

Comparative Analysis of Attitudes and Knowledge Using Environmental-Based Learning Methods on Natural Resource Management Material at SMAN 1 Bangkalan

R.Aj. Hafidah¹ (Universitas Negeri Surabaya, Indonesia)
Umsiyah² (Universitas Negeri Surabaya, Indonesia)
Inung Sektiyawan³ (Universitas Negeri Surabaya, Indonesia)
Baiti Nur Saidah⁴ (Universitas Negeri Surabaya, Indonesia)

Received: 06-01-2024

e-ISSN : 2987-9140

Accepted: 29-09-2025

Volume : 3 No. 2, (2025)

Published: 01-10-2025

Page : 83-91

DOI: <https://doi.org/10.26740/ijgsme.v3n2.p83-91>

Abstract

This study aims to determine whether there is a difference between attitude values and knowledge values using the Environmental Based Learning method on the material of natural resource management for class XI Kurmer and to determine the reliability of the assessment instrument. The method used in this study is a comparative method using t-test statistics with parameters of attitude and knowledge values from the test. The trial subjects of the study were 200 class XI students at SMA Negeri 1 Bangkalan. The t-test statistical analysis technique was used to compare the attitude and knowledge values obtained through the application of Environmental Based Learning compared to schools that did not receive treatment. While reliability was analyzed using a qualitative descriptive method. The results of this study are that there is a significant difference between attitude values and knowledge values using the Environmental Based Learning method on the material of Natural Resource Management for class XI and the instrument is declared unreliable in assessing student competencies so that it cannot be applied to help teachers assess the achievement of students' attitude and knowledge competencies based on the Independent Curriculum.

Keywords: Attitude, Knowledge, Learning

1. INTRODUCTION

Background

In the era of globalization, understanding natural resource management is increasingly crucial. The world is currently facing increasingly complex environmental challenges, such as climate change, ecosystem degradation, and over-exploitation (Purwanto, 2018). These problems require all parties to raise awareness of the importance of sustainable resource management. Indonesia, as a country rich in natural resources, is also faced with various problems in its management (Kosch et al., 2013). Abundant natural wealth is often not accompanied by wise governance. Environmental protection and management are systematic and integrated efforts made to preserve environmental functions and prevent environmental pollution and/or damage which include planning, utilization, control, maintenance, supervision, and law enforcement (Pardede et al., 2023). The challenges that arise include excessive exploitation of resources, ecosystem damage, and lack of attention to sustainability aspects (Agustin, 2023).

Addressing these problems requires a deep understanding from all levels of society, including the younger generation. Therefore, environmental education is very important. Natural resource management is not only related to protecting the environment, but also forming

awareness and positive attitudes of students as the next generation of the nation (Supriatna et al., 2023). According to Awewomom et al. (2024), concerning environmental management, article 6, everyone is obliged to maintain the sustainability of environmental functions and prevent and overcome environmental pollution and destruction.

One educational approach that is considered effective in improving students' understanding of environmental issues is Environmental Based Learning (Genc, 2015). This method invites students to be directly involved with environmental problems around them, making it easier for them to understand the concepts taught. Environmental Based Learning emphasizes the importance of connecting theory with practice in the field. With this method, students not only learn theory in class, but also understand how the theory is applied in real life (Lufri et al., 2020). This makes learning more relevant and meaningful for students. At SMAN 1 Bangkalan, this is implemented as an effort to improve students' understanding of natural resource management. The implementation of this method is expected to strengthen students' knowledge while forming their positive attitudes towards the environment. Students at SMAN 1 Bangkalan are invited to observe, analyze, and participate in activities related to the environment around them. Environmental Based Learning uses a contextual approach that links lessons to real situations in the students' environment. Thus, students are more easily aware of the problems in their environment and understand the importance of managing natural resources wisely. The positive impact of implementing environmental based learning is that students can be stimulated to be curious about something in the environment (Mariza Fitriati, 2019)

Students are expected to develop a responsible attitude towards the environment through this method. They are encouraged to think critically and find solutions to environmental problems, such as pollution or inefficient use of resources. This attitude will help students play an active role in maintaining the sustainability of natural resources. With good understanding and attitude, students have the potential to contribute to creating a more sustainable future. Education through Environmental-Based Learning not only provides knowledge, but also fosters awareness that every small action they take can have an impact on the environment. The implementation of Environmental-Based Learning in schools such as SMAN 1 Bangkalan is expected to be one of the solutions in facing environmental challenges in Indonesia. With knowledge, awareness, and positive attitudes formed from an early age, the younger generation will be better prepared to face and overcome environmental problems in the future and support sustainable management of natural resources.

This study focuses on the importance of environmental-based education in natural resource management, a crucial aspect for sustainability and environmental preservation. In Indonesia, understanding natural resource management is often limited, especially among the younger generation. Therefore, educational approaches that integrate environmental issues into the school curriculum are expected to enhance students' awareness and knowledge about the importance of sustainable natural resource management. SMAN 1 Bangkalan, as an educational institution committed to the development of student character and knowledge, plays a significant role in introducing natural resource management topics through environmental-based learning methods. This research aims to examine the extent to which these learning methods impact students' attitudes and knowledge toward natural resource

management and their contribution to environmental awareness at the secondary education level.

Formulation of The Problem

Based on the background above, the problem formulation in this study is as follows:

1. Is there a significant difference between the attitude values of students taught using environmental-based learning methods and students taught using conventional methods on natural resource management material?
2. Is there a significant difference between the knowledge scores of students taught using environmental-based learning methods and students taught using conventional methods on natural resource management material?
3. Is there a significant relationship between the attitude values and knowledge values of students taught using environmental-based learning methods on natural resource management material?

Objective

The objectives of this study are:

1. To find out whether there is a significant difference between the attitude values of students taught using environmental-based learning methods and students taught using conventional methods on the material of natural resource management?
2. To find out whether there is a significant difference between the knowledge scores of students taught using environmental-based learning methods and students taught using conventional methods on the material of natural resource management?
3. To find out whether there is a significant relationship between the attitude values and knowledge values of students taught using environmental-based learning methods on natural resource management material?.

2. METHOD

This research is a comparative research type, namely to determine the differences between two or more variables. (Arikunto, 2010). The variables compared are between attitude values and knowledge obtained through the application of Environmental Based Learning with conventional methods. This research uses a quantitative approach and is analyzed using t-test statistics. The targets of this research are attitude values and knowledge values. Quantitative Research is a type of research that uses numerical data to answer research questions. This numerical data is collected through various methods such as surveys, experiments, or secondary data analysis, then analyzed using statistical methods. (Sugiyono, 2014).

Attitude and knowledge values were obtained by conducting a trial on Environmental Based Learning. The students who were the targets of the trial were grade XI students at SMA Negeri 1 Bangkalan who were divided into treatment and non-treatment classes. The selection of this school was based on the implementation of the Merdeka Curriculum which had been implemented at SMAN 1 Bangkalan. The design in this study used The One-Group Pretest-Posttest Design by (Fraenkel, 2008) which was then modified by the researcher so that according to this research.

The research design is described as follows: The research design of The One-Group Pretest - Posttest Design is one group that is measured twice before and after treatment, but in this study there is a treatment before the initial measurement is carried out. The treatment is actually a treatment by the teacher, not a treatment by the researcher. The teacher carries out the treatment symbolized by X_1 using various assessment techniques (written tests, observations, journals, self-assessments, peer assessments, etc.) in order to obtain attitude and knowledge scores. Symbol O_1 is the attitude and knowledge scores of students obtained from the assessment by the teacher. Then students will be given treatment by the researcher symbolized by X_2 by being given an assessment instrument (Environment-Based Learning) in order to obtain attitude and knowledge scores derived from the application of the assessment instrument. So that symbol O_2 is the attitude and knowledge scores of students resulting from the application of the assessment instrument. Then the results of the attitude and knowledge scores of students obtained from the teacher (O_1) will be compared with the results of the attitude and knowledge scores of students from the application of the assessment instrument (O_2).

Data collection was carried out using test techniques and documentation techniques. Test techniques were carried out to obtain student attitude and knowledge scores using testinstruments which hasdeveloped. Documentation techniques are carried out to obtain attitude and knowledge values from teachers. Analysis techniques used to test the hypothesis that there is a significant difference between attitude values and knowledge values using. Environmental Based Learning on natural resource management material. Analysisdata using t-test statistics in order to determine whether there are differences in the values of attitudes and knowledge from teachers compared to the test. The hypothesis of this study is:

- H_0 :There is no significant difference between attitude and knowledge values using the Environmental-Based Learning Method and conventional learning methods on natural resource management material for class XI Independent Curriculum
- H_a :There is a significant difference between the attitude and knowledge values using the Environmental Based Learning Method and conventional learning methods on the material on natural resource management for class XI Independent Curriculum.

Then to carry out a comparative test, a technique is used t-testpaired sample. The paired sample t-test is used because the data is in the form of pairs of values and the type of data is interval or ratio. The t-test is carried out using SPSS 15.0 with a confidence level of 95% or an error level of $\alpha = 5\%$, with the test criteria that (1) if the calculated t result $\leq$ t table, then accept H_0 and reject H_a , (2) if the calculated t result $>$ t table, then accept H_a and reject H_0 .

The second data analysis usesqualitative descriptive (Sugiyono, 2014), namely by describing the results of the conclusion of the t-test between the attitude and knowledge values of the teacher and from the test. If the results of the attitude and knowledge values of the test are consistent with the results of the attitude and knowledge values of the teacher, then the instrument can be considered reliable. from the test is consistent with the results of the attitude and knowledge values of the teacher, then the instrument can be considered reliable.

3. RESULTS AND DISCUSSION

Based on the research that has been conducted on comparative analysis of attitude values and knowledge values using documentation and test data collection techniques, data were obtained

in the form of values and knowledge and comparative analysis results. Attitude and knowledge values were documented from Geography teachers in both schools with the following examples.

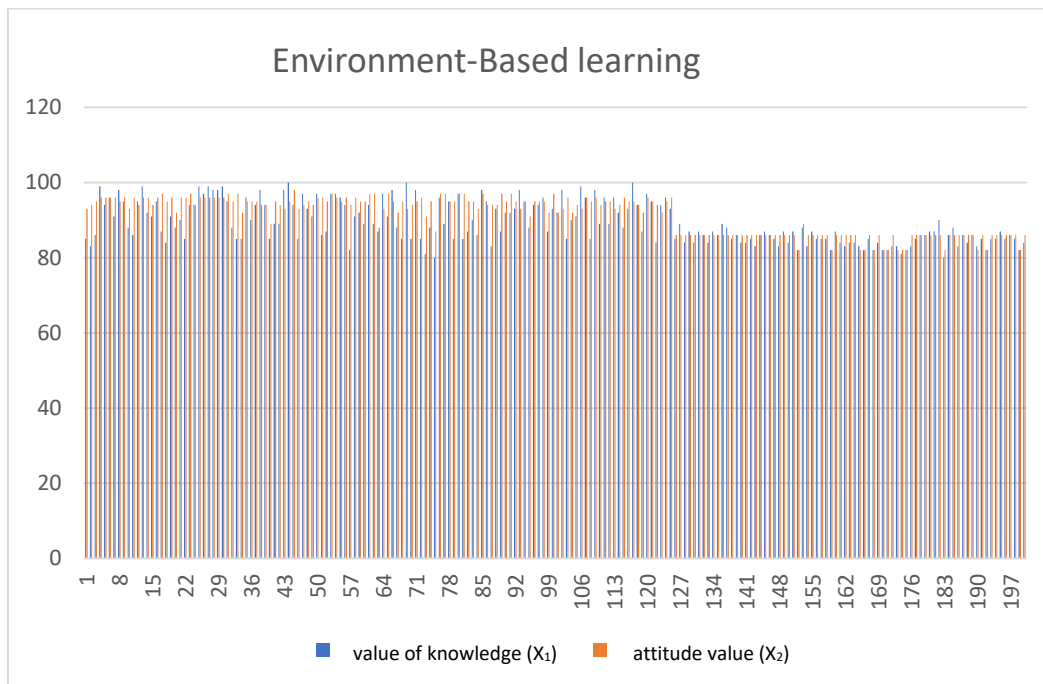


Figure 1. Attitude and Knowledge Values of teachers for the experimental class

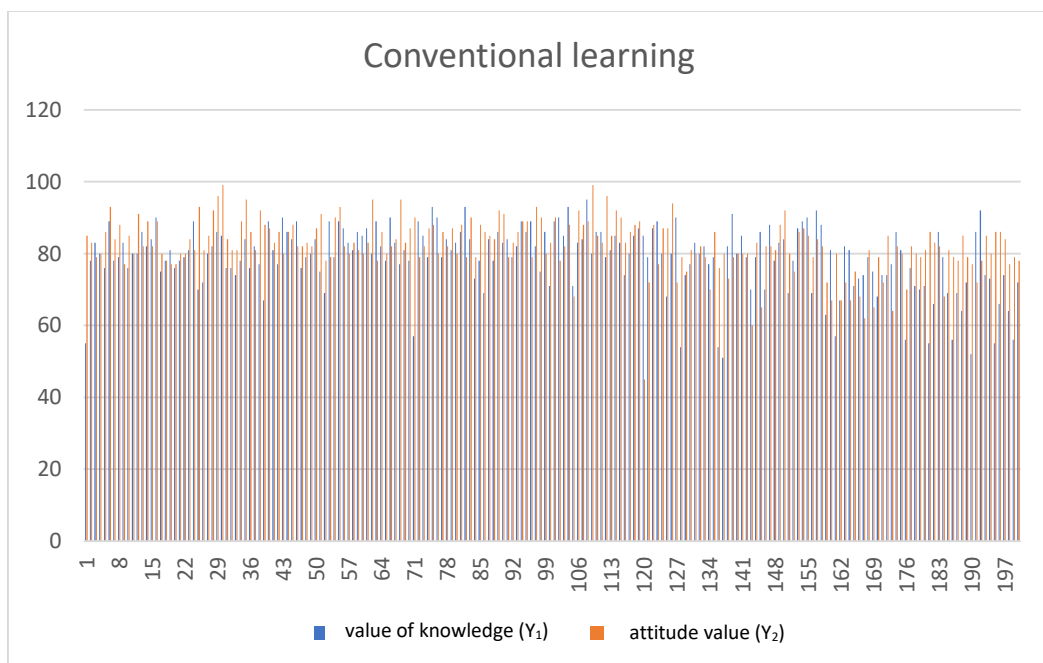


Figure 2. Attitude and Knowledge Values of teachers for conventional classes

From Figures 1 and 2 it can be concluded that the value of attitudes and knowledge in classes that use the Environmental-Based Learning method, the value of knowledge and attitudes is higher than in conventional classes or those that do not receive treatment. This research was conducted at a State Senior High School in Bangkalan Regency, namely State Senior High School 1 Bangkalan in class XI. The location of this research is located at Jalan Pemuda Kaffa

No.10, Kraton, Bangkalan District, Bangkalan Regency, East Java Province. With coordinates
Latitude: -7.030300000000. Longitude: 112.758400000000.

After the documentation results from the teacher and the test application values are obtained,
they are then tested using the t-test with the following results.

Table 1. T-Test Result

Comparison variables	Calculation results		Conclusion
	To	Table	
Attitude Values of Environmental and Conventional Based Learning	16,073	0.675	to>ttable Accept Ha and Reject Ho
Knowledge Value of Environmental and Conventional Based Learning	15,948	0.675	to>ttable Accept Ha and Reject Ho

Based on table 1, shows the comparison between the treatment attitude value and from conventional learning, the to value or t count is 16,073, while the t table value is 0.675, so the to value> t table. Because the to value> t table, then accept Ha and reject Ho so that the conclusion obtained is that there is a significant difference between the attitude value of the teacher and from the test. The comparison between the knowledge of the teacher and the knowledge of the application of the instrument obtained a to value or t count of 15,948, while the t table value is 0.675, so the to value> t table. Because the to value> t table, then accept Ha and reject Ho so that the conclusion obtained is that there is a significant difference between the knowledge value of the teacher and from the test. Then from these results the researcher compared the conclusions of the t-test results of the attitude value of Environmental-based Learning and from conventional learning methods with the results of the knowledge value of the class.

From a total of 200 students who were the research sample, the results were obtained in the form of the same conclusion, namely that there was a significant difference. Thus, the generalization of the conclusion of the comparative analysis of the attitude and knowledge values of teachers with the application of Environmental Based Learning showed the same results. That is, there is a difference significant between attitude values and knowledge values. So based on the two same conclusions, the generalization of the conclusion is "There is a significant difference between attitude values and knowledge values. The research instrument was created at the time and designed by considering the current developmental stage and level of achievement of students, according to learning needs, and reflecting the characteristics and development of diverse students so that learning becomes meaningful and enjoyable.

Based on the results of the analysis are knownThe average value of Environmental-based Learning and conventional learning shows a difference that the attitude value of the treatment class has a higher average than the attitude value of the test, and the knowledge value of no treatment has a higher average than the test. The difference in the average causes a significant difference between the attitude value of the teacher and the test, as well as knowledge. The high average value of the teacher is not in line with the average value of the test. The low average achievement of attitude values from the test is likely due to students not being accustomed to using self-assessment.

The implementation of environmental-based learning methods significantly influences students' attitudes toward environmental sustainability and natural resource management. When students are actively engaged in environmental issues through hands-on experiences and discussions, they are more likely to develop a deeper understanding and a sense of responsibility toward protecting natural resources (Brahma, 2025; Amiri, 2025). Studies show that learning methods that emphasize real-world applications—such as field studies, project-based learning, and interactive media—tend to make the content more relatable and meaningful (Boss & Krauss, 2018). At SMAN 1 Bangkalan, incorporating local environmental issues into the curriculum can foster an emotional connection to the material, thereby shaping positive attitudes toward natural resource conservation. Students become more aware of the immediate impact of their actions on the environment and may even adopt more eco-friendly habits, which could extend beyond the classroom into their daily lives.

Environmental-based learning methods provide a dynamic approach to understanding the complexities of natural resource management (Nawawi, 2025). These methods integrate knowledge from various disciplines, including biology, geography, and social sciences, to give students a comprehensive understanding of environmental issues (Ardiansyah, 2024). In the case of SMAN 1 Bangkalan, students exposed to environmental-based lessons are likely to have a better grasp of sustainable practices in managing natural resources, such as water conservation, waste management, and biodiversity protection. These topics are not only taught through theory but are contextualized with real-world examples, making it easier for students to connect classroom learning with local environmental challenges. The comparative analysis of students' knowledge before and after participating in environmental-based learning shows an evident improvement in their understanding of the interconnectedness of ecosystems and the importance of sustainable resource use.

4. CONCLUSION

Based on the research results, the following conclusions were drawn there is a significant difference between attitude values and knowledge values using environmental-based learning methods and conventional learning. The suggestions that researchers can provide after conducting this research are: (1) further research is needed so that Environmental-based learning methods can be implemented in all materials; (2) it is necessary to condition students who are the test subjects to be able to work on the instruments seriously and appropriately at the right time after receiving the material on natural resource management, to be able to describe the students' true competencies so that the test results are valid.

REFERENCES

- Agustin, dr. Sienny. 2023. "12 Impacts of Air Pollution on Health." Alodokter. Accessed April 29, 2024. <https://www.alodokter.com/12-dampak-polusi-air-bagi-kesehatan>
- Alfarizi, M.F. (2024). Students' Perceptions of Geospatial Technology Applications. *UNNES Journal: Edu Geography*, 12 (1), 121- 136. DOI: <https://10.15294/edugeo.v11i2.69710>
- Amiri, S. M. H. (2025). Project-Based Learning Pedagogy: Bridging Theory and Practice for Real-World Impact. *International Journal of Research and Innovation in Social Science*. IX(IIIS), 3810-3831. <https://10.47772/IJRISS.2025.903SEDU0274>

- Anindita, Nimas. (2020). Utilization of the Nature-Based Environment as a Learning Resource for Class V at SD 1 Tlirenggo Bantul. *UNY Journal: Journal of Epistema*, 1 (1), 13-22. <https://10.21831/ep.v1i1.32055>
- Ardiansyah, A. I., Putra, A. K., & Nikitina, N. (2024). Investigating problem-based learning model's impact on student's critical thinking skills in environmental conservation context. *Jambura Geo Education Journal*, 5(2), 87-103. <https://doi.org/10.37905/jgej.v5i2.26110>
- Arikunto, s. (2010). Procedure Research: An Approach Practice. Jakarta: *Rineka Cipta*.
- Awewomom, J., Dzeble, F., Takyi, Y. D., Ashie, W. B., Ettey, E. N. Y. O., Afua, P. E., ... & Akoto, O. (2024). Addressing global environmental pollution using environmental control techniques: a focus on environmental policy and preventive environmental management. *Discover Environment*, 2(1), 8. <https://doi.org/10.1007/s44274-024-00033-5>
- Boss, S., & Krauss, J. (2018). Reinventing project based learning: Your field guide to real-world projects in the digital age. ASCD. Washington: *ISTE (International Society for technology in education)*,
- Brahma, R. (2025). Innovations in teaching and learning for environmental education. *Journal of the American Institute*, 2(2), 210-224.
- Cholvistaria, Mia. (2012). Application of an Environment-Based Learning Model in Efforts to Improve the Science Process Skills of Metro High School Students. *BIOEDUKASI (Jurnal Pendidikan Biologi)*.3(1). <https://10.24127/bioedukasi.v3i1.209>
- Damanhuri, Ahmad. (2019). School Environmental Management as a Participatory Based Natural Laboratory. *Journal of Education: Research and Conceptual*, 3 (2), 137-142. DOI: https://doi.org/10.28926/riset_kontual.v2i4.119
- Dewi, Novella E & Pargito. (2017). The Relationship between Understanding Geography Learning and Environmental Care Attitudes in Class XI IPS Students. *Digilib Unila*
- Fraenkel, J.R. (2008). How To Design and Evaluate Research In Education. New York: *Mc-Graw Hill Companies, Inc.*
- Genc, M. (2015). The project-based learning approach in environmental education. *International research in geographical and environmental education*, 24(2), 105-117. <https://doi.org/10.1080/10382046.2014.993169>
- Koch, S., Barkmann, J., Strack, M., Sundawati, L., & Bögeholz, S. (2013). Knowledge of Indonesian university students on the sustainable management of natural resources. *Sustainability*, 5(4), 1443-1460. <https://doi.org/10.3390/su5041443>
- Lufri, et al. (2020). Learning Methodology: Strategies, Approaches, Models, Learning Methods. Purwokerto: *CV IRDH Publisher*.
- Mariza Fitriati, RS (2019). The Effect Of Environment-Based Learning. *Khatulistiwa Journal of Education and Learning*. 8 (1), 1- 8. <https://doi.org/10.26418/jppk.v8i1.30614>
- Nawawi, M. (2025). Local Wisdom-Based Science and Environmental Education Management: Perspectives from the Bunggu Indigenous Community. *Jurnal Penelitian Pendidikan IPA*, 11(5), 408-418. <https://10.29303/jppipa.v11i5.11167>
- Noviantoro, KM & Kurnianto, FA. (2023). Analysis of Students' Social Attitudes in Geography Learning at SMA Zaha 1 Genggong. *UNEJ Journal*, 6(2). DOI: <https://doi.org/10.19184/pgeo.v6i2.44876> .

- Pardede, M., Situmorang, M., Aristeus, S., Rumadan, I., Lumban Toruan, H. D., Diogenes, ... & Nugrahani, E. L. P. (2023). Perspectives of sustainable development vs. law enforcement on damage, pollution and environmental conservation management in Indonesia. *Journal of Water and Climate Change*, 14(10), 3770-3790. <https://doi.org/10.2166/wcc.2023.417>
- Purwanto, H. (2018). Indonesian Maritime Tourism: Opportunities and Challenges. *Gava Media Publisher*.
- Suarsini, NWD. (2020). Development of Geography Learning Media Based on Instagram Social Media to Increase Motivation and Learning Outcomes. *Post Ejournal. Indonesian Journal of Social Sciences Education*, 4 (2), 72-81. DOI: <https://10.23887/pips.v4i2.3386>
- Subrata, IM. (2023). Environmentally Based Biology Learning in an Effort to Improve Science Process Skills and Preserve the Local Artifact of the Balinese Community. *SEMBIO: Proceedings of the National Seminar on Biology and Biology Education*, 2, 41-48.
- Sugiyono. (2014). Research Methods Quantitative, Qualitative. *Bandung: Alfabet*.
- Sulistiawati and Lestari, Sulistia. (2024). Technological Innovation in Natural Resource Management to Improve Environmental Quality. *JIC Nusantara*, 4 (2), 72-81. DOI: <https://10.23887/pips.v4i2.3386>
- Supriatna, E., Qadri, M. Z., Haviana, E., Dani, A., & Alisyahbana, A. N. Q. A. (2024). The Role of 5G Technology in Driving Digital Economic Growth and Industrial Transformation. *J-CEKI: Journal of Scholarly Scholars*, 3(4), 2120-2128. <https://doi.org/10.56799/jceki.v3i4.4103> .
- Susilawati, SA. (2024). Outdoor Study Learning in Geography Subjects: Systematic Review. *Citeus: Journal of Geography Education*, 27 (1), 51-62. DOI: <https://10.17977/um017v27i12022p51-62>