Student's Knowledge, Attitudes, and Practice towards Sustainable Development Goals at the Sultan Idris Education University

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ABSTRACT

The integration of Sustainable Development Goals (SDGs) into education systems, especially at higher education institutions, is vital for cultivating global citizens equipped to address sustainability challenges. This study explores the knowledge, attitudes, and practices (KAP) of undergraduate students at Sultan Idris Education University (UPSI) regarding the SDGs. Using a quantitative survey method, 426 students from diverse faculties participated, providing insights into their engagement with sustainability principles. The findings revealed high levels of awareness in specific areas, such as the impact of overusing natural resources and the role of education in sustainable development, but also identified gaps in understanding core sustainability concepts. While students exhibited positive attitudes toward the SDGs, their translation of these attitudes into consistent sustainable practices remained limited. Correlation analyses showed a modest positive relationship between knowledge and practice ($r = 0.228$, $p < 0.05$) and a slight negative correlation between attitudes and practice ($r = -0.198$, $p < 0.05$), underscoring the need for targeted interventions. These results highlight the importance of integrating comprehensive sustainability education and practical initiatives into university programs to transform intention into action. By fostering a deeper understanding and active involvement, UPSI can enhance its role in preparing a sustainability-conscious generation aligned with national and global development goals.

Keywords: Sustainable Development Goals (SDGs), Knowledge, Attitudes, and Practices (KAP), Sustainability Education, Sultan Idris Education University, Malaysia

INTRODUCTION

The Sustainable Development Goals (SDGs), introduced by the United Nations (UN) in 2015, provide a comprehensive global framework consisting of 17 objectives aimed at promoting economic, social, and environmental sustainability by 2030. These goals address critical global challenges, including poverty reduction, quality education, health improvement, and climate action (United Nations, 2015). Achieving the SDGs necessitates the active participation of all sectors, with higher education institutions playing a pivotal role in shaping the perspectives, behaviors, and competencies of future generations. As centers of knowledge production and skill development, universities are instrumental in advancing sustainability education, equipping students with the necessary tools to drive societal transformation. The integration of sustainable development principles into university curricula is therefore imperative in fostering a culture of sustainability among students (Sivapalan, 2016; Machado & Davim, 2022; Machado & Davim, 2023).

Despite the growing emphasis on sustainability education, research consistently highlights a significant issue between theoretical knowledge and practical engagement. Although students often demonstrate strong awareness and positive attitudes toward sustainability issues, actual participation in sustainability initiatives remains low (Tang, 2018; Owojori et al., 2022; Afrin et al., 2024; Alazaiza et al., 2025; Pratama et al., 2025). Research conducted at Universiti Malaya (UM) by Afroz and Ilham (2020) further reinforces this finding, revealing a weak negative correlation between sustainability knowledge and practice, indicating that mere awareness does not automatically translate into sustainable behaviors. This issue is evident across various sustainability domains, including solid waste management, food safety, and SDG-related participation, where students express support for sustainability initiatives but lack active involvement due to limited infrastructure, motivation, and structured engagement opportunities. For instance, Ahamad and Ariffin (2018) found that while university students in Malaysia had high levels of knowledge about sustainable consumption, their attitudes and practices remained moderate, with social media being their primary source of environmental knowledge. Similarly, Abdullah et al. (2023) reported that while 97.6% of students at Universiti Putra Malaysia (UPM) were knowledgeable about the No Plastic Bag Campaign, only 18.2% actively practiced it, further highlighting that knowledge alone does not ensure behavioral change. To address this problem, researchers have explored effective instructional strategies to enhance student engagement in sustainability education. Huang et al. (2023) conducted a quasi-experimental study comparing thematic teaching, design-thinking, and traditional lectures, finding that design-thinking significantly improved students' sustainability-related knowledge, attitudes, and behaviors. Similarly, Muñoz-Mazón et al. (2024) examined an online gender equality course, demonstrating that students with positive initial attitudes were more likely to adopt sustainable behaviors, even in the absence of prior sustainability knowledge. Furthermore, Kitta and Cardona-Moltó (2022) assessed Greek university students' competencies in gender equality practices, emphasizing the importance of structured assessments in measuring students' readiness to implement sustainability principles.

Other studies emphasize the importance of structured sustainability education programs in fostering behavioral engagement. Zubir et al. (2024) examined environmental literacy in Malaysia through the Ecosystem Discovery Journey (EDJ) Programme, reporting high knowledge levels (94.4%) but moderate practice (69.5%), with social media identified as a key source of environmental learning. A similar trend was observed among Erasmus students in Spain, where Picatoste et al. (2025) found high levels of concern for SDGs but varied engagement depending on gender and specific SDG priorities, suggesting the need for tailored interventions to enhance sustainability commitment. Additionally, Abdullahi et al. (2024) explored the impact of Education for Sustainable Development (ESD) on student behavior in Somalia, revealing a significant positive relationship between ESD integration and students' sustainability behaviors. The study emphasizes the importance of embedding ESD into higher education curricula to promote environmentally friendly practices and align cultural norms with sustainability objectives. Baharudin et al. (2024) further examined the knowledge and attitudes of Malaysian university students toward climate change adaptation, revealing a strong correlation between climate change awareness and proactive behavioral attitudes. Their findings highlight the influence of digital platforms as the primary source of climate-related knowledge, reinforcing the role of the internet and social media in shaping sustainability perceptions among youth.

As a leading institution in Malaysia's sustainability efforts, Sultan Idris Education University (UPSI) has implemented various policies and initiatives to integrate sustainability within its academic and operational frameworks. The UPSI SDG Policy (2023) incorporates sustainability principles into curricula, providing students with opportunities to engage with SDG-related topics through interdisciplinary learning, research, and experiential education. Additionally, green campus initiatives such as energy conservation, responsible waste management, and carbon footprint reduction serve to promote sustainable behaviors within the university community. As a testament to its commitment to sustainability, UPSI ranked 111th in the 2024 UI Green Metric World University Rankings, aligning with Malaysia's Higher Education Blueprint, which prioritizes the development of sustainable campuses.

However, despite these policies and institutional efforts, challenges persist in ensuring consistent adoption of sustainable behaviors among students. Alomari and Khataybeh (2021) found that science students in Jordan

had low comprehension of SDGs (44.36%), despite recognizing their role in achieving sustainability goals, advocating for curriculum integration to improve engagement. Similarly, Omisore et al. (2017) reported that only 43% of university students and staff in Nigeria were aware of the SDGs, and a mere 4.2% demonstrated good knowledge, reinforcing the critical need for educational institutions to incorporate SDG-related content into curricula and awareness initiatives.

Building upon previous research that highlights the disparity between sustainability awareness and practice, this study seeks to examine the correlations between (i) knowledge and practice and (ii) attitude and practice among UPSI students. By addressing these gaps, it aims to generate data-driven insights into student engagement with SDGs and provide evidence-based recommendations for policy enhancements that encourage sustainable behaviors. The findings will contribute to the broader discourse on sustainability in higher education, offering practical strategies to enhance sustainability education at UPSI, while reinforcing Malaysia's commitment to achieving the 2030 Agenda for Sustainable Development.

METHOD

Research design

This study employed a quantitative research approach to evaluate the knowledge, attitudes, and practices (KAP) of undergraduate students at Sultan Idris Education University (UPSI) regarding the Sustainable Development Goals (SDGs). The research aimed to explore the relationships between students' KAP and their engagement with sustainability initiatives. The target population comprised undergraduate students from various faculties at UPSI. With a total undergraduate enrolment of 18,766 students, the required sample size was calculated using Yamane's formula (Israel, 1992) to ensure adequate representation, resulting in a minimum of 377 participants. To accommodate a 10% non-response rate, the sample size was adjusted to 419 participants. A convenience sampling method was applied to efficiently recruit respondents while ensuring accessibility for all participants. Data collection was conducted online, using a digital survey platform to facilitate broad participation and maintain convenience for respondents.

Data analysis

Descriptive statistics were utilized to summarize the levels of knowledge, attitudes, and practices among students. The relationship between variables was examined using Spearman's rank correlation coefficient, a non-parametric test suitable for ordinal data, to assess the strength and direction of correlations between students' KAP. Spearman's rank correlation was chosen due to its robustness in handling non-normally distributed data and its ability to capture monotonic relationships between variables, making it particularly appropriate for evaluating associations within the ordinal and non-parametric nature of the survey responses. Statistical significance was determined at the $p < 0.05$ level.

RESULTS AND DISCUSSION

The study collected data from 426 undergraduate students across multiple faculties to ensure a representative sample. The distribution of respondents from each faculty is presented in Figure 1. The Faculty of Language & Communication (FBK) had the highest number of respondents (83 students), accounting for 19.5% of the total sample. This was followed by the Faculty of Sciences & Mathematics (FSMT) (69 students, 16.2%) and the Faculty of Human Sciences (FSK) (60 students, 14.1%), both of which contributed significantly to the study. Conversely, the Faculty of Music & Performing Arts (FMSP) (17 students, 4.0%) and the Faculty of Technical & Vocational (FTV) (20 students, 4.7%) had the lowest number of respondents. The Faculty of Art, Sustainability & Creative Industry (FSKK) (28 students, 6.6%) and the Faculty of Sports Sciences & Coaching (FSSK) (28 students, 6.6%) also had relatively lower participation.

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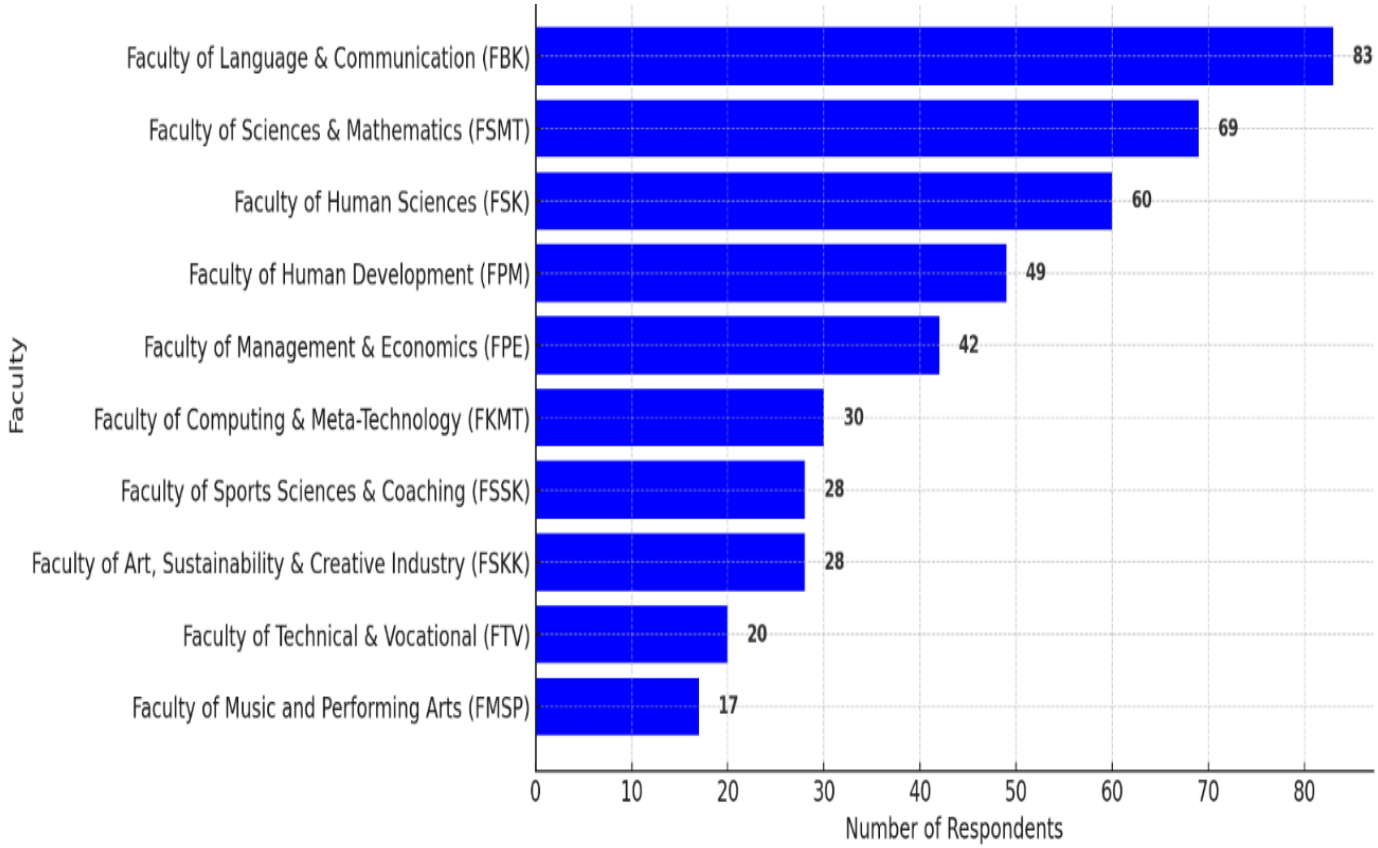

Figure 1:- Distribution of respondents by faculties

The study assessed undergraduate students' knowledge levels regarding SDGs through a series of seven key knowledge-based statements. The findings are summarized in Figure 2. Overall, the results indicate that the majority of students demonstrate a high level of awareness regarding fundamental aspects of SDGs. For instance, 99.3% of students acknowledged that the overuse of natural resources is affecting the well-being of future generations (K3), marking the highest level of agreement among the assessed items. Similarly, 90.4% of students were aware that the SDGs are targeted to be achieved by 2030 (K2), reflecting a general understanding of the SDG timeline. Additionally, 81.7% of students correctly recognized the meaning of the term "sustainability" as the ability to be maintained at a certain rate or level (K1), indicating a foundational awareness of sustainability concepts. Furthermore, a significant majority (95.5%) of students recognized that access to quality education is essential for achieving sustainable development (K4). This aligns with SDG 4, which emphasizes inclusive and equitable quality education as a key factor in sustainability efforts. Additionally, 80.5% of students agreed that maintaining good relationships with various countries is crucial for preserving peace worldwide (K7), highlighting their understanding of global partnerships for sustainable development (SDG 16 and SDG 17). However, there was a notable weakness in knowledge regarding the role of environmental protection, economic growth, and social equity as fundamental elements of a nation (K5), where only 55.4% of students agreed with the statement. This suggests that a significant proportion (44.6%) of students may lack a comprehensive understanding of the interconnectedness between economic, social, and environmental pillars of sustainability. Similarly, while 75.4% of students recognized that increased use of renewable resources can reduce greenhouse gas emissions (K6), a relatively higher percentage (24.6%) expressed uncertainty or disagreement, indicating potential misconceptions regarding the role of renewable energy in mitigating climate change. These findings align with earlier studies by Bui et al. (2024) and Suklun, & Bengü, (2024) which emphasize problems in sustainability education and advocate for integrating SDG-related content into higher education curricula. Few studies further support this notion, noting that students exposed to SDG-focused courses or activities demonstrate higher knowledge levels than their peers without such exposure (Al-Naqbi, & Alshannag, 2018; Marcos-Merino et al., 2020).

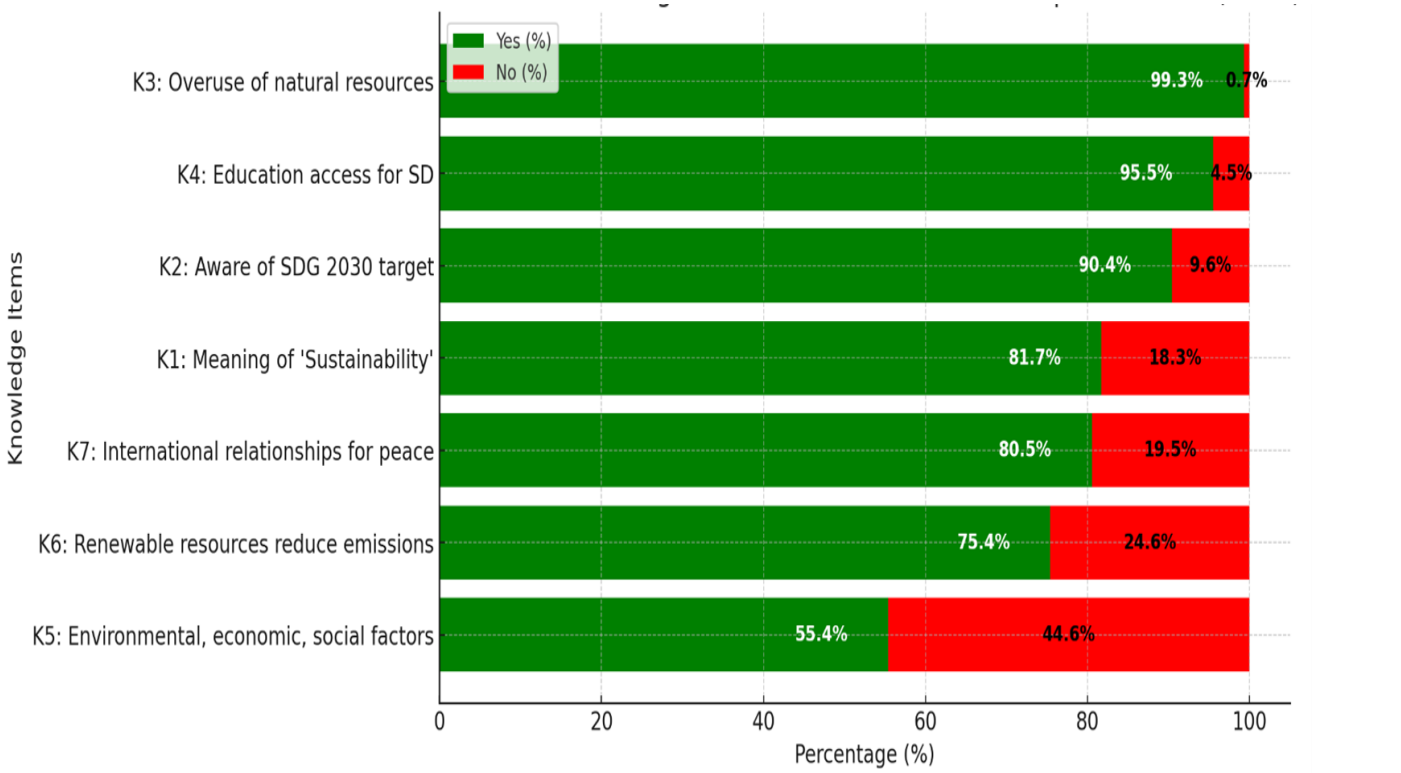

Figure 2.:- Student's knowledge level towards SDG

Figure 3 showed undergraduate students' attitudes toward SDGs through a set of seven statements assessing their perspectives on sustainability, environmental awareness, and social responsibility. The findings indicate that the majority of students exhibited positive attitudes toward SDGs, with most agreeing or strongly agreeing with key sustainability principles. Notably, the highest level of strong agreement (67.6%) was observed for the statement "Environmental problems are a matter of my concern", suggesting a high level of environmental awareness among students. Similarly, 67.1% of students strongly agreed that "Basic environmental courses should be part of the university curriculum", reflecting strong support for integrating sustainability topics into academic programs. In addition, a substantial proportion of students strongly agreed that "The rise of global temperature has increased water scarcity" (58.9%), reinforcing awareness of climate change-related issues. Furthermore, the need for raising awareness on SDGs among university students (49.3%) and providing basic free health services to society (41.3%) received strong support, aligning with SDG 3 (Good Health and Well-being) and SDG 4 (Quality Education).

While most students demonstrated a strong commitment to sustainability, some aspects revealed a less definitive stance. For example, "Respecting people from varying cultural backgrounds" (41.3% SA, 42.0% A) received moderate agreement, suggesting that while many students support inclusivity, some may not actively consider cultural diversity as a sustainability issue. Interestingly, the statement "I try to reduce the amount of waste at home by collecting recyclable materials" had the lowest proportion of strong agreement (30.5%) and the highest neutral response (22.1%). This finding implies that while students recognize environmental issues conceptually, their engagement in practical sustainability efforts, such as recycling, may be limited. Overall, strong disagreement (SD) and disagreement (D) were minimal, ranging from 0.2% to 0.5% across all items. However, neutral responses were relatively higher for statements related to personal action, such as recycling (22.1%) and cultural respect (16.4%), indicating potential areas where awareness and behavioral change efforts could be strengthened. To address this issue, incorporating SDG-focused education and practical initiatives into university programs could further enhance student engagement with sustainability goals. By fostering both knowledge and actionable behaviors, universities can help align positive attitudes with meaningful practices, as highlighted by Baba-Nalikant et al. (2023), Braßler and Sprenger (2021), and Leal et al. (2024).

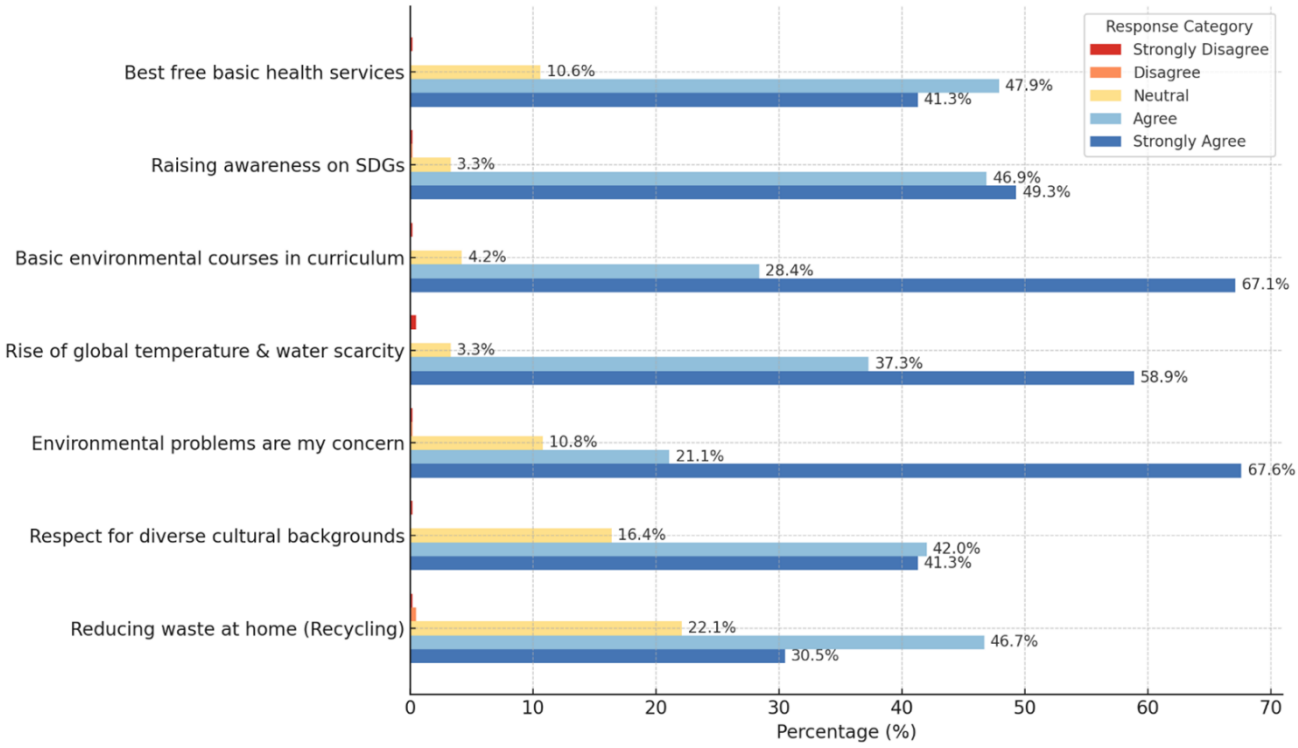

Figure 3:- Students' attitudes towards SDG

The results, as summarized in Figure 4, reveal varying degrees of engagement in sustainability-related actions. The findings suggest that water conservation is the most widely practiced sustainability behavior among students, with 67.1% reporting that they "Sometimes" conserve water and 12.2% stating they "Always" do so. Notably, no students reported "Never" conserving water, indicating a widespread acknowledgment of the importance of water conservation. Similarly, a significant proportion of students actively avoid using animal-skinned products, with 40.6% reporting they "Sometimes" avoid them, and 15.3% doing so "Often". Only a small percentage (1.2%) reported "Never" avoiding these products, suggesting that ethical consumerism related to animal-derived goods is fairly common. The result also reveals moderate adoption levels for behaviors such as preferring public transport over private vehicles and turning off air-conditioners and lights after class. While 42.0% of students "Often" choose public transport, only 2.8% "Always" opt for this mode of travel, indicating that more encouragement is needed to enhance public transport utilization. Similarly, while 27.7% of students "Often" turn off air-conditioners and lights in classrooms, only 6.6% "Always" do so, and 33.1% only "Sometimes" engage in this practice. This highlights a potential gap in energy conservation habits that could be improved through awareness campaigns or institutional policies. Several sustainability behaviors showed relatively low levels of consistent adoption. One of the most concerning findings is that avoidance of plastic straws is not widely practiced, with only 0.5% of students "Always" avoiding plastic straws and 35.0% doing so "Sometimes". A significant proportion (21.4%) of students admitted to "Never" avoiding plastic straws, suggesting a need for greater awareness about plastic waste reduction. Similarly, energy conservation at home remains an issue, as 24.4% of students "Never" turn off electrical appliances they do not need. More than half (52.6%) reported doing so "Rarely", while only 8.7% stated they "Always" engage in this energy-saving habit. This indicates that students may not fully recognize the impact of energy consumption in their daily lives, warranting more targeted sustainability initiatives. An additional concern is the treatment of individuals from different cultural and religious backgrounds, where 51.9% of students reported treating people equally only "Rarely". This suggests a potential issue in fostering inclusivity, diversity, and respect, which are essential components of sustainable development. The variability in responses, underscores the influence of factors such as individual attitudes, resource availability, and institutional infrastructure. These findings highlight the need for targeted initiatives to strengthen students' engagement with both environmental and social dimensions of sustainability as emphasized by Uzorka et al. (2024) and Brugman et al. (2019).

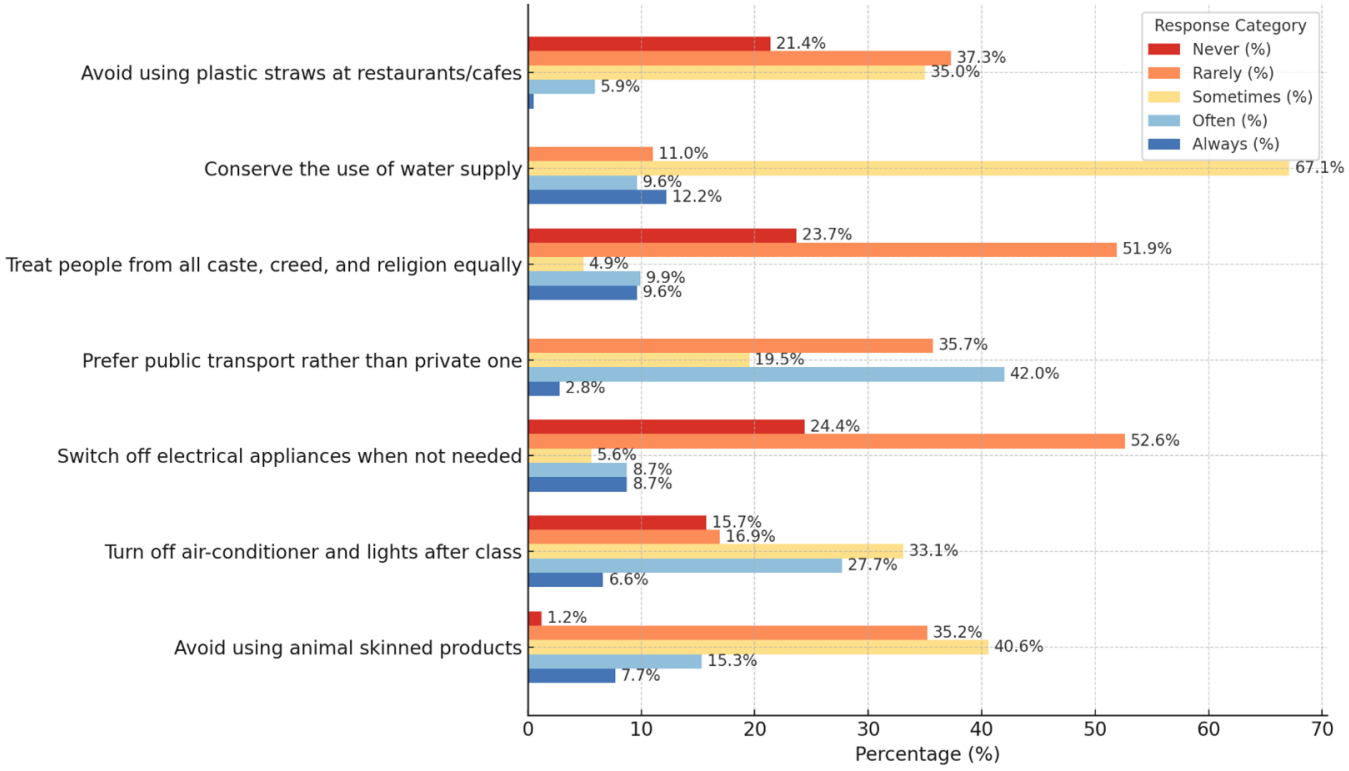

Figure 4:- Percentage of student practice levels on SDG.

Table 1 reveals a moderate positive correlation between students' knowledge of the SDGs and their practical application of this knowledge ($r = 0.228$; $p < 0.05$). This indicates that students with a better understanding of the SDGs are somewhat more likely to translate their knowledge into action, although the relationship is not particularly strong. Garcia et al. (2021) support this finding, asserting that education significantly influences students' proactive engagement with sustainable development by fostering awareness and empowering them to recognize the impact of their actions.

Table 1:- Correlation between knowledge and practice and attitude and practice

Correlation between	**N**	**Spearman's rho correlation coefficient**	**Inference**
Knowledge and practice	426	0.228	Correlated
Attitude and practice	426	-0.198	Correlated

The observed negative correlation between attitudes and practice ($r = -0.198$, $p < 0.05$) suggests that while students hold positive perceptions of sustainability, these attitudes do not necessarily translate into consistent sustainable behaviors. This aligns with findings from Nousheen et al. (2020), who reported that although students demonstrated strong pro-sustainability attitudes, practical engagement remained low due to various external constraints. One key factor contributing to this inconsistency is the intention-behavior, where individuals' express positive attitudes but struggle to act accordingly due to contextual barriers such as lack of infrastructure, habitual behaviors, or social and economic constraints (Zhao & Cheah, 2023). To bridge the disconnect between sustainability policies and student behaviors, UPSI should implement a multi-pronged strategy that combines education, leadership development, and infrastructure support. This strategy should focus on active student participation, faculty engagement, and external partnerships. Three key initiatives are proposed to enhance sustainability implementation at UPSI, such as the SDG Student Ambassadors Program. This program can serve as a cornerstone for fostering sustainability leadership among undergraduates. The initiative would involve training selected students as sustainability advocates who collaborate with faculties, student organizations, and administrative departments to promote SDG-related projects. Such a program has been successfully implemented in universities worldwide, demonstrating its effectiveness in enhancing student

engagement and long-term behavioral change (Nedungadi et al., 2023; Carney-Nedelman & Clark, 2022; Shrivastava et al., 2017; Lee et al., 2023; Jensen & Pilgaard, 2024). Furthermore, by providing formal recognition, leadership training, and structured responsibilities, UPSI can create a self-sustaining model of student-driven sustainability initiatives. The other feasible strategy is through the development of Sustainability Action Plans in curriculum. One of the most effective ways to embed sustainability principles into student practice is by integrating SDG-related coursework across disciplines. Faculties should be encouraged to incorporate project-based learning activities that require students to engage in real-world sustainability challenges. For instance, engineering students could design eco-friendly infrastructure models, while business students could develop sustainability-driven entrepreneurship projects. Prior studies suggest that embedding sustainability concepts in academic programs enhances long-term retention and application of sustainable behaviors (Al-Naqbi & Alshannag, 2018). The other strategy is through community engagement which plays a critical role in reinforcing student sustainability behaviors. Partnering with local government agencies, non-governmental organizations (NGOs), and industry leaders can provide students with practical exposure to sustainability implementation beyond the classroom. Collaborative initiatives, such as sustainability-focused internships, environmental conservation projects, and community-driven SDG awareness campaigns, can enhance experiential learning and reinforce sustainability as a social responsibility (Zhao & Cheah, 2023).

UPSI has implemented several sustainability-focused policies, such as the UPSI Green Campus Initiative and the UPSI SDG Strategic Framework, which aim to integrate sustainable practices into campus operations, curriculum, and student engagement (UPSI SDG Policy, 2023). However, the findings highlight several limitations in the current SDG@UPSI Policy that may hinder student engagement in sustainability practices. Despite the university's strong commitment to sustainable development, the lack of incentives and recognition for student involvement suggests a shortfall in motivation, which could be addressed through structured reward systems such as co-curricular credits, special awards, or scholarships. Additionally, while institutional leadership drives SDG initiatives, student participation remains passive, necessitating the establishment of a Student SDG Council to enhance student leadership and decision-making roles. Another key limitation is the limited integration of sustainability education across disciplines, where sustainability concepts are primarily emphasized in environmental-related courses rather than embedded within all academic programs. A mentorship program between faculty, senior students, and juniors could further reinforce long-term awareness and application of sustainability principles. Moreover, although the policy underscores sustainability-focused research, the absence of clear mechanisms to involve students in final-year projects or internships related to SDGs indicates a missed opportunity to cultivate research-based solutions. Establishing mini-grants or research funding for student-driven sustainability projects could enhance their engagement in applied research. Furthermore, constraints in green campus infrastructure may limit the effectiveness of sustainability initiatives, emphasizing the need for a Green Fund to support student and faculty-led sustainability projects.

CONCLUSION

This study provides critical insights into the knowledge, attitudes, and practices of undergraduate students at UPSI regarding the SDGs. While students exhibit a strong conceptual understanding of sustainability and hold positive attitudes towards the SDGs, the translation of these attributes into tangible, sustainable behaviors remain suboptimal. The modest positive correlation between knowledge and practice underscores the necessity of reinforcing sustainability education with experiential learning and institutional support. Conversely, the slight negative correlation between attitudes and practice reveals a fundamental disconnect, suggesting that positive perceptions alone are insufficient to drive meaningful behavioral change.

These findings highlight structural barriers such as inadequate resources, limited institutional initiatives, and motivational constraints that must be addressed to foster a more sustainability-oriented campus culture. To ensure the longevity and efficacy of UPSI's sustainability initiatives, a comprehensive and strategic framework is imperative. Establishing an SDG Resource Hub can facilitate interdisciplinary collaborations, knowledge dissemination, and hands-on sustainability initiatives, embedding sustainable development within the

university's core operations. The integration of mandatory sustainability courses across disciplines will equip students with the competencies required to navigate and address complex sustainability challenges. Furthermore, strengthening multi-sectoral partnerships with governmental bodies, industry leaders, and non-governmental organizations (NGOs) will enhance real-world applications of sustainability principles and foster innovation-driven solutions. Moreover, the UPSI SDG Strategic Committee must take an active role in institutionalizing sustainability governance, ensuring continuous assessment, policy refinement, and alignment with global sustainability benchmarks. By embedding sustainability into its academic and operational blueprint, UPSI can position itself as a leading institution in sustainable education and policy implementation. Through sustained institutional commitment and targeted interventions, UPSI can serve as a model for higher education institutions in fostering an enduring culture of sustainability, reinforcing Malaysia's role in advancing the 2030 Agenda for Sustainable Development.

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