Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

Environmental Literacy Levels and Environmental Pollution among Senior High School Students

Hazel Ann C. Mahinay[1], Mary Shenny A. Marapao[2], Jos hua B. Jempero[3], Jovany Gleen L. Allawan[4*]

[1,2,3]Student, Department of Business Administration Education, UM Panabo College, Panabo City, Philippines.
[4]Faculty, Department of Teachers Education, UM Panabo College, Panabo City, Philippines.*

Corresponding Email: [4]jovanygleenallawan@gmail.com*

Received: 06 July 2023 **Accepted:** 22 September 2023 **Published:** 06 November 2023

Abstract: ***Environmental literacy plays a crucial role in shaping the attitudes, knowledge, and behaviors of individuals towards environmental issues, including pollution. This study aims to assess the environmental literacy levels among students of UMPC Senior High School (SHS) and examine its relationship with their awareness and understanding of environmental pollution. The research employs a quantitative approach, utilizing a survey questionnaire administered to a representative sample of UMPC SHS students. The questionnaire assesses various dimensions of environmental literacy, including knowledge of ecological concepts, understanding of environmental challenges, and the willingness to take environmentally responsible actions. Additionally, it explores students' perception of environmental pollution, its causes, and potential mitigation strategies. This study highlights the importance of enhancing environmental literacy levels among UMPC SHS students to promote sustainable practices and address environmental challenges, particularly pollution. The findings can guide educational institutions in designing effective environmental education programs that foster knowledge, attitudes, and behaviors conducive to environmental stewardship. Additionally, the results can inform policymakers and curriculum developers in integrating comprehensive environmental education into the formal education system to empower the youth in tackling environmental issues.***

Keywords: ***Environmental Literacy, Environmental Pollution, UMPC SHS Students, Ecological Concepts, Awareness, Pro-Environmental Behavior.***

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

1. INTRODUCTION

Environmental pollution is a serious worry for people all over the world and is brought on by human activities that introduce toxins and dangerous substances into the environment. Pollution is a serious problem that must be addressed immediately since it may negatively influence people's health, the ecology, and the economy. The World Health Organization (WHO) estimates that indoor air pollution kills 3.8 million people each year whereas outdoor air pollution kills 4.2 million people globally (WHO, 2016). In contrast to interior air pollution, which is mostly brought on by the use of solid fuels for cooking and heating in inadequately ventilated areas, outdoor air pollution is primarily produced by industrial emissions, transportation, and agricultural activities.

According to estimates, 1.8 billion people worldwide consume water that is polluted with feces, which can cause illnesses including cholera, dysentery, and typhoid (WHO, 2017). Agricultural runoff, untreated sewage, and industrial waste are some of the causes of water pollution. Another environmental problem is soil pollution, which is brought on by the buildup of chemicals and hazardous waste in the soil. This results in soil deterioration and lower agricultural yield. Using chemical fertilizers and pesticides, improperly disposing of hazardous waste, and industrial operations are some of the causes of soil contamination (UNEP, 2016).

Ajibade (2021) claims that environmental pollution is increasingly becoming an issue of significant public interest in many developing countries and the international community at large. The growing socioeconomic developments witnessed globally in recent times due to rapid urbanization and industrialization have led to the over-exploitation of natural resources, while inadvertently resulting in severe environmental problems. Environmental pollution is not a recent phenomenon, but it continues to be the biggest threat to humanity and the major factor in disease and mortality due to the environment. Urbanization, industrialization, mining, and exploration are human activities that have had the greatest impact on worldwide environmental pollution. Although knowledge and tighter legislation in developed countries have helped to a greater extent in maintaining their environment (Ukaogo et al., 2020), both developed and emerging countries share this responsibility.

Knowledge of environmental degradation is yet scarcer. This study thoroughly summarizes the most recent research on the microbiological deterioration of some of the most popular plastic kinds. Furthermore, they illustrate the analytical challenges concerning the evaluation of plastic bio-degradation as well as constraints likely standing against the evolution of effective bio-degradation pathways (Krueger, et al., 2015). Environmental awareness is crucial for a number of reasons, including that it stimulates sustainable development, advocates the protection of precious natural resources, and generates a sense of connection to the fosters the preservation of fragile plant and animal species and precious natural resources in the natural environment. Thinking “ecologically" or in terms of ecological consciousness. Understanding the vulnerability of our environment and the significance of its conservation is known as environmental awareness. Promoting environmental awareness is an easy way to protect the environment and help create a better future for our children. The movement's success depends heavily on environmental

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

consciousness. In order to properly solve environmental concerns, there is a critical need to increase environmental awareness. It is linked to environmental education.

This study would be useful to the community since it would provide information on the role of environmental literacy level and environmental pollution on Senior high school students in UMPC. The findings of the study can be used as empirical evidence by scholars looking into the role of the Environmental literacy level and environmental pollution of the Senior high school in UMPC

2. METHOD

This chapter presents the research design, research locale, population and sample, research instrument, data collection, and statistical tools used by the researchers to come up with this study.

Research Design

The research design for this study is a quantitative correlational research design. This design allows for examining the relationship between environmental literacy levels and environmental pollution among UMPC SHS students.

Research Locale

This study was conducted to the borders of UM Panabo College located in Pedro N. Arguelles St., Brgy San Francisco, Panabo City, Davao Del Norte.

Population Sample

The researchers questioned various seniors high school students at the University of Mindanao Panabo City branch using a survey questionnaire. The researchers polled the various groups in grade 11 and 12. There are 21 students in grade 11 HUMSS and 26 students in grade 12. 24 participants in grade 11 and 22 participants from the grade 12 ABM strand. A questionnaire was used to collect data on the level of environmental literacy and environmental pollution in three areas: knowledge, attitudes, and behavior.

Data Collection

The following are the steps involved in the process of conducting the study:

Determination of Respondents. The researchers determine the number of respondents by asking the school principal for the list of student enrolled in Grade 11 ABM, Grade 11 HUMSS, Grade 12 ABM and Grade 12 HUMSS. **Validation of the Instrument**. The questionnaire made by the researchers was validated by an expert.

Administration of the Instrument. After the validation of the instrument, the researchers personally administered the questionnaire. The distribution was done their free time. Personal interviews were conducted for clarity of the answers from the respondents. **Retrieval of the Questionnaire**. After administering of the questionnaire, the researchers immediately collected data. **Collection of Data**. Afterwards, the data were tallied, analyzed and interpret with the help of statistician.

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

Statistical Tools

The following statistical tools was utilized:

The **t-value** was used to determine the level of environmental literacy and environmental pollution on Senior high school students in UMPC.

The **p-value** was used to determine the significant relationship between the Environmental literacy level and environmental pollution on Senior high school students in UMPC.

3. RESULTS AND DISCUSSION

This section shows the results of the study that answers the research questions. It indicates the interpretation and analysis of data gathered with the corresponding implications supporting the analytical discussions.

The Level of Environmental Literacy of SHS students

The analysis of the data on environmental literacy levels revealed that UMPC SHS students had a mean score of 4.25 with a standard deviation of 0.55. This indicates a very high level of environmental literacy among the students. Among the statements the Q15 is the highest mean with 4.42 the statement of, “Whenever I see a polluted water source, walk around in smog, or come upon garbage, I think about the importance of keeping the environment clean and protecting it for our lives.” However the lowest mean is the 3.99, the statement is, “I can make conjectures on potential harm by landslides.” .This result meets with previous theory of Lui (2015), that in order to address environmental pollution, individuals need to have the knowledge, skills, attitudes, and values necessary to understand the causes and effects of pollution, as well as how to prevent or minimize it. The descriptive equivalent of "very high" suggests that the students possess substantial knowledge, attitudes, and skills regarding environmental concepts and issues, which emphasizes the importance of promoting environmental literacy to ensure polite and safe interactions in the digital realm.

Table 1. The Level of Environmental Literacy of SHS students

Variable	S.D	Mean	Description
Environmental literacy	0.55	4.25	Very high

The examination of the data on environmental pollution levels indicated that UMPC SHS students reported a mean score of 4.08 with a standard deviation of 0.60. Among the statements the Q27 is the highest mean with 4.30 the statement of ,” I have taken measures to protect the living beings in my immediate vicinity.”This signifies a high level of environmental pollution in the surrounding environment of the school. However the lowest mean is 3.90 with the statement of, “Of the issues threatening our world such as nuclear pollution, acid rain, and sea pollution, I have done research on at least one. The descriptive equivalent of "high" highlights the need for further investigation into the sources and causes of pollution in the vicinity. It is crucial to identify specific pollutants and develop appropriate strategies to mitigate and reduce pollution levels.

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

Table 2. The level of Environmental Pollution of SHS students

Variable	S.D	Mean	Description
Environmental Pollution	0.60	4.08	High

The findings highlight a potential disparity between the high level of environmental literacy and the presence of environmental pollution among UMPC SHS students. It raises questions about the effectiveness of the students' knowledge, attitudes, and skills in translating into actions that mitigate or reduce pollution.

Further analysis is required to explore the specific factors contributing to this disconnect. Possible factors may include a lack of opportunities for practical application of environmental knowledge, limited access to resources for pollution control, or inadequate implementation of sustainable practices within the school community.

Addressing this disparity would require efforts to bridge the gap between environmental literacy and environmental pollution. To reduce environmental pollution, it is crucial to develop and implement educational programs, awareness campaigns, and community engagement initiatives that target specific audiences. Encouraging active participation in environmental projects, promoting behavior change, and advocating for policies that prioritize pollution prevention are also essential steps in aligning environmental literacy with a reduction in environmental pollution.

Significant Difference in Environmental Pollution when Analyzed According to Year Level.

The results from Table 3 provide evidence to reject the null hypothesis. The significant difference in environmental pollution when analyzed according to year level among UMPC SHS students. The variable "environmental pollution" was analyzed for two groups: grade 11 and grade 12. Grade 11 students (N=45) had a mean of 3.76 with a standard deviation of 0.50, while grade 12 students (N=47) had a higher mean of 4.40 with a standard deviation of 0.52. The t-value of -6.005 and a p-value of 0.000 indicate a significant difference in environmental pollution between the two year levels.

Table 3. Significant difference when analyzed according to year level.

Variable	Groups	N	Mean	S.D SE	t	p
Environmental Pollution	11	45	3.76	0.50	-6.005	0.000
	12	47	4.4	0.52		

The t-value of -6.005, which represents the study's results, shows that there is a very significant difference in environmental contamination ratings between pupils in grades 11 and 12. This implies that pupils' understanding and perception of environmental contamination grow as they advance through high school. When compared to grade 11 students, grade 12 pupils perceive higher levels of environmental contamination, according to the negative t-value.

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

These findings align with prior research, such as the work of Kollmuss and Agyeman (2002) and Hungerford and Volk (1990), which suggest that higher grade levels correspond to a deeper understanding and recognition of environmental challenges. As students advance in their academic journey, they are exposed to more comprehensive and in-depth environmental education, which contributes to their heightened awareness of environmental issues, including pollution.

The observed variation in environmental pollution levels between grade levels is consistent with other studies showing that higher grade levels are more environmentally harmful. This highlights the need for ongoing efforts to foster environmental consciousness and encourage proactive engagement in environmental conservation efforts among senior high school students.

Future research can explore additional factors that may contribute to the observed difference in environmental pollution levels between grade levels. Additionally, interventions and educational initiatives can be developed to mitigate pollution and promote sustainable practices among senior high school students. By nurturing a culture of environmental stewardship, educational institutions can contribute to the preservation and protection of the environment for future generations.

4. CONCLUSION

Based on the research conducted on environmental literacy and pollution among UMPC SHS, we can conclude that there is a need for increased awareness and education on environmental issues. The study highlights the limited knowledge and understanding of environmental pollution among senior high school students, emphasizing the need for more comprehensive programs to address this issue.

In conclusion, environmental literacy is crucial in combating environmental pollution. By educating senior high school students on the causes and effects of pollution, we can encourage them to take action and create a cleaner and more sustainable environment. To achieve this, universities should develop and implement environmental education programs that encompass various aspects of environmental literacy.

It is essential to promote an interdisciplinary approach to environmental education, where senior high school students from different academic backgrounds can collaborate and contribute to the development of sustainable solutions. In summary, universities should prioritize environmental literacy to empower students to become responsible and environmentally-conscious citizens, capable of driving positive change in their communities and beyond.

Recommendations

Based on the findings of the study on environmental literacy and environmental pollution among UMPC SHS, we recommend that educational institutions prioritize environmental literacy in their academic programs. The study reveals a low level of environmental understanding among students, indicating a need for increased awareness and education on environmental issues.

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

To address this, universities should integrate environmental education into their core curriculum, making it a mandatory requirement for all students. This should include interdisciplinary courses that cover topics such as climate change, pollution, and sustainable development. These courses should be designed to enhance students' environmental literacy, giving them a firm understanding of the impact of human activities on the environment.

Moreover, universities should create opportunities for students to participate in environmental projects, research, and other community-based activities that promote environmental sustainability. This will enable students to apply their knowledge and skills to real-world situations, contributing to a cleaner and healthier environment.

Additionally, universities should invest in eco-friendly initiatives, such as recycling programs, green buildings, and renewable energy projects. This will promote sustainable practices and provide a learning environment that aligns with the principles of environmental literacy.

In summary, universities should prioritize environmental literacy to create a generation of environmentally-conscious citizens who can drive positive change contribute to the long-term sustainability of our planet.

5. REFERENCES

1. Ajibade, F. O., Adelodun, B., Lasisi, K. H., Fadare, O. O., Ajibade, T. F., Nwogwu, N. A., & Wang, A. (2021). Environmental pollution and their socioeconomic impacts. In Microbe mediated remediation of environmental contaminants (pp. 321-354). Woodhead Publishing.
2. Antúnez, A., & Guanoquiza, L. (2018). La contaminación ambiental en los acuíferos de Ecuador. Revista Visión Contable, 5337(19), 64-101. https://doi.org/10.24142/rvc.n19a4
3. Arslan, H. O., Moseley, C., & Cigdemoglu, C. (2011). Taking attention on environmental issues by an attractive educational game: Enviropoly. Procedia – Social and Behavioral Sciences (pp.801–806). Elsevier. https://doi.org/10.1016/j.sbspro.2011.11.146
4. Craig, C. A., & Allen, M. W. (2015). The impact of curriculum-based learning on environmental literacy and energy consumption with implications for policy. Utilities Policy, 35, 41–49. https://doi.org/10.1016/j.jup.2015.06.011
5. Gatan, P. R. G., Yangco, R., & Monterola, S. L. (2021). Relationships among environmental literacy, locus of control, and future orientation of STEM students in the Philippines. Interdisciplinary Journal of Environmental and Science Education, 17(4), e2250. https://doi.org/10.21601/ijese/10984
6. Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. Washington, DC: North American Association for Environmental Education. https://naaee.org/sites/default/files/devframewkassessenvlitonlineed.pdf Date accessed: 16 Mar. 2017.
7. Hungerford, H. R., & Volk, T. L. (1990). Changing learner behavior through environmental education. The journal of environmental education, 21(3), 8-21.

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

8. Karyadi, B., Ansori, I., & Aswin, P. (2019). Understanding skill of junior high school students on environmental pollution topic by environmental-based science learning. Journal of Physics: Conference Series, 1233(1) doi:https://doi.org/10.1088/1742-6596/1233/1/012011
9. Krueger, M. C., Harms, H., & Schlosser, D. (2015). Prospects for microbiological solutions to environmental pollution with plastics. Applied microbiology and biotechnology, 99, 8857-8874.
10. Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? Environmental education research, 8(3), 239-260.
11. Liu, S. Y., Yeh, S. C., Liang, S. W., Fang, W. T., & Tsai, H. M. (2015). A national investigation of teachers' environmental literacy as a reference for promoting environmental education in Taiwan. The Journal of Environmental Education, 46(2), 114-132.
12. Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. Journal of economic psychology, 39, 141-153.
13. Palacios, Í., & Moreno, D. (2022). Contaminación ambiental. Revista Científica Muno de La Investigación y El Conocimiento, 6(2), 93-103. https://doi.org/10.26820/recimundo/6.(2).abr.2022.93-103
14. Redhana, I. W., Suardana, I. N., & Selamat, I. N. (2020, July). Profiles of environmental literacy of senior high school students. In Journal of Physics: Conference Series (Vol. 1503, No. 1, p. 012047). IOP Publishing. https://iopscience.iop.org/article/10.1088/1742-
15. Saldaña-Almazán, M., Maldonado-Astudillo, Y., Sampedro-Rosas, M., Carrasco-Urrutía, K., Rosas-Acevedo, J., & Juárez-López, A. (2020). Comportamiento proambiental de los estudiantes de la universidad Autónoma de Guerrero, México. Revista Electrónica de Sociología y Ciencias Sociales Controversias y Concurrencias Latinoamericanas, 11(20), 307320.
16. Sigit, D. V., Suryanda, A., & Adityaningsih, S. R. (2021, April). The perspective of conservation behavior and environmental pollution knowledge of senior high school students. In AIP Conference Proceedings (Vol. 2331, No. 1, p. 050019). AIP Publishing LLC. https://pubs.aip.org/aip/acp/article/2331/1/050019/986004/The-perspective-of-conservation-behavior-and?fbclid=IwAR3wvB7htCjbZVy1DH5mbZLPpb2loOXtSJ8pODHN7cgqPmTFqJnoyy2uf7A
17. Ukaogo, P. O., Ewuzie, U., & Onwuka, C. V. (2020). Environmental pollution: causes, effects, and the remedies. In Microorganisms for sustainable environment and health (pp. 419-429). Elsevier.
18. UNEP (2016). Frontiers 2016: Emerging issues of environmental concern. United Nations Environment Programme. https://www.unep.org/resources/report/frontiers-2016-emerging-issues-environmental-concern

Journal of Environmental Impact and Management Policy
ISSN: 2799-113X
Vol : 03 , No. 06 , Oct-Nov 2023
http://journal.hmjournals.com/index.php/JEIMP
DOI: https://doi.org/10.55529/jeimp.36.17.25

19. WHO (2016). Ambient air pollution: A global assessment of exposure and burden of disease. World Health Organization. https://www.who.int/phe/publications/air-pollution-global-assessment/en/
20. WHO (2017). Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. World Health Organization. https://www.who.int/water_sanitation_health/publications/jmp-2017/en/
21. Yadav, P., Singh, J., Srivastava, D. K., & Mishra, V. (2021). Environmental pollution and sustainability. In Environmental sustainability and economy (pp. 111-120). Elsevier.