Islam & Khan, 2024; . Precisely designed game-based learning can be an effective vehicle for deep learning (Choosang et al., 2023;. Students not only play but also analyze and evaluate their actions, and relate those experiences to ecotheological values and real situations in their environment.

Deep learning through ecotheology literacy games allows students to construct meaning independently. Not only do they learn about the ecosystem or recycling theoretically, but they also experience how small actions in games can have a significant impact on environmental sustainability (Cloete & N., 2022, Rabiej, 2021). These experiences can then be applied in real-world contexts, encouraging students to adopt eco-friendly behaviors in their daily lives. This is where the transformative aspect of learning

really happens: students not only know but also become aware, caring, and responsible individuals for the environment.

In addition, integrating ecotheology games through deep learning offers teachers opportunities to develop more collaborative and creative learning strategies. Teachers can act as facilitators, guiding reflection, group discussion, and the exploration of ecotheological values after students have played the game. Teachers can also relate play experiences to IPAS competencies, especially in understanding concepts such as ecology, the adaptation of living things, environmental change, and human-nature interaction. Thus, learning becomes more relevant and meaningful, and it impacts students' ecological character development.

From a student's perspective, games provide a learning space that suits their dynamic, visual, and interactive learning style. Students tend to have an easier time understanding the concepts visualized in a game than just reading a textbook. In addition, games allow students to learn independently, work together with friends, or compete in a healthy way, thus creating a fun and challenging learning atmosphere. Through games, students also learn to make ethical decisions, consider long-term impacts, and balance human and environmental needs, which are core values in ecotheology literacy.

Based on these descriptions, integrating ecotheology literacy games into deep learning is one innovative alternative solution to address the challenges of learning IPAS in elementary schools. This approach not only facilitates a scientific understanding of concepts but also fosters a solid and value-based environmental awareness. Furthermore, this approach helps schools prepare a generation with sufficient ecological knowledge, caring attitudes, and concrete actions to preserve the environment.

This study reveals that integrating ecotheology literacy games through an in-depth learning approach in social studies is effective in increasing elementary school students' environmental awareness. The results of the survey show that game-based learning can increase students' active engagement, strengthen their understanding of ecological concepts, and encourage the internalization of environmental care values. Deep learning plays a vital role in connecting the in-game learning experience to students' real-life context, leading to genuine ecological attitudes and behavioral changes. This is reflected in findings that most students demonstrate excellent environmental awareness through critical reflection, concern for cleanliness, and active participation in preserving the school environment.

However, this study still has limitations due to the case-study design and the small sample size, so the generalizability of the findings warrants further investigation. In addition, the long-term sustainability impact of learning on environmental awareness, as well as the variety of ecotheology literacy game designs, have not been explored in depth. However, this research is relevant and vital at this time, in response to the challenges posed by the global environmental crisis and the need for transformative IPAS learning models. The integration of ecotheology literacy games through deep learning offers an innovative, contextual pedagogical contribution that has the potential to strengthen environmental

education from an early age, especially in addressing the characteristics of digital-generation learners.

This research will explore how integrating ecotheology literacy games can be applied through deep learning in science subjects and how this approach can increase students' environmental awareness. Through a qualitative research approach, this study aims to comprehensively explore students' learning experiences, interactions during learning, and their reflections on the ecotheological values they acquire. Thus, this research not only advances theoretical understanding but also provides practical contributions to teachers and schools in developing innovative, ecological character formation learning models in science.

The questions in this study focus on two main aspects. First, how to implement Ecotheology literacy games that are integrated with an in-depth learning approach in the science learning process. Second, what is the impact of using Ecotheology literacy games through deep learning on increasing students' environmental awareness? This study aims to comprehensively analyze the effectiveness of Ecotheology literacy games as a learning medium in fostering students' environmental awareness in science subjects.

METHODS

This study uses a qualitative approach to understand, in depth, the process of integrating ecotheology literacy games into science instruction to increase students' environmental awareness. The qualitative approach was chosen because it can explore students' experiences, perceptions, and responses to games as a learning medium naturally, and provides space for contextual analysis that cannot be achieved through quantitative approaches. This research is oriented towards exploring education as it is, with the researcher serving as the primary instrument for data collection and analysis.

The design of this study uses a qualitative case study focused on a single class or group of elementary school students who have implemented social studies learning with the integration of ecotheology literacy games. The case study was chosen because it allowed researchers to examine in detail the dynamics of the learning process, student interactions, and transformations in environmental awareness that emerged during the intervention. Through this design, researchers can comprehensively document real events, including teachers' strategies, student responses, and meanings formed during the learning process.

The research was conducted at the 1 Medani State Elementary School, which has implemented deep learning and used ecotheology literacy games, especially in science learning. The research subjects include grade V students, science teachers, and learning support documents. The main data sources in this study are primary data, including observation results, in-depth interviews, and documentation of the learning process. Meanwhile, secondary data includes learning tools, school curriculum, game activities, and student-generated artifacts.

The students who were made respondents in this study ranged in age from 10 to 11 years. The selection criteria were selected based on the material taught by the teacher related to environmental materials. The intervention lasted one month. In this study, teachers' role during implementation is to use IPAS learning with ecotheology literacy games through deep learning, serving as facilitators and motivators.

The ecotheology literacy game in this study is designed with a progressive, level-based structure, aligned with the learning outcomes of science and deep learning principles. The ecotheology literacy game, based on deep learning, is conducted through structured and reflective learning stages, starting with an orientation to contextual, near-students' lives environmental problems. In the early stages, students are introduced to game scenarios that represent simple ecological issues, such as waste management, school environmental cleanliness, and natural resource conservation. Furthermore, students are actively involved in play through decision-making, problem-solving, and exploration of the consequences of each chosen action, thus encouraging simultaneous cognitive and affective engagement. In the final stage, learning is closed with deep reflection and follow-up through tangible actions, which allow students to construct meaning, foster moral-ecological awareness, and transform learning experiences into ecological behaviors in daily life. The implementation of the game is structured, with a duration of 20–30 minutes per session and a frequency of 1–2 times per week, as an integral part of IPAS learning, reinforcing reflective, meaningful learning experiences for students.

Data collection was conducted using three main techniques: participatory observation, in-depth interviews, and document analysis. Participatory observation was used to record students' learning activities while using ecotheology literacy games, including their engagement, interactions, and emotional responses. In-depth interviews are conducted with students and teachers to understand their experiences, perceptions, and interpretations of learning. Documentation analysis was used to examine learning tools, student work results, game screenshots, and teacher reflection notes. The entire data collection process is carried out repeatedly and gradually to ensure data adequacy and depth of information.

Data were analyzed using the Miles & Huberman model, which includes data reduction, data presentation, and the drawing of conclusions. The researcher reads and codes the data thematically to identify patterns, categories, and relationships relevant to the research objective. To maintain data validity, source triangulation, triangulation techniques, and member checking are used. Triangulation was conducted by comparing findings from observations, interviews, and documentation, while member checking was conducted by reconfirming the findings with participants. The study also examined ethical aspects, such as maintaining the confidentiality of students' and teachers' identities, obtaining consent before conducting research, and ensuring that game activities are used safely and do not interfere with the learning process.

RESULTS AND DISCUSSION

The results of this study indicate that integrating ecotheology literacy games through a deep learning approach at 1 Medani State Elementary School has positively enhanced students' environmental awareness. This finding demonstrates that innovative learning strategies that combine values-based literacy with interactive game elements can effectively support students' understanding of environmental issues. The learning process becomes more meaningful because students are actively involved and emotionally engaged in the learning activities.

The ecotheology literacy games implemented in this study were designed to introduce students to the relationship among humans, nature, and spiritual or moral responsibility toward the environment. Through game-based activities, students were encouraged to explore environmental problems, reflect on ethical values related to environmental stewardship, and connect these values with their daily experiences. As a result, learning was not limited to the transfer of knowledge but also fostered deeper reflection and internalization of environmental values.

Furthermore, the application of a deep learning approach strengthened the effectiveness of the ecotheology literacy games. Deep learning emphasizes understanding, critical thinking, and the ability to relate concepts across contexts. In this learning environment, students were guided to analyze environmental issues, discuss potential solutions, and reflect on the consequences of human actions on the environment. This process helped students develop a deeper, more lasting awareness of environmental sustainability.

Overall, the positive impact observed at 1 Medani State Elementary School suggests that integrating ecotheology literacy games into deep learning is an effective pedagogical strategy for increasing students' environmental awareness. The combination of cognitive understanding, value formation, and active engagement enables students to develop not only knowledge about the environment but also responsible attitudes and behaviors toward environmental preservation. These findings highlight the potential of this approach to be applied more broadly in elementary education contexts. The learning process that combines ecological concepts with ecotheological values through interactive games makes students more engaged and enthusiastic, and it shows significant behavioral changes (Risamasu, 2025). Key findings show that students not only understand the concept of the environment cognitively, but also live it emotionally and spiritually.

Through observation during three intensive meetings, it was seen that students showed a high level of participation when ecotheology games were used as a learning medium. They are more active in discussing, offering opinions, and reflecting on human actions towards the environment. Game media has proven to facilitate a more immersive learning experience that is fun and readily accepted by elementary school students.

The increase in environmental awareness is most evident when students begin to relate gaming experiences to real life. In the game, students are required to make decisions that affect the preservation of the digital environment, such as maintaining river

cleanliness, planting trees, or choosing ethical actions in managing natural resources. This process forms the understanding that every human action has ecological consequences.

The social studies teacher said that before the use of games, some students showed a limited understanding of the relationship between humans and nature. However, after the intervention, students can explain these concepts more comprehensively. They can cite examples of simple actions that can be taken at school or at home to protect the environment, showing that meaning is internalized through the learning process.

The results of in-depth interviews with students corroborated these findings. Many students admit that games make them more aware of the need to care for the environment, both in real life and in gaming. Some students even stated that they felt "guilty" when, in the game, they committed actions that damaged the environment, which shows the formation of ecological empathy through the game (Lambert, 2024, Li & Zhang, 2025)

Other findings from this study indicate that integrating ecotheology literacy games has been successful in fostering positive, sustainable habits within the school environment. Students demonstrate increased awareness and responsibility in their daily activities, particularly in waste management practices. They are more careful when disposing of garbage, have begun to distinguish between organic and inorganic waste, and show greater initiative in maintaining classroom cleanliness without relying on constant reminders from teachers. This shift reflects a growing sense of ownership and responsibility toward their immediate environment.

These observable changes in students' behavior suggest that environmental awareness has progressed beyond conceptual understanding and attitudes to become embedded in practical, everyday actions. The ability of students to consistently apply environmentally responsible behaviors in real situations indicates that the learning experiences have been internalized effectively. As a result, environmental awareness is no longer merely an abstract concept. Still, it has developed into a lived practice that supports the creation of a cleaner, healthier, and more sustainable school environment.

Observation data also showed that cooperation between students increased during the learning process. In the game, some missions require students to work in groups to solve environmental problems. This encourages them to discuss, share opinions, and strategize together. This kind of collaboration builds social awareness that environmental conservation cannot be done individually but requires collective work.

An analysis of documentation in the form of student reflection notes showed that most students were able to identify environmental problems around them, such as plastic waste, excess water use, and lack of greening. They are also able to formulate simple solutions that can be done independently. This shows that learning not only impacts knowledge but also critical thinking and problem-solving skills.

Of the 16 students who were the subjects of the study, as many as 15 showed excellent environmental awareness, characterized by behavioral changes, reflective abilities, and active involvement in learning activities. One student who showed

improvement but was not optimal was known to face obstacles, including lapses in concentration and engagement during several learning sessions. However, the students still showed the development of a basic understanding of the importance of protecting the environment.

The teacher stated that the use of ecotheology literacy games is constructive in the IPAS learning process because it presents abstract material in concrete terms. This ecotheology literacy game will provide students with the experience they need to increase their environmental awareness (Kenfack, 2023,Baring & Molino, 2023). The teacher also said that it is easier for students to understand the concept of ecology when they can see firsthand the impact of their choices in games, rather than through lecture or reading textbooks.

Analysis of the overall data indicates that deep learning is a key factor in the intervention's success. Students not only receive information, but are invited to analyze, feel, and reflect on their experiences. This approach supports the development of an internal and sustainable (Kanojia & Tewari, 2025) Because students realize that their actions have a broader meaning in social and environmental life (Lewis, 2025).

In general, the results of the study show that integrating ecotheology literacy games into deep learning is an effective strategy for increasing elementary school students' environmental awareness. The findings at SD Negeri 1 Medani prove that well-designed educational games can be a powerful educational tool, combining scientific knowledge, ecological values, and fun learning experiences (Maksum et al., 2023, Bámaca-López et al., 2024). This success provides an opportunity to develop similar learning models in other schools to strengthen environmental education from an early age. Environmental awareness can be measured by several indicators, namely knowledge about the environment, attitudes towards the environment, behavior towards the environment, participation in environmental activities, and reflective awareness. Based on the research results, environmental awareness indicators are shown in the following table.

Table 1. Environmental Awareness Indicators

Environmental Awareness Indicators	**Total Students**
Knowledge of the Environment	14
Attitude towards the environment	15
Behavior towards the environment	16
Participation in the environment	15
Reflective awareness	15

Based on the data in the table, most fifth-grade students demonstrate a relatively good level of environmental awareness. This finding indicates that students already possess a basic understanding of environmental issues and show positive tendencies in responding to ecological challenges. Such awareness is an essential foundation for the development of environmentally responsible behavior, especially at the elementary education level, where attitudes and values begin to take firmer shape.

Environmental awareness among students is reflected in several key indicators, particularly in their knowledge and understanding of fundamental ecological concepts. Students can recognize the relationship between human activities and their impacts on nature, including both positive and negative consequences. This conceptual understanding enables students to identify environmental problems in their surroundings and to build their awareness of the importance of maintaining ecological balance in everyday life.

In addition to cognitive understanding, students also demonstrate environmental awareness through their attitudes and behaviors. Caring attitudes and a sense of responsibility toward the environment are evident in daily practices such as properly disposing of waste, conserving water and electricity, and maintaining cleanliness in the school environment. These behaviors indicate that students are not only aware of environmental values at the theoretical level but also translate them into concrete actions that support environmental sustainability.

Furthermore, students' environmental awareness is strengthened through active participation and reflective abilities. Their involvement in school-based environmental programs and cleanliness activities shows a willingness to contribute collectively to environmental preservation efforts. At the same time, students can reflect on the relationship between humans and nature, recognizing that even small actions can significantly impact ecological sustainability. Through integrating knowledge, attitudes, actions, participation, and reflection, students exhibit a comprehensive and meaningful level of ecological awareness.

CONCLUSION

This study concludes that integrating ecotheology literacy games into deep learning in IPAS at SD Negeri 1 Medani is effective in increasing students' environmental awareness. The use of games that incorporate ecological and ecotheological values makes students more actively involved, helps them understand environmental concepts more concretely, and leads to real behavioral changes in daily life. Of the 16 students, as many as 15 showed excellent ecological awareness, as evidenced by their ability to identify environmental problems, be caring, and take positive actions such as maintaining cleanliness and formulating simple solutions. Game media also helps teachers convey material more interestingly and contextually. Overall, this learning model can be a relevant and innovative strategy for strengthening environmental education in elementary schools.

The findings of this study imply that teachers can effectively utilize ecotheology literacy games as a pedagogical strategy to enhance students' environmental awareness by fostering active engagement, reflective thinking, and contextual understanding in IPAS learning. From a curriculum development perspective, integrating ecotheological and ecological values through game-based deep learning supports a more holistic, interdisciplinary curriculum that connects scientific knowledge with ethical and moral dimensions. Theoretically, this study contributes to the body of knowledge on deep learning and environmental education by demonstrating that integrating the cognitive,

affective, and behavioral domains through ecotheology-based games can promote transformative learning at the elementary level. Practically, schools are encouraged to implement ecotheology literacy games as a complementary instructional approach, supported by adequate teacher facilitation and reflective activities. For future research, longitudinal studies with broader samples and diverse educational contexts are recommended to examine the sustainability of behavioral changes and to explore further the potential of ecotheology-based game learning across subjects and academic levels.

REFERENCES

Bámaca-López, E., De La Vega, P., & Orcasitas, L. J. (2024). Ecological Preventive Empathy: A Proposal for Ethical Articulation in Times of the Anthropocene. *Historia Ambiental Latinoamericana y Caribena*. https://doi.org/10.32991/2237-2717.2024v14i1.p257-276

Baring, R., & Molino, J. (2023). Kalikhasang Balaan: Elements of a Youth Specific Ecotheology in the Philippines. *Religions*. https://doi.org/10.3390/rel14060768

Camilleri, V. (2023). Designing GBL for Higher Education: Pitfalls & Recommendations. *Proceedings of the European Conference on Games-Based Learning*. https://doi.org/10.34190/ecgbl.17.1.1900

Choosang, S.,Chai-Ngam, N.,Pongkiatchai, R., & R., S. mail to P. (2023). Instructional Design: Under the Concept of Game Based Learning for Nursing Education. *Journal of Food Health and Bioenvironmental Science*.

Cloete, N., & N., S. mail to C. (2022). An African perspective on hamartology and ecology: Assessing Jesse Mugambi's contribution to the contemporary debate. *Pharos Journal of Theolog*. https://doi.org/10.46222/PHAROSJOT.10333

Ganie, R. H.,Gajbhiye, P., P., S. mail to G., Yadav, A. M., & Modak, N. (2024). Statistical Analysis of Environmental Awareness Among Undergraduate Students in the Kashmir Valley Using SPSS. *AIP Conference Proceedings*.

Islam, Q., & Khan, S. M. F. A. (2024). Understanding deep learning across academic domains: A structural equation modelling approach with a partial least squares approach. *International Journal of Innovative Research and Scientific Studies*, *7*(4), 1389–1407. https://doi.org/10.53894/ijirss.v7i4.3408

Kanojia, H., & Tewari, S. (2025). Enabling Climate Change Through Communication Design in Environmental Education Discourse at School Education in India. *Lecture Notes in Mechanical Engineering*. https://doi.org/10.1007/978-981-96-7316-2_3

Kenfack, C. E. (2023). Saving Our "Common Home" Through Them: A Critical Analysis of the "For Our Common Home" Campaign in Alberta. *Environmental Justice*. https://doi.org/10.1089/env.2022.0051

Kumari, R. (2024). A study on environmental awareness among the people of Kopahbari village under the Doomdoma Development block of Tinsukia District, Assam. *MSW Management*. https://doi.org/10.7492/jxs79879

Lambert, L. M. (2024). Ecological empathy: relational theory and practice. *Ecosystems and People*. https://doi.org/10.1080/26395916.2024.2396919

Lewis, J. (2025). Cultivating Empathy for Earth: Integrating Empathy into Ecological Religious Education. *Religious Education*. https://doi.org/10.1080/00344087.2024.2448389

Li, M., & Zhang, L. (2025). Rock Skin—A Process Toward Ecological Empathy. *Advances*

in 21st Century Human Settlements. https://doi.org/10.1007/978-981-96-0547-7_13

Lukacs, R., Szeberenyi, A., & Papp-Vary, A. (2023). Attitudes Towards Environmentally Conscious Lifestyle Among University Students In Budapest-In Light of Their Purchasing Decisions And Waste Management. *Engineering for Rural Development*. https://doi.org/10.22616/ERDev.2023.22.TF047

Makhtar, S. Z., A.S.N, A., Wahab, M. A., Hassan, Z., & Hamid, S. (2021). Study of environmental awareness, practices and behaviours among UniMAP students. *IOP Conference Series: Earth and Environmental Science*.

Maksum, A., Sopyan, A. R., Indiyanto, A., & Wahyuni, E. N. (2023). Ecotheology: environmental ethical view in water spring protection. *Ethics in Science and Environmental Politics*. https://doi.org/10.3354/ESEP00205

Pramita, Fenny, S. mail to P.,Taufik, M., Jumailah,Ikal, I.,& Subroto, G. (2023). The Significance of Environmental Awareness for Protecting Nature and Cherishing the Earth. *BIO Web of Conferences*. https://doi.org/https://doi.org/10.1051/bioconf/20237901001

Rabiej, S. J. (2021). Ecotheology in Dialogue with Natural and Social Sciences. In *Ekologia Interdyscyplinarnosci*.

Risamasu, M. (2025). From marginalisation to mission: Akit's indigenous ecological knowledge for transformissional ecotheology. *HTS Teologiese Studies / Theological Studies*. https://doi.org/10.4102/hts.v81i1.10076

Song, X., Yang, X., Wang, Q., Su, Y., & Hong, J. (2022). The relationship between teacher's gender and deep learning strategy: The mediating role of deep learning motivation. *Psychology in the Schools*, *59*(11), 2251–2266. https://doi.org/10.1002/pits.22694