MAIN ORGANISER:

OFFICIAL COLLABORATORS:

THE INTERNATIONAL COMPETITION ON SUSTAINABLE EDUCATION

20TH AUGUST 2025

TRANSFORMING EDUCATION, DRIVING INNOVATION AND ADVANCING LIFELONG LEARNING FOR EMPOWERED WORLD

SUSED2025
THE FOURTH INTERNATIONAL COMPETITION ON SUSTAINABLE EDUCATION 2025
e-PROCEEDING
20TH AUGUST 2025
ACADEMY OF LANGUAGE STUDIES
UNIVERSITI TEKNOLOGI MARA
NEGERI SEMBILAN BRANCH
KUALA PILAH CAMPUS
MALAYSIA

A TRANSFORMATIVE APPROACH TO ENVIRONMENTAL IMPACT ASSESSMENT: LINKING SDGS WITH INNOVATION IN TEACHING

Norhafezah Kasmuri*

Faculty of Civil Engineering, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia*

norhafezahkasmuri@uitm.edu.my*

ABSTRACT

The subject for Environmental Assessment reviews the environmental resources available and identifies the causes of environmental degradation. This subject focuses on Environmental Impact Assessment (EIA) in Malaysia, examining the environmental, social, and educational implications of environmental assessment with a strategic emphasis on advancing the United Nations' Sustainable Development Goals (SDGs). The assessment evaluates potential impacts on ecosystems, natural resources, public health, and community well-being, integrating both traditional environmental metrics and innovative educational approaches. In alignment with SDGs such as Quality Education (SDG 4), Sustainable Cities and Communities (SDG 11), and Climate Action (SDG 13), this study incorporates innovation in teaching as a tool for environmental awareness and capacity building. Educational interventions—including collaborative teaching between stakeholders and international universities, participatory open-based project assignments, and site visits on advanced technological approaches—are embedded in the mitigation framework to foster sustainability literacy. The students, who are future managers, engineers, and policymakers, play a crucial and active role in this process. By integrating EIA with education for sustainable development (ESD), this project not only assesses environmental risks but also empowers these future leaders through transformative, inquiry-driven learning. The findings demonstrate that when innovative teaching practices are aligned with sustainability objectives, environmental management becomes more inclusive, adaptive, and impactful.

Keywords: *Environmental Impact Assessment, Sustainable Development Goals, Innovation in teaching, Education for sustainable development.*

INTRODUCTION

Environmental Assessment (EA) is a systematic process used to evaluate the potential environmental impacts of proposed projects, policies, or developments before decisions are made, and actions are taken. It plays a crucial role in integrating environmental considerations into decision-making to promote long-term sustainability. By identifying, predicting, and evaluating the environmental effects of human activities, EA ensures that development is ecologically responsible, socially acceptable, and economically viable.

With the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, environmental assessment has gained renewed importance as a tool to support sustainable development. EA directly aligns with several SDGs, particularly for the SDG 6 (Clean Water and Sanitation) by ensuring water resources are protected from pollution and overuse; SDG 11 (Sustainable Cities and Communities) by promoting environmentally sound urban planning; SDG 13 (Climate Action) by assessing climate risks and encouraging low-carbon development strategies; SDG 15 (Life on Land) by safeguarding ecosystems and biodiversity. Furthermore, EA supports SDG 17 (Partnerships for the Goals) by fostering collaboration between governments, developers, scientists, and communities in decision-making processes.

In this context, environmental assessment serves not only as a regulatory tool but also as a strategic mechanism to guide sustainable development. It ensures that economic growth does not come at the expense of environmental integrity, thereby contributing to a balanced approach that meets present needs without compromising the needs of future generations. The subject for Environmental Assessment reviews the environmental resources available and identifies the causes of environmental degradation. This subject focuses on Environmental Impact Assessment (EIA) in Malaysia, examining the environmental, social, and educational implications of environmental assessment with a strategic emphasis on advancing the United Nations' Sustainable Development Goals (SDGs).

METHODOLOGY

A field trip to the Jeram Sanitary Landfill in Selangor offers students and professionals a practical and insightful experience in understanding waste management systems, their environmental impacts, and how they align with sustainable development. The students of this subject have been allowed to go on a field trip and check on the effluent of leachate samples. The entrance and exit surveys have been distributed to the students to see the outcomes of the field trip. The Jeram Sanitary Landfills are properly designed and managed, representing one of the best management practices for disposing of municipal solid waste. Thus, linking this experience to Environmental Assessment (EA) and the Sustainable Development Goals (SDGs) is essential for fostering a holistic understanding of sustainability in waste management. This hands-on experience not only enhances their understanding but also makes them feel more connected to the subject matter.

RESULTS

Entrance Survey

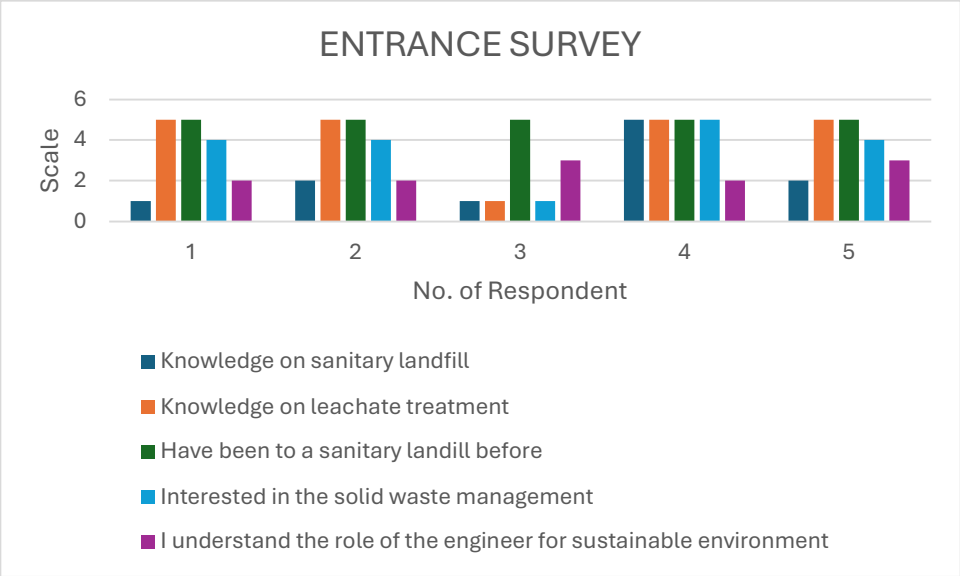

Figure 1.: Entrance Survey from the field trip

The students have completed the entrance survey, and the overall results indicate that they possess some knowledge of environmental assessment related to solid waste management.

Exit Survey

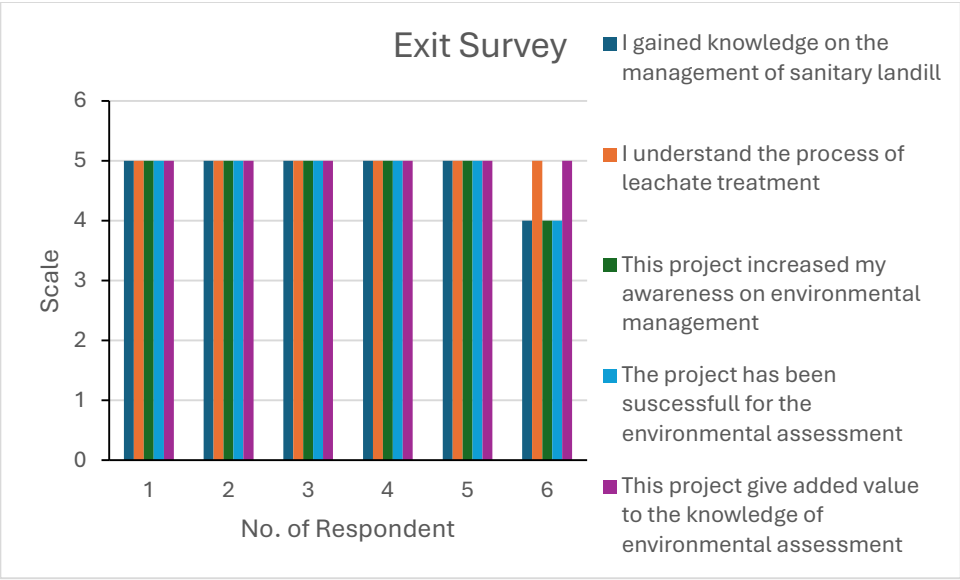

Figure 2.: Exit Survey from the field trip

Most students have given positive responses, stating that they gained very insightful knowledge on environmental assessment through field trips. They also have the opportunity to observe the landfill operations. Learning how leachate collection systems, gas capture technologies, and impermeable liners reduce environmental risks. The students understand how landfill operators monitor environmental parameters (e.g., groundwater quality, methane emissions) to ensure compliance with environmental regulations. The application of EA principles in real-world waste management highlights the importance of continuous environmental monitoring, offering reassurance about the effectiveness of waste management practices.

The operation and management of sanitary landfills are deeply interconnected with several SDGs, including:

SDG 3: Good Health and Well-being, as improper waste disposal can lead to the spread of diseases and exposure to hazardous pollutants. Sanitary landfills help minimize these risks through controlled waste handling and environmental protection measures, contributing to improved public health outcomes. SDG 6: Clean Water and Sanitation, as the major concern with landfills is leachate, a liquid that can contaminate groundwater if not properly managed. Sanitary landfills include proper leachate management systems, thus supporting the protection of freshwater resources. SDG 11: Sustainable Cities and Communities. An effective landfill design supports sustainable urban development by providing a safe and clean method of waste disposal, thereby preventing illegal dumping and reducing urban pollution. SDG 12: Responsible Consumption and Production, as these field visits highlight the need to minimize waste generation and improve recycling and composting efforts. This goal promotes awareness of sustainable production and consumption patterns, which in turn reduce reliance on landfills. SDG 13: Climate Action, as sanitary landfills equipped with methane gas recovery systems contribute to climate change mitigation by capturing greenhouse gases and potentially using them for energy production. SDG 15: Life on Land. Improperly managed waste can threaten terrestrial ecosystems through pollution and habitat destruction. Proper landfill operations safeguard the surrounding flora and fauna, aligning with the conservation of terrestrial biodiversity.

The field trip to the Jeram Sanitary Landfill in Selangor is not just an academic experience, but also a capacity-building exercise that bridges the gap between theory and practice in environmental assessment. It enhances awareness of sustainable engineering solutions in waste management and promotes interdisciplinary thinking among students and young professionals across environmental, civil, and chemical engineering fields. The field trip highlights the practical application of sustainable innovations such as waste-to-energy systems, circular economy models, and biodegradable packaging in their future careers.

CONCLUSION

A field trip to a sanitary landfill, when guided through the lens of environmental assessment and the SDGs, becomes a transformative learning opportunity. It emphasizes the importance of integrated planning, environmental protection, and sustainable infrastructure development. Such experiential learning not only enhances understanding of technical waste management systems but also inspires commitment to sustainable development goals, aligning engineering practice with environmental stewardship.

ACKNOWLEDGEMENTS

This work was supported by the Faculty of Civil Engineering. University Teknologi MARA, Shah Alam.

REFERENCES

Nations U (2020). THE 17 GOALS | Sustainable Development Department of Economic and Social Affairs https://sdgs.un.org/goals

National Water Quality Standards for Malaysia 2006 Interim National Water Quality Standards for Malaysia in Wepa pp 1–5