The Relationship Between Perception of Environmental Knowledge and Practices Among Upper Secondary Vocational Program Students in Batu Pahat District

Mohd Sabran, F.[1], Abdullah, N. H. L.[1]*

[1] *Faculty of Technical and Vocational Education,*
 Universiti Tun Hussein Onn Malaysia, Parit Raja, 86400, MALAYSIA

*Corresponding Author: hidayahl@uthm.edu.my

Abstract

Environmental education plays a crucial role in raising awareness and fostering environmental responsibility, particularly among students. However, the level of environmental knowledge and practices among Malaysian students remains a concern. This study aims to examine the relationship between students' perceptions of environmental knowledge and their environmental practices. A quantitative survey design was employed, involving 92 Upper Secondary Vocational Program (PVMA) students from four schools in Batu Pahat District. Data were analyzed using descriptive statistics, including mean and standard deviation, as well as Pearson correlation analysis. The findings indicate that while students exhibit a high level of perceived environmental knowledge, their environmental practices remain at a moderate level. Additionally, no significant relationship was found between students' perceptions of environmental knowledge and their actual environmental practices. These results suggest that possessing environmental knowledge does not necessarily translate into proactive environmental behaviour. In conclusion, strengthening environmental education through practical engagement is essential to bridging this gap. The findings of this study can serve as a valuable reference for future research aimed at enhancing environmental practices among students.

1. Introduction

The emphasis on the Sustainable Development Goals (SDGs) related to the environment necessitates a shift towards sustainability and highlights the importance of conservation and environmental stewardship. Natural ecosystems are currently under severe threat, endangering human, animal, and planetary health. These threats include climate change, deforestation, soil degradation, plastic pollution, inadequate waste management, and air pollution (Rahman, 2017). The impacts of these environmental risks are projected to worsen in the future, potentially affecting both current and future generations. Young people play a crucial role as future environmental ambassadors for their respective countries, bearing the responsibility of making informed decisions to address environmental challenges. To effectively confront these issues, students must possess a solid understanding of environmental concerns, develop heightened awareness of conservation efforts, and implement sustainable practices to preserve the planet. Furthermore, addressing environmental issues requires collaborative efforts, proactive attitudes, and the development of innovative, sustainable solutions. Research by Wan Harun and Abd Rahman (2019) indicates that environmental practices among teacher trainees are currently low, which could

negatively influence their future students. As such, this group plays a pivotal role in protecting and preserving natural environments for future generations.

Environmental degradation is exacerbated by unsustainable development, technological advancements, and a growing global population (Adriyanto & Martono, 2020). This trend underscores the tendency of human behaviour to prioritize luxury lifestyles over environmental concerns (Jena & Behera, 2017). Rapid urbanization is another key contributor to environmental decline, leading to increased waste generation, climate change, ecosystem destruction, and pollution, all of which significantly impact quality of life (Li, Stringer & Dallimer, 2022). Additionally, anthropogenic activities, particularly industrialization and transportation, play a crucial role in environmental degradation (Ahmed et al., 2022). Social and psychological factors related to environmental issues directly and indirectly influence human well-being. Despite numerous environmental awareness campaigns led by governmental and non-governmental organizations, inadequate research and insufficient reporting on environmental awareness and commitment remain ongoing challenges (Ahmed et al., 2022). Strengthening environmental knowledge and practices is essential to inform policy development aimed at preserving and restoring the environment, thereby improving overall societal well-being (Ahmed et al., 2022).

Environmental knowledge and recycling education should be integrated into school curricula as a foundation for shaping students' attitudes. For instance, the Curriculum and Assessment Standard Document (DSKP) for Geography subjects can enhance students' understanding and cultivate positive attitudes toward recycling initiatives in schools (Kamaruddin et al., 2019). However, many individuals fail to translate environmental awareness into concrete actions (Jamaludin et al., 2023). Some individuals possess knowledge and awareness of environmental issues yet do not take responsibility for applying this knowledge in their daily lives. This aligns with the findings of Kamidin (2006), who identified a weak correlation between environmental knowledge and attitudes among trainee teachers at Batu Lintang Teacher Training College, with knowledge contributing only 5% to environmental attitudes. In contrast, a study by Mini Ratamun (2019) found a strong correlation between knowledge of recycling and actual recycling practices among teacher trainees. In summary, environmental knowledge is crucial for ensuring that positive environmental practices are consistently implemented to preserve and restore ecosystems (Mini Ratamun, 2019).

Furthermore, according to the Institute of Environment and Development (LESTARI), water is a critical resource essential for global growth and development. The increasing demand for clean water is driven by population growth, rising living standards, industrial expansion, urbanization, and agricultural activities (Javan et al., 2024). Global climate change and attitudes that neglect environmental quality contribute to the depletion of clean water sources (Ahmed, 2022). This is supported by the findings of Hashim et al. (2024), which indicate moderate sustainability practices in water usage among residents of Ipoh City, Perak. Similarly, Hashim et al. (2021) reported moderate water conservation practices among schools in the Baling district, Kedah, suggesting that students have yet to fully adopt daily water-saving habits. Consequently, parental guidance plays a critical role in educating and encouraging students to practice water conservation in their daily lives (Hashim et al., 2021). Knowledge of water conservation significantly influences individuals' water-saving practices. Studies by Hashim et al. (2021) and Mariapan, Mahat, and Nayan (2018) demonstrate a positive correlation between environmental knowledge and water-saving behaviours among students. Overall, enhancing students' knowledge of water conservation is expected to improve their daily practices (Hashim et al., 2021). The implementation of environmental education is essential in shaping students' environmental consciousness by providing them with scientific knowledge and fostering greater environmental awareness (Zamhari & Perumal, 2016).

Electricity conservation is another critical environmental practice necessary for sustainability. Uncontrolled electricity consumption is a major contributor to climate change (Idris & Basir, 2020), as excessive energy use increases atmospheric heat due to higher carbon dioxide emissions (Er & Safuan, 2022). Ali Khan et al. (2016) highlighted that the frequent use of electronic devices such as smartphone chargers, laptops, and water heaters significantly contributes to increased electricity consumption in daily life. Consequently, excessive reliance on such devices not only promotes wasteful behaviour but also has adverse environmental consequences (Goto et al., 2016; Khan et al., 2020).

In the context of vocational education, integrating environmental education into vocational programs is essential to equip students with adequate environmental knowledge and encourage positive environmental actions (Aladag, Oztas & Oztas, 2018). Research suggests that upper secondary vocational students are generally aware of environmental issues such as global warming, ozone depletion, and the greenhouse effect (Madrliyah, Sunardi & Agung, 2018). These findings align with those of Aladag, Oztas, and Oztas (2018), who reported high levels of environmental knowledge among vocational students. However, a study by Maknun et al. (2018) found that environmental knowledge among upper secondary vocational students ranged from moderate to low, emphasizing the need for improved environmental education in schools. Environmental education serves as a vital platform for imparting knowledge on sustainability, with increased understanding of environmental issues serving as the foundation for fostering positive environmental behaviours (Harun, Lim & Othman, 2011). Based on the issues presented, the purpose of this study is to examine the relationship between students' perceptions of environmental knowledge and the types of environmental practices adopted by secondary school students.

2. Methodology

This study employs a survey research design with a quantitative approach, utilizing a questionnaire as the instrument for data collection. The purpose of the survey design is to provide a quantitative description of trends, attitudes, and opinions within a population (Creswell & Creswell, 2018).

2.1 Research Sample

In this study, the sample consists of Form Four students from four secondary schools in Batu Pahat, Johor, that offer the Upper Secondary Vocational Program (PVMA). Table 1 presents the study sample. The data indicate that the study sample consists of a total of 92 students. According to the provided data, School A offers a program in Refrigeration and Air Conditioning, School B provides a program in Furniture Manufacturing, and Schools C and D both offer programs in Food Preparation.

Table 1 *The study sample*

School	PVMA	Sample
A	Refrigeration and Air Conditioning	24
B	Furniture Manufacturing	20
C	Food Preparation	22
D	Food Preparation	26
Total		92

2.2 Research Instrument

The questionnaire serves as the primary research instrument for data collection in this study. According to Ling and Othman (2018), questionnaires are an effective tool for obtaining respondents' cooperation while being cost-efficient, time-saving, and less labor-intensive. This study's questionnaire was adapted from previous research and modified to align with the study's objectives, based on the studies by Rahaman and Rahim (2021), Er and Safuan (2022), Idris and Basir (2020), and Ismail and Rahmad (2022).

Table 2 outlines the sections of the questionnaire used for data collection in this study. Section A of the questionnaire gathers respondents' demographic information, including gender, race, school, and program or stream of study. Respondents are required to select only one response for each item that best represents their personal background. Section B measures the variable of perceptions of environmental knowledge. This section covers knowledge related to recycling, pollution, climate change, and environmental conservation. A five-point Likert scale is used to assess students' perceptions of environmental knowledge, where 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Agree, 4 = Agree, and 5 = Strongly Agree. Lastly, Section C of the questionnaire evaluates the variable of environmental practices among PVMA students. The items in this section, adapted from previous studies, assess recycling practices, water and energy conservation, and environmental preservation efforts. A five-point Likert scale is employed to measure the frequency of these environmental practices, where 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Very Often.

Table 2 *Section and number of the item in the questionnaire*

Section	Name of Item	Number of Item
A	Demographic information	4
B	Perception of environmental knowledge	25
C	Environmental practice	19

The validity of the questionnaire was assessed by experts, covering two types of validity which are language validity and content validity. Language validity ensures the accuracy of language use, vocabulary, and grammar, while content validity verifies the appropriateness of the constructs within the questionnaire in relation to the study. In summary, validity assessment is conducted to ensure that the items or questions in the research instrument are relevant to the study's respondents (Taherdoost, 2016). Table 3 presents the analyzed Cronbach's Alpha values. The results indicate that the research instrument demonstrates good reliability in Section B (perception of environmental knowledge variable) and adequate reliability in Section C (environmental practice variable). Therefore, the instrument is deemed suitable for data collection in the actual study.

Table 3 *Result of instrument reliability*

Section	Variable	Cronbach's Alpha	Level of realibility
B	Perception of environmental knowledge	0.857	Good
C	Environmental practice	0.738	Adequate

2.3 Data Analyses

This quantitative study employs two data analysis methods, which are descriptive analysis to analyzed the level of perception of environmental knowledge and environmental practice while inferential analysis is used to examined the relationship between these two variables. The results of the descriptive analysis are represented by the mean and standard deviation, while the results of the inferential analysis (Pearson Correlation analysis) are represented by the correlation coefficient (r-value) to determine the strength of the relationship between perceptions of environmental knowledge and practices among Upper Secondary Vocational Program (PVMA) students in schools around Batu Pahat, Johor.

3. Results and Discussion

This section provides a detailed discussion of the study's findings and analysis.

3.1 Perception of Environmental Knowledge

Referring to Table 4, item B3, "I know that recycling activities aim to reduce waste," recorded the highest mean value of 4.64 (SD = 0.526) compared to the other 24 items. This indicates that PVMA students have a high level of knowledge regarding the role of recycling activities in waste reduction. The second-highest item was B6, with a mean value of 4.61 (SD = 0.534), which states, "I know that recycling campaigns serve as an effort to reduce environmental pollution."

The findings also reveal two items with moderately high mean values. Item B24, with a mean value of 4.34 (SD = 0.579), states, "I know that implementing greening programs around the school area is a measure of environmental conservation." This is followed by item B7, with a mean value of 4.30 (SD = 0.707), which states, "I know that using recycling bins for solid waste management can help reduce environmental pollution." Although these two items fall within the moderately high category, their mean values still indicate a high level of knowledge. Additionally, two items recorded the lowest mean values. Item B14, with a mean value of 3.89 (SD = 0.858), states, "I know that the use of insecticides can pollute the environment." Meanwhile, item B11, with a mean value of 3.62 (SD = 1.015), states, "I know that the production of equipment containing CFCs (chlorofluorocarbons), such as air conditioners, can cause environmental pollution." The findings indicate that item B11 is the only item categorized at a moderate level in terms of students' perceptions of environmental knowledge.

In conclusion, the overall findings on students' perceptions of environmental knowledge are at a high level, with an overall mean value of 4.32.

Table 4 *Analysis of perceptions of environmental knowledge*

Item	Statement I know…	Mean (M)	Standard Deviation (SD)	Interpretation
B1	about recyclable items such as newspapers, bottles, or cans.	4.52	0.502	High
B2	about the existence of recycling bins in three different colors, which are blue, orange, and brown.	4.43	0635	High
B3	that recycling activities aim to reduce waste.	4.64	0.526	High
B4	that recycling activities contribute to environmental preservation.	4.54	0.543	High
B5	that selling beverage cans is one of the recycling activities.	4.17	0.765	High
B6	that recycling campaigns implemented are an effort to reduce environmental pollution.	4.61	0.534	High
B7	that the use of recycling bins in solid waste management helps reduce environmental pollution.	4.30	0.707	High

B8	that industrial waste is the biggest contributor to water pollution.	4.48	0637	High
B9	that water pollution has adverse effects on other living beings, such as plants and animals.	4.53	0.654	High
B10	that global warming negatively impacts the environment.	4.27	0.697	High
B11	that the production of equipment using CFCs (Chlorofluorocarbons), such as air conditioners, can cause environmental pollution.	3.62	1.015	Moderate
B12	that the habit of indiscriminate waste disposal by society contributes to environmental pollution.	4.48	0.671	High
B13	that traffic congestion contributes to increased air pollution.	4.24	0.652	High
B14	that the use of insecticides can pollute the environment.	3.89	0.858	High
B15	that excessive deforestation or forest burning leads to climate change.	4.46	0.747	High
B16	that ozone layer depletion caused by nitrogen oxide emissions increases the Earth's temperature.	4.16	0.684	High
B17	that heavy rainfall or prolonged flooding results from human activities affecting the environment.	4.00	0.843	High
B18	that one of the causes of rising temperatures is the burning of fossil fuels such as natural gas.	4.19	0.763	High
B19	that the increase in greenhouse gases leads to rising global temperatures.	4.11	0.813	High
B20	that each individual is responsible for preserving the environment.	4.46	0.834	High
B21	that waste segregation before disposal is one of the ways to protect the environment.	4.51	0.564	High
B22	that purchasing products made from recycled materials helps protect the environment.	4.41	0.577	High
B23	that practicing electricity conservation can help save the environment.	4.04	0.797	High
B24	that implementing greening programs around the school area is a step towards environmental preservation.	4.34	0.579	High
B25	that campaigns to prevent deforestation should be continued to avoid the extinction of flora.	4.54	0.686	High
	Mean Average	4.32		High

The study findings indicate that students have a high perception of environmental knowledge. This aligns with previous research by Ismail and Rahmad (2022) and Ismail et al. (2023), which also reported a high level of environmental knowledge among students. According to Ismail and Rahmad (2022), environmental education plays a crucial role in disseminating environmental knowledge to students. Education serves as a vital medium in shaping students' environmental awareness (Dato et al., 2020), proving that environmental education at the school level is effective in providing comprehensive knowledge.

Education is one of the key channels for instilling environmental knowledge among students (Rahman, 2017) and helps individuals develop awareness and understanding of environmental issues. Abdullah, Shafii, and Seow (2013) emphasize that education should be applied as a tool to promote positive environmental actions.
Apart from education, social media also plays an essential role in spreading environmental knowledge. Platforms like TikTok, Facebook, and Instagram are effective in promoting environmental programs and issues. Skalík (2015) highlights that social media is a valuable tool for disseminating environmental awareness in a fast and

accessible manner. Similarly, Khalil, Ismail, and Arifin (2023) suggest that social media usage can enhance individuals' environmental awareness and encourage more responsible behaviour.

Furthermore, the study supports previous findings by Rahaman and Rahim (2021), which indicate that recycling is widely recognized as a method to reduce waste. PVMA students demonstrated a strong understanding of recycling practices, reinforcing the idea that recycling is a common and well-understood concept (Chong & Mapa, 2021). Schools play a crucial role in educating students about waste management (Chong & Mapa, 2019), and teachers are key figures in fostering recycling habits. Mini Ratamun (2019) emphasizes the importance of teachers in ensuring future generations acquire sufficient environmental knowledge.

In conclusion, the integration of education, social media, and the role of teachers and the community is essential in enhancing students' environmental knowledge. These combined efforts contribute significantly to fostering environmental awareness and responsibility among students.

3.2 Environmental Practice

Based on Table 5, the findings indicate that item C11, "I turn off the light switch when leaving the classroom or bedroom" (M = 4.21, SD = 0.913), has the highest mean score. The table also shows that item C7, "I use both sides of the paper when writing or printing" (M = 3.76, SD = 1.093), has the second-highest mean score after item C11. The findings further reveal that item C1, "I separate waste by type, such as food waste or solid waste, before disposing of it" (M = 3.29, SD = 0.955), and item C9, "I only print assignments related to my studies, when necessary," have moderately high mean scores.

Two items have relatively low mean scores: item C19, "I bring my own food container when buying food outside" (M = 2.42, SD = 1.263), and item C4, "I make handicrafts, such as flower vases, using recycled materials" (M = 2.34, SD = 1.103). Although these two items have the lowest mean scores, the level of practice remains moderate. In conclusion, the results indicate that the level of environmental practices among PVMA students in schools around Batu Pahat, Johor, is at a moderate level (M = 3.23).

Table 5 *Analysis of environmental practice*

Item	Statement	Mean (M)	Standard Deviation (SD)	Interpretation
C1	I separate waste by type, such as food waste or solid waste, before disposing of it.	3.29	0.955	Moderate
C2	I resell recyclable items such as newspapers, cans, or glass bottles.	3.00	1.213	Moderate
C3	I dispose of waste in the appropriate recycling bin according to its designated color.	3.07	1.067	Moderate
C4	I create handicrafts, such as flower vases, using recycled materials.	2.34	1.103	Moderate
C5	I reuse used paper for food wrapping, such as wrapping fruits.	2.60	1.250	Moderate
C6	I repurpose glass or plastic containers for storage purposes.	3.30	1.146	Moderate
C7	I use both sides of the paper when writing or printing.	3.76	1.093	High
C8	I reuse envelopes or used folders to store important documents, such as co-curricular participation certificates.	3.37	1.247	Moderate
C9	I only print assignments related to my studies when necessary.	3.24	1.123	Moderate
C10	I practice the concept of "think before you throw" for recyclable items.	3.57	0.976	Moderate
C11	I turn off the light switch when leaving a room, such as a classroom or bedroom.	4.21	0.913	High
C12	I do not use an air conditioner at home except at night.	2.65	1.354	Moderate
C13	I turn off the water tap while brushing my teeth.	3.66	1.132	Moderate
C14	I turn off my laptop when it is not in use for an extended period.	3.71	1.223	High

C15	I use harvested rainwater to water plants in the yard when available.	3.70	1.211	High
C16	I do not dispose of oil or food waste in sinks or drains.	3.16	1.207	Moderate
C17	I do not litter in public places, such as drains or rivers.	3.37	1.410	Moderate
C18	I avoid open burning, such as burning used paper or books.	2.97	1.353	Moderate
C19	I bring my own food container when purchasing food outside.	2.42	1.263	Moderate
	Mean Average	3.23		Moderate

The findings of this study indicate that overall environmental practices among PVMA students are at a moderate level. This is consistent with previous studies by Ismail et al. (2023) and Mahat, Che Ngah, and Ahmad (2015), which also found that students' environmental practices are at a moderate level. This suggests that many students are still unaware of the importance of protecting the environment.

Several factors contribute to the moderate level of environmental practices in schools. According to Dato et al. (2020), a lack of environmental awareness among individuals is a key reason for low engagement in environmental conservation. Additionally, the role of parents and teachers in guiding students is not fully implemented (Ahmad, Noor, & Ismail, 2015). Mahat, Che Ngah, and Ahmad (2015) suggest that hands-on environmental activities should be incorporated into education to enhance students' understanding and encourage sustainable practices.

One major challenge is the lack of facilities to support continuous environmental practices. Mahat et al. (2017) highlight that the absence of recycling bins in schools is a major factor in the low recycling rate among students. Similarly, Chong and Mapa (2021) state that inadequate recycling facilities at home and school contribute to students' reluctance to recycle. Therefore, limited parental and teacher guidance, as well as insufficient infrastructure, hinder long-term environmental practices in addressing pollution issues.

However, Khalil, Ismail, and Arifin (2023) found that recycling practices are at a high level due to extensive environmental awareness programs promoted through social media. This demonstrates the importance of community engagement in educating younger generations about environmental conservation. Hands-on activities, such as school recycling programs, have been shown to provide significant benefits to students, including financial incentives and instilling frugality (Zamhari & Perumal, 2016). Thus, teachers and communities should actively conduct such activities to foster students' interest in environmental conservation.

Furthermore, the study aligns with Er and Safuan (2022), which found that electricity conservation is the most commonly practiced environmental behaviour. Similarly, Idris and Basir (2020) reported that turning off lights is widely practiced. The strong emphasis on energy conservation at home and school suggests that parental and teacher influence play a crucial role in shaping students' habits (Zerinou et al., 2020; Yaacob & Abdullah, 2024). According to Er and Safuan (2022) and Anang (2024), excessive electricity consumption contributes to high carbon dioxide emissions, leading to global warming. This issue not only increases global temperatures but also causes long-term environmental impacts such as polar ice melting and severe flooding (Er & Safuan, 2022; Idris & Basir, 2020; Anang, 2024). Therefore, continuous parental and teacher guidance is essential in ensuring that energy conservation becomes a routine practice for students (Idris & Basir, 2020).

In summary, to cultivate lasting environmental responsibility among students, schools and communities must work together to provide engaging, hands-on learning experiences. By integrating sustainability into daily routines, future generations can develop habits that contribute to long-term ecological well-being. The active involvement of parents, teachers, and institutions plays a crucial role in embedding environmental conservation into students' lives, ensuring a more sustainable future for all.

3.3 The Relationship Between Perception of Environmental Knowledge and Practices Among PVMA Students

The results of the Pearson correlation test analysis indicate that there is no significant relationship between the perception of environmental knowledge and environmental practices among PVMA students, r = 0.072, p = 0.496. Therefore, the null hypothesis is accepted. This suggests that students with high environmental knowledge do not necessarily exhibit high environmental practices.

The findings of this study indicate that there is no significant relationship between perceptions of environmental knowledge and environmental practices among Upper Secondary Vocational Program (PVMA) students. This aligns with previous studies by Wan Harun and Abd Rahman (2019) and Almasi et al. (2019), which also found no significant relationship between environmental knowledge and practices among individuals.

Similarly, Mahat et al. (2017) confirmed that there is no significant correlation between environmental knowledge and conservation practices among school students.

According to Almasi et al. (2019), having good environmental knowledge does not necessarily lead to positive environmental behaviour. This finding highlights the need to enhance environmental knowledge through practical guidance, both in formal and informal education settings. Education is believed to play a crucial role in increasing students' awareness of environmental issues, ultimately leading to sustainable environmental practices (Mahat et al., 2015; Lampa, Greculescu & Todorescu, 2012).

For instance, the availability of recycling bins in schools and residential areas is essential to encourage recycling activities. The researcher believes that providing such facilities will promote recycling as a daily habit among students. Additionally, schools, including teachers and administrators, should encourage students to dispose of their waste responsibly instead of relying on cleaning staff. A lack of encouragement from educators and school administrators is one of the main reasons students do not actively engage in recycling and environmental conservation at school. Therefore, various stakeholders must play a role in promoting sustainable environmental practices among students.

However, this study contradicts the findings of Er and Safuan (2022), which reported a strong significant relationship between environmental knowledge and green practices among undergraduate students. This discrepancy may be due to the influence of environmental education in shaping students' knowledge and green behaviours. According to Chong and Mapa (2019), environmental awareness improves when formal or informal environmental education is introduced. Furthermore, the availability of facilities such as recycling bins significantly contributes to the adoption of recycling habits in daily life.

4. Conclusions

This study successfully achieved its objectives. It found that PVMA students have a high level of environmental knowledge, particularly in recycling. However, their environmental practices remain at a moderate level, with electricity conservation being the most commonly practiced behaviour. The study also confirmed that there is no significant relationship between environmental knowledge and environmental practices, indicating that knowledge alone does not lead to consistent environmental actions. Therefore, active guidance from parents and teachers is crucial in fostering sustainable environmental habits. Ultimately, preserving the environment is a shared responsibility, and continuous efforts are needed to mitigate environmental degradation.

This study is limited in scope as it focuses on a specific group of PVMA students. To enhance future research, it is recommended to expand the study population to include PVMA schools across Johor. Additionally, future studies should explore differences in environmental knowledge and practices based on students' programs, employ qualitative methods for deeper insights, and investigate the factors influencing environmental practices. Further research should also examine the challenges and strategies to enhance environmental sustainability among PVMA students.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

*The authors confirm sole responsibility for the following: **study conception and design:** Farhana Mohd Sabran, Nurul Hidayah Liew Abdullah; **data collection:** Farhana Mohd Sabran; **analysis and interpretation of results:** Farhana Mohd Sabran, Nurul Hidayah Liew Abdullah; **draft manuscript preparation:** Farhana Mohd Sabran, Nurul Hidayah Liew Abdullah. All authors reviewed the results and approved the final version of the manuscript.*

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