International Conference on Social Science, Humanities, Education, and Society Development 2025
ISSN: 3031-7282
Website: https://ic.upstegal.ac.id/index.php/icons

THE ROLE OF EDUTOURISM IN FORMING STUDENTS' ENVIRONMENTAL LITERACY THROUGH EXPERIENTIAL LEARNING: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT *The ability of each person to comprehend and analyze environmental circumstances is known as environmental literacy. Based on the outcomes of this comprehension and interpretation, each person can choose the best course of action to preserve, repair, and enhance environmental conditions. This research attempts to ascertain the rise in environmental literacy of students in schools through experiential learning. This article has urgency because the lack of pupils' environmental literacy can hinder students' understanding of the problems that occur around them and decision making on these problems. The method used is a literature study of several articles related to the use of experiential learning on students' environmental literacy published in recent years. Article searches using Publish or perish and 20 articles were selected. The analysis's findings and discussion show that the average environmental literacy of students who participate in experiential learning has increased. The results of this study are expected to provide an important contribution in understanding ways to raise the environmental literacy of students by experiential learning and help solve problems in the environment.*

Keywords: *Environmental literacy, Experiential learning*

INTRODUCTION

Environmental damage that is currently occurring has become a major topic in global world issues. This can be seen from the increasing number of natural disasters or events such as floods, landslides, droughts, illegal logging and forest fires, most of which are actually caused by human activities. As technology develops, humans realize that the activities carried out have a significant impact on environmental change. In addition, not all human activities are accompanied by conservation plans for the sake of future life. This attitude has an impact on the worsening of environmental conditions. The insight possessed by a person will affect existing problems, including environmental problems. Solutions to these environmental problems must come from various disciplines, especially the most basic is the world of education. One indicator of environmental concern can be measured through the level of environmental literacy.

Understanding environmental issues is a prerequisite for, analyze, and respond critically to environmental issues. In this modern era, the significance of environmental literacy is increasingly highlighted because of the increasing global environmental crises, such as climate change, pollution, and environmental degradation. Education is one of the important instruments in efforts to build environmental awareness from an early age. In the context of formal education, schools play a central role in improving students' environmental literacy. However, the challenge faced by the current

education system is how the learning methods applied can facilitate students to be actively involved and directly connected to environmental issues around them. The goal of environmental literacy is to instill in people a fundamental attitude of love and protection for the environment (Mardiani, et al., 2021). Environmental literacy, which is part of environmental education, can be applied through an effective method, namely *experiential learning*, especially in Biology subjects.

One of the learning methods that can be applied to students' environmental literacy is *experiential learning* or experience-based learning. The *experiential learning theory* popularized by David Kolb emphasizes the importance of direct experience as an effective learning medium and through this learning, students do not only rely on theory in the classroom, but also learn through direct interaction with the natural and social environment. Thus, *experiential learning* is considered relevant in improving environmental literacy because it provides opportunities for students to understand environmental concepts contextually and practically. In addition

Experiential learning or experimental learning can involve active and directed processes that are contextualized in direct " *real word* " activities or simulated by students so that they possess the chance to plan and construct their own educational and career journeys. Other names for experiential learning include learning by doing, learning by action, learning through experience, and learning via exploration and discovery (Husin, 2013). *Experiential learning* provides students with the opportunity to experience concepts directly, providing students with a deeper and more significant comprehension.

According to the study's findings, students' environmental literacy is still inadequate for a number of reasons, including their desire to learn about and research environmental issues (Rokhmah & Fauziah, 2021). This leaves various problems that don't care about the environment. This low environmental literacy concerns the ability to identify, analyze problems, and make planning actions to practice solving environmental problems, so efforts need to be made to improve students' environmental literacy in schools through *experiential learning*.

METHOD

This writing employs a literature review study as its methodology. Literature review studies are a common technique for gathering information about a specific subject from a variety of sources, including books, journals, the internet, and other libraries. Data obtained from reviewing articles, journals or other sources related to the topic were then concluded. The initial stage carried out is topic selection. Finding and choosing articles on the given subject is the second step, and evaluating and synthesizing the material is the last. The criteria for scientific articles used as data are in the form of scientific articles sourced from journals, proceedings or other sources with an update of the last 10 years, namely from 2013-2023. The scientific article data used is 20 articles. After determining the inclusion and exclusion criteria, the next step is selecting the articles to be reviewed. get latest update. Here process chart election article.

RESULTS AND DISCUSSION

Based on the results of data acquisition on the role of edutourism in shaping students' environmental literacy through *experiential learning* from 2013 to 2023, an analysis was then carried out with the aim of considering several factors, especially those relevant to the topic, analysis of the title and abstract of the study. The following is the search data using the *Publish or Perish application,* article data with the most citations and relevant to the title from 2013-2023

Table 1. Reviewed articles

No.	Writer	Year	Method	Results
1	McBride, et all.	2013	Reference Study	Perceptions about environmental literacy, ecological literacy and ecoliteracy were found.
2	Husin, A.	20 14	PTK	*experiential learning* method in environmental learning for elementary school students shows that this method is very suitable for use.
3	Ramdas & Mohamed	2014	Quantitative	There is a relationship between environmental literacy and willingness to pay for environmental attributes.
4	Nasution, R	20 16	Description	There are differences between the 2 schools where the research was conducted.
5	Prasetyo, P.	2017	Qualitative	Learning carried out by teachers does not support the optimization of environmental literacy
6	Nurwaqidah & Ramli	2019	Qualitative	Environmental literacy is influenced by the degree of Adiwiyata and gender, but not by age.
7	Hayati, RS	202 3	Reference study	An efficient way to develop environmental literacy is through experiential learning-based environmental education.
8	Husamah, H., Miharja, FJ, & Hidayati, D. A	2020	Qualitative	Environmental literacy varies and tends to increase in quality according to grade level.
9	Nurwidodo, et all.	2020	Qualitative	The Adiwiyata program's implementation has a major impact on students' environmental literacy outcomes.
10	Aini, et all	2021	Qualitative	Students' environmental literacy increases as they learn about local environmental education topics.
11	Mardiani, et all	2021	Quantitative	Male and female pupils' environmental literacy skills are unaffected by their parents' work.

12	English: The Study of the Effects...	2021	Reference study	Students need to be exposed to the natural world, and their level of environmental literacy is deemed adequate.
1 3	Rokhmah, Z., & Fauziah, ANM	20 21	Quantitative	Students in junior high schools that use an environmental insight curriculum are classified as having rather good, less good, and good environmental literacy skills.
14	Bidarinjani, M., Rahardjanto, A., & Setyawan, D.	202 3	Quantitative	The environmental community of Dasan Sari, Mataram City, West Lombok, and the indigenous people of Bayan Village, North Lombok, have different levels of environmental literacy.
15	Hayati, RS, Jariah, A., Imam, YK, Yoluut, MA, & Kusmawan, I.	202 3	Qualitative	There is an increase in environmental literacy in the knowledge aspect
16	Groves, et all	2013	Case study	Carefully developed study skills can foster experiential learning.
17	Baldwin, et all	2014	Literature	Integrating experiential learning into the planning curriculum helps students develop practical skills and a deep understanding of real challenges in the field.
18	Rosier, et all	2016	PTK	integrating EL activities and concepts into the planning curriculum to offer a methodical schedule of interaction between theory and practice.
19	Karmana, .WE	2023	Literature review study	Efforts used to optimize and improve environmental literacy in schools include curriculum structuring, conducting active learning, using problem-solving based learning models, Adiwiyata programs, and using interesting learning media.
20	Utami, k., Surtikanti, RRHK, & Amprasto	2023	Descriptive research	Environmental literacy of class XI IPA students of SMA Negeri 10 Palembang is still in the fairly good category.

The analysis of the title and abstract of the study in this article began with 752 articles obtained using *Publish or Perish software* , then filtered articles relevant to the topic with up to 122 articles, after which the author used the VOSviewer software to see the database. Three components make up the mapping visualization examined in this study: 1) Network visualization, 2) Density visualization, and 3) Overlay visualization.

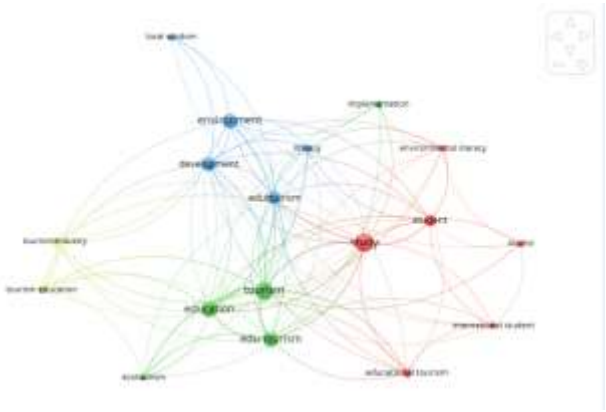

Figure 1. Visualization results metadata articles indexed by Google Scholar

1. In group 1 which is marked in red, there are 5 terms, namely student, environmental literacy, study, tourist, educational tourism, international students.
2. In group 2, which is marked in green, there are 5 terms, namely tourism, education, edutourism, ecotourism, implementation.
3. In group 3, which is marked in blue, there are 5 terms, namely local wisdom, environment, development, literacy, edutourism.
4. In group 4 which is marked in yellow there are 2 terms tourism industry, tourism education

Each existing cluster displays the link between terms and other terms. A colored circle is used to indicate each phrase. The size of the circle for each term indicates how frequently it appears. The label circle's size shows a positive relationship with the term's appearance in the abstract or title. The circle size increases with the frequency of the term.

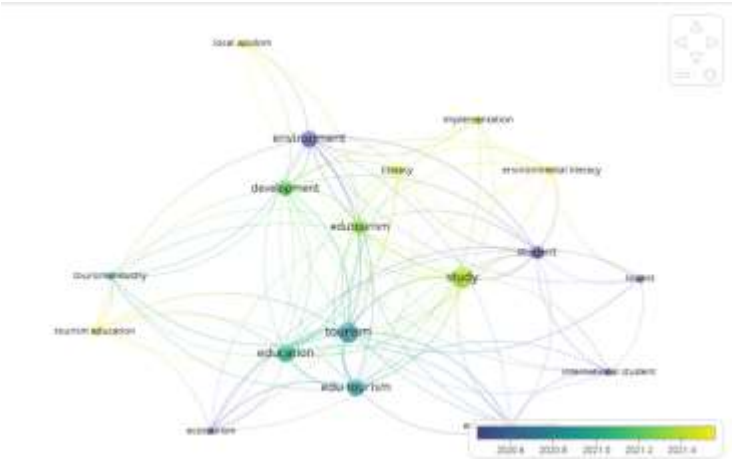

Figure 2. Overlay visualization results

The range of publication years is indicated by the color difference of each year in the overlay visualization shown in Figure 3. The oldest year of publishing is shown by the purple network, while the most recent year of publication is indicated by the yellow network. The most recent terms to emerge are local wisdom, environmental literacy, tourists, international students, and tourism

education. Since research on biology education through edutourism is still in its infancy, it is imperative that more be done on this topic, according to the overlay data mapping results.

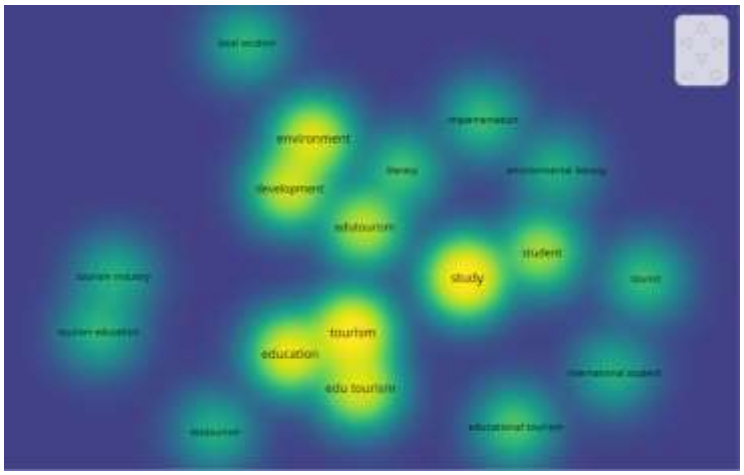

Figure 3. Density visualization results

According to the Density Visualization results in the above image, the more frequently a phrase appears, the brighter the yellow color and the larger the diameter of the term label. On the other hand, if the yellow color fades, it indicates that there aren't many individuals studying the topic; if the density is low, it may present a chance for fresh research. According to the Density Visualization results above, there are a lot of studies that are extensively researched in relation to the phrases study and tourist.

DISCUSSION

Environmental literacy as a conscious attitude used to pay attention to and maintain the environment so that it is always maintained, sustainable and balanced. The desired conscious attitude is an attitude that is sensitive to the environment and aware of the problems that occur (Nasution, 2016). Students in schools are expected to have good environmental literacy so that they can contribute to maintaining the surrounding environment. A person who has environmental literacy tries to understand the cause and effect relationship in human interaction with nature, so that they are able to make decisions for the future regarding the environment (McBride et al., 2013). A person's level of environmental literacy can form an ideal living environment. Increasing environmental literacy in a person can provide an opportunity for society to protect and repair the earth from damage (Bidarinjani et al., 2023).

opinion was expressed by Nurwidodo (2020), environmental literacy focuses on the ability to handle, minimize and resolve environmental problems. A person with a good level of environmental literacy will always be willing to act to improve the welfare of others, a community and the environment at large and participate as part of a life that is lived. Puspitasari (2020), stated that a student's environmental literacy skills in school can be built or formed strongly if a teacher and school provide support as the spearhead of education. The lack of student literacy skills is caused by several

things, including students being accustomed to getting material that tends to be theoretical and less applicable. In addition, it is also caused by the lack of teacher ability in arousing student creativity and creating products that are related to everyday life.

The findings of the study by Utami et al. (2023) indicate that there is still room for improvement in students' environmental literacy, particularly with regard to knowledge and cognitive skills indicators. Teachers that are creative in their selection of instructional tactics can enhance their students' environmental literacy, particularly when it comes to biology instruction. Among these include cooperative learning, scientific methods, problem-based learning exercises, and the use of media and instructional resources that enable students to engage directly with environmental issues that arise in their immediate surroundings. In addition, teachers can also encourage students to actively read. Environmental literacy must be taught from an early age, especially to students as part of society, as well as a changing and successor generation (Susilawati, et al., 2019).

In environmental literacy learning, teachers can include environmental issues by using teaching practices that increase students' love for the environment and attitudes towards its preservation. In addition, teachers can encourage actions that protect the environment and bring about greater changes in social and natural aspects through a holistic approach. A holistic approach emphasizes the intellectual, emotional, physical, and spiritual growth of individuals. A holistic approach teaches environmental literacy, actions in teaching environmental literacy and students' backgrounds in learning and underlines the interrelated nature of environmental education. Teachers' experiences in teaching environmental literacy can be seen in Figure 4.

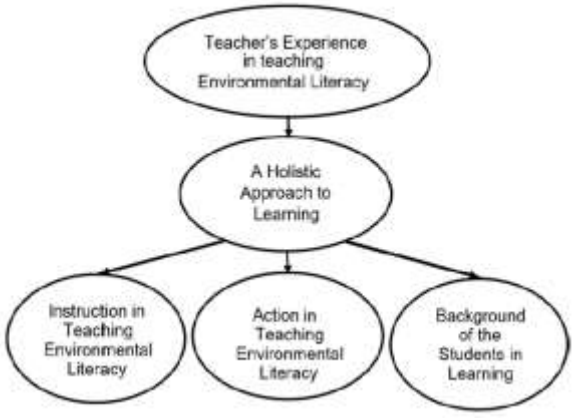

Figure 4. Teacher Experience in Environmental Literacy Learning
(Source: Quezada, et al., 2024)

The image is a diagram showing a holistic approach in teaching environmental literacy which includes teacher experience in teaching environmental literacy, a holistic approach in learning , instruction in teaching environmental literacy, action in teaching environmental literacy , and student background in learning . Overall, this diagram shows that teacher experience and a holistic approach are very important in developing students' environmental literacy , by considering students' instructions, actions, and backgrounds, teachers can create more comprehensive and in-depth learning.

Based on research by Hayati, et al., (2023), the measurement of learning outcomes from environmental education in the form of environmental literacy focuses on indicators of environmental issue analysis skills, namely identifying the causes of environmental problems, explaining the causes of environmental problems, predicting the effects of environmental problems, and identifying alternative solutions that can solve environmental problems. A deliberate attempt to create a system of lifelong learning that promotes engagement in educational activities and immerses people in real-world situations is environmental education combined with experiential learning. The following are the goals of incorporating experiential learning into environmental education:

a. Integrating environmental thinking into students' daily lives, instilling environmental values
b. Encourage students to acquire new ways of thinking
c. Developing teacher and student collaboration
d. Improving students' problem solving skills
e. Improve social skills
f. Improving scientific literacy and environmental literacy
g. Enables skills development
h. Better understand the natural world and environmental issues

In general, environmental education in the form of environmental literacy based on *experiential learning* is acceptable, this method is considered more appropriate, more effective and more beneficial for students. In addition, it is able to develop students' ability to reflect before, during and after learning (Hayati, 2020). This is in accordance with the research of Aini, et al (2020), which states that learning in environmental education has a positive impact on improving students' environmental literacy. Learning should be emphasized on knowledge of ecological systems, and the cause and effect of the relationship between the impact of human activities on the environment. So that it is expected to have an impact on students' environmental literacy levels. Mifidah & Asyhari's research in 2023 concluded that environmental literacy as part of literacy skills is very important because it affects students' learning success and daily lives. The results of this study show the same thing as Utami's research (2023), that there is still room for improvement, especially in knowledge and cognitive skills. Teachers can improve environmental literacy by implementing innovative strategies, especially in Biology subjects.

The conclusion of Shutaleva's research (2023) also explains that environmental education has been an important component of formal education for many years with a focus on developing students' knowledge and understanding of environmental issues. In addition, it is also explained that *experiential learning* is a learning process through direct experience, reflection and application. In environmental education, experiential learning provides opportunities for students to engage with nature, develop relationships with nature and apply knowledge and skills to address environmental problems.

Ramdas & Mohamed (2014), stated that a major evolution has occurred along with changes in

environmental impact conditions that are components of environmental literacy assessment. This change requires not only environmental literacy knowledge but also attitudes, motivation, awareness and concern that will lead the way towards a more environmentally friendly responsible behavior. The environmental literacy value category can be determined based on the categorization norms proposed by Azwar (2012) which consists of a high category obtained by adding the mean value with the standard deviation value, a low category obtained by subtracting the mean value with the standard deviation value, while the medium category can be obtained from the interval between the results of the high category and the low category. In the study by Pangestu, et al (2023), it was shown that the average score of the level of knowledge possessed by students was included in the high category so that it was expected to influence students' environmental attitudes which would be manifested in their behavior towards the surrounding environment. Based on Table 1 above, the most cited research from McBride, BB, Brewer, CA, Berkowitz, AR, & Borrie, WT, which discusses the terms environmental literacy, ecological literacy and ecoliteracy. In addition, it also discusses the definition and description of important components of environmental literacy, ecological literacy and ecoliteracy. The aim is to advance a complete framework, guide pedagogy and can be applied widely and allow for the establishment of standards and assessment of educational achievement.

Furthermore, the second most cited are Ramdas, M., & Mohamed, B. with the aim of the study being to conceptually and theoretically examine the relationship between the impact of tourism on the environmental attributes of small islands and environmental literacy with willingness to pay . The concept of environmental literacy which not only includes knowledge about the environment and its issues but also includes components of disposition, attitude, sensitivity and motivation is discussed thoroughly. The same is true for the research of Nurwidodo, et al., (2020) which aims to see the role of the Eco-school (Adiwiyata) program on the environmental literacy of high school students. In general, all data analysis concluded that the implementation of the Adiwiyata program was able to have a positive impact on the level of environmental literacy of students. Similar to the results of the study by Nurwaqidah, et al (2018) which concluded that environmental literacy was influenced by the degree of Adiwiyata and gender. However, it is not influenced by age, there is no interaction between environmental literacy between schools and graduation levels, and school levels and gender.

CONCLUSION

Based on *reviews* of various articles, journals and other sources, edutourism has a role in shaping students' environmental literacy through *experiential learning*

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