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Sustainable development attitudes among university students: Insights from a Vietnam case study

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ABSTRACT

As future decision-makers, university students play an important role in advancing sustainable development goals. Thus, understanding students' attitudes towards sustainable development has become a critical area of research. Therefore, this study assesses Vietnamese undergraduate students' attitudes towards sustainable development and examines the factors in shaping these attitudes. A cross-sectional study was conducted in which 250 undergraduate students from four universities in Vietnam participated. Data were collected using the *Attitudes towards Sustainable Development Scale* to measure students' attitudes towards sustainable development. The questionnaire also included demographic characteristics such as gender and academic year. The collected data were analyzed using both descriptive and inferential statistical techniques, including mean scores, independent sample t-tests, and analysis of variance (ANOVA), performed using IBM SPSS Statistics version 25. The significant level was set to $p < 0.05$. The findings indicated that undergraduate students generally held positive attitudes towards the environment, economy, society, and education components, with particularly favorable views observed in the society and education components. There was no statistically significant relationship between students' attitudes towards the four components and their gender, age or academic year. However, a statistically significant relationship was found between students' attitudes towards the social component and their field of study (p <0.001). Overall, the findings indicate that Vietnamese university students generally hold favorable views regarding the principles and goals of sustainable development.

Keywords: sustainable development, sustainability attitudes, sustainability, university students, Vietnam

INTRODUCTION

INTRODUCTION

Sustainable development is viewed as a large and complex phenomenon (Koskela & Kärkkäinen, 2021). According to the United Nations (UN), sustainable development refers to a development approach that aims to satisfy current needs while ensuring that future generations retain the capacity to meet their own economic, social, and environmental requirements. This concept is at the heart of the 2030 Agenda for Sustainable Development, which was adopted by all UN Member States in 2015 (United Nations, 2015). This global framework is organized around 17 Sustainable Development Goals (SDGs) designed to tackle major global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. The SDGs provide a framework for all countries to work towards a more sustainable and equitable future for everyone. The concept of sustainable development is generally understood through several core principles. First, sustainable development addresses environmental sustainability. This principle emphasizes the responsible use and conservation of natural resources while safeguarding ecosystems for future generations, encompassing actions aimed at reducing pollution, protecting biodiversity, and addressing climate change. Second, sustainable development promotes social inclusion. This dimension concerns equality and access to basic services such as education, healthcare, and clean water for all people, irrespective of gender, age, or ethnicity, seeking to ensure that no one is left behind. Third, sustainable development encompasses economic development, referring to the promotion of economic growth that generates employment and prosperity while maintaining social fairness and responsible resource use. Finally, sustainable development rests on the principle of intergenerational equity, which recognizes that the well-being of future generations is linked to the choices made today, ensuring that the planet and its resources are left in a better state for those who follow. While these goals provide a roadmap for global action, the present study focuses specifically on assessing student attitudes towards the underlying principles of

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sustainability that support these goals, rather than measuring direct SDG implementation or behavioral engagement.

As a member country of the United Nations, Vietnam has been actively participating in the implementation of the global SD agendas. In the context of Vietnam, the Sustainable Development Goals (SDGs) were nationalized in the National Action Plan to implement the 2030 Agenda for SDGs (SDG NAP) in May 2017. The SDG NAP was a cross-sectoral policy document, and was promulgated as per Decision 622/QD-TTg of the Prime Minister, in which 17 SDGs of Vietnam towards 2030 have been set including 115 specific targets, in corresponding with global SDGs targets approved at the Summit Meeting of the UN in September 2015 (The Government of Vietnam, 2017). To concretize Decision No. 622/QĐ-TTg, the Ministry of Education and Training of Vietnam (MOET) issued Decision No. 2161/QĐ-BGDĐT, promulgating the Action Plan for implementing the Sustainable Development Goals in the field of education and training through 2025, with orientations towards 2030 (MOET, 2017). From this stance, integrating education for sustainable development into universities is imperative, and a critical first step in designing effective education curricula is understanding university students' attitudes towards sustainable development (UNESCO, 2017).

To date, a growing body of research has explored various aspects of sustainability in higher education, including management, resource utilization, health, and awareness. Among these, students' attitudes towards sustainable development have gained increasing attention, as university students play a key role in shaping future sustainability practices. Overall, studies consistently report that university students tend to hold positive attitudes towards sustainable development. In Malaysia, for example, Balakrishnan et al. (2020) found that students from five universities expressed favorable perceptions across environmental, economic, and social dimensions of sustainability, though they showed slightly lower confidence in economic issues. Similarly, at Universiti Sains Malaysia, Azhar et al. (2022) reported that students exhibited moderate to high levels of positive attitudes towards sustainability, closely linked to their participation in campus-based initiatives. Research from other countries supports these findings. In the United Arab Emirates, students at the University of Sharjah showed high awareness and strong support for their institution's sustainability programs (Radwan & Khalil, 2021). In the Philippines, Legaspi et al. (2024) observed generally high levels of positive student attitudes, particularly regarding environmental protection and social equity. In Iran, Rezaei and Khodaei Motlagh (2017) found that 77.2% of students at Arak University demonstrated a high level of awareness of sustainable development, while 33.7% exhibited strong attitudes towards it. Their study also identified gender as a significant factor, with female students showing greater environmental concern; however, religion and age had no significant influence. Findings from Jordan (Abu-Alruz et al., 2018) and China (Hwang, 2025; Liu et al., 2022) further highlight regional trends. Jordanian students displayed positive attitudes towards the educational, economic, and social pillars of sustainable development, although their environmental attitudes were less favorable. Chinese vocational accounting students, by contrast, were especially strong in their support for the educational dimension of sustainable development, with female and senior-year students scoring higher overall. Hwang (2025) also confirmed that Chinese students held a uniformly positive attitude towards sustainable development, with minimal gender-based differences.

Academic discipline has emerged as another important factor influencing sustainability attitudes. For instance, social work students in Albania expressed strong support for the social and educational dimensions of sustainable development and advocated for greater curricular integration of sustainability topics (Osmanaga & Lumanaj, 2024). In Croatia, students in teacher training programs also demonstrated favorable attitudes (Anđić & Ćurić, 2020). Engineering students similarly exhibited strong interest, with 70.7% willing to attend sustainability workshops and 65.7% expressing willingness to contribute to achieving sustainable development goals, despite facing uncertainties on how to begin (Nakad & Kövesi, 2022).

Furthermore, demographic factors such as gender and academic year have also been found to correlate with student attitudes. Studies consistently show that female students tend to score higher on environmental and social dimensions (Abu-Alruz et al., 2018; Liu et al., 2022), while senior students generally exhibit more developed attitudes, likely due to greater exposure to sustainability-related content through coursework and university programs (Michael et al., 2020). In Egypt, a study at Assiut University found that students showed the strongest attitudes towards societal and educational aspects of sustainable development, with academic year significantly influencing their perspectives (El-Hamed et al., 2022).

Despite this growing body of international research, the topic of environmental perception and attitudes towards sustainable development has been less explored in Vietnam, a developing country in Southeast Asia with a unique socio-cultural context. Investigating students' perceptions in this setting yields insights specific to the urban higher education landscape of Ho Chi Minh City. While these findings provide a foundational understanding of sustainability attitudes within a major Vietnamese economic hub, the use of a convenience sampling strategy geographically restricted to one city limits the representativeness of the sample. Consequently, while the results may offer points of comparison for other developing contexts, they should be interpreted as localized evidence rather than broadly generalizable to all of Vietnam or other developing countries seeking to implement education for sustainable development.

The present study examines Vietnamese university students' attitudes towards sustainable development within their local context, using the Attitudes Towards Sustainable Development Scale. In addition to describing overall attitudes, the study explores whether these attitudes differ according to students' demographic and academic characteristics, including prior awareness of sustainable development and field of study. By providing evidence from Vietnam, where empirical research on university students' sustainability attitudes remains limited, the study contributes to the growing

literature on sustainability education in developing country contexts.

MATERIALS AND METHODS

To examine the attitudes of university students in Vietnam towards sustainable development, the present research adopted a quantitative cross-sectional survey design to examine students' attitudes towards sustainable development. Such a design is widely used in social science research because they facilitate the collection of self-reported information regarding respondents' perceptions, beliefs, and attitudes (Hall, 2008; Tien, 2022, 2024). Data collection was carried out through a face-to-face survey questionnaire, conducted in the students' classroom at the end of their course in October 2024. To minimize social desirability bias, students were assured of complete anonymity, and course instructors were not present during the survey administration. The questionnaire used in this study consists of two parts. In the first part, there are demographic questions in order to determine the age, gender, academic year, field of study of the students. In the second part, the Attitudes Towards Sustainable Development scale is included to assess students' attitudes towards sustainable development. The study utilized the Attitudes Towards Sustainable Development Scale developed by Biasutti and Frate (2017). The instrument contains 20 items grouped into four dimensions: environmental (5 items), economic (5 items), social (5 items), and educational (5 items). Participants responded to each statement using a five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). This scale incorporated education as a fourth dimension, alongside the traditional three pillars of sustainable development such as environment, economy, and society. Previous validation studies have reported satisfactory reliability for the instrument, with Cronbach's alpha coefficients ranging from 0.660 to 0.854 across the four dimensions (The full survey questionnaire is provided in **Appendix A**).

The respondents were students enrolled at four universities in Ho Chi Minh City, the largest city in Vietnam. A total of 250 students participated in the study using a convenience sampling method. Among them, 70 students (28.0%) were from Ho Chi Minh City Open University (HCMCOU), 50 students (20.0%) from the University of Technology (HUTECH), 60 students (24.0%) from Sai Gon University (SGU), and 70 students (28.0%) from the University of Education (HCMUE). Participation in the survey was voluntary, and respondents' anonymity was strictly maintained. Informed consent was obtained from all respondents. While this approach facilitated data collection within the targeted universities in Ho Chi Minh City, it introduces significant risks of selection bias and substantially limits the external validity of the findings. Since participants were not randomly selected, the sample may over-represent students who are more accessible or more interested in sustainability issues, thereby potentially inflating the observed attitude scores. Consequently, the results should be viewed as localized insights into the urban student population of Ho Chi Minh City rather than being broadly generalizable to all university students across Vietnam or other developing countries.

For data analysis, both descriptive and inferential methods were used, including frequency, mean, *t*-test, and analysis of variance (ANOVA), conducted using IBM SPSS Statistics 25. The significance level was set at $p < 0.05$. Because this study was exploratory rather than confirmatory in nature, aiming to identify potential patterns of association rather than formally test a limited set of pre-specified hypotheses, no adjustment for multiple comparisons was applied. Controlling the family-wise error rate (e.g., using the Bonferroni correction) was not considered appropriate because it would substantially reduce statistical power and increase the risk of Type II errors, potentially obscuring meaningful associations in this exploratory context. Nevertheless, given the number of hypothesis tests conducted, the reported *p*-values should be interpreted with appropriate caution and regarded as exploratory rather than confirmatory.

Prior to conducting inferential statistical analyses, the assumptions underlying the parametric tests were evaluated. Although both the Kolmogorov-Smirnov and Shapiro-Wilk tests indicated statistically significant departures from normality for all four dimensions (all $p < 0.001$), such findings are common in large samples because these tests are highly sensitive to minor deviations from normality. Accordingly, skewness and kurtosis values were also examined. Skewness ranged from -0.947 (Social) to -0.385 (Environmental), and kurtosis ranged from 0.734 (Educational) to 1.762 (Economic), all within the acceptable range of ±2, supporting the use of parametric analyses in the present study. Homogeneity of variance was assessed using Levene's test for each grouping variable. The homogeneity assumption was satisfied for the independent-samples *t*-tests comparing students by prior awareness (Levene's $p = 0.089–0.820$ across dimensions) and by gender (Levene's $p = 0.094–0.943$), as well as for the one-way ANOVA comparing academic year (Levene's $p = 0.312–0.894$).

For comparisons across fields of study, however, the homogeneity assumption was violated for the Educational (Levene's $p = 0.010$) and Social (Levene's $p = 0.001$) dimensions. Accordingly, Welch's ANOVA was used as a robust alternative for these two analyses. Independence of observations was ensured through the sampling design.

RESULTS AND DISCUSSION

Table 1 showed the demographic characteristics of the participants. Regarding gender, **t**he distribution was relatively balanced, with 50.8% female (n = 127) and 49.2% male (n = 123), indicating no significant gender bias in the respondent group. Regarding the academic year, the highest proportion of students were in their second year (38.8%), followed by third-year students (24.4%), first-year students (20.8%), and fourth-year students (16.0%). In terms of field of study, the largest group of respondents were from the Social Sciences and Humanities (33.2%), followed by Business (20.8%), Information Technology (20.4%), and Foreign Languages (19.2%). A small proportion (6.4%) were from other disciplines. This distribution reflects a diverse academic background,

Table 1. Demographic characteristics of the respondents

Variable	Values	Frequency	Percent
Gender	Male	123	49.2
	Female	127	50.8
Academic year	First year	52	20.8
	Second year	97	38.8
	Third year	61	24.4
	Fourth year	40	16.0
Field of study	Business	52	20.8
	Social Sciences & Humanities	83	33.2
	Information Technology (IT)	51	20.4
	Foreign Languages	48	19.2
	Other	16	6.4
Hearing about sustainable development	Yes	227	90.8
	No	23	9.2
Age	Mean	19.57	
	SD*	1.198	

* *SD: Standard deviation*

Table 2. Respondents' views on the environmental issues in Vietnam

Environmental issues	Frequency	Percent
Air pollution	159	63.6
Water pollution	82	32.8
Noise pollution	38	15.2
Thermal pollution	18	7.2

Note. Total percentage exceeds 100% because respondents were permitted to select multiple options. *N*= 250

which was beneficial for analyzing differences in sustainability attitudes across fields. The mean age of respondents was 19.57 years, with a standard deviation (SD) of 1.198, indicating a relatively young and homogenous age group, as expected for an undergraduate population.

A substantial majority of students (90.8%) reported that they had heard about sustainable development, while only 9.2% had not. To further explore the factors influencing these attitudes, an independent samples *t*-test was conducted to compare students with prior awareness of sustainable development against those without. Despite the high awareness rate (90.8%), the analysis revealed no statistically significant differences in attitudes across any dimensions: Environmental ($t(248) = 1.74$, $p = 0.083$, *Cohen's d* = 0.38), Economic ($t(248) = 0.88$, $p = 0.380$, *Cohen's d* = 0.21), Educational ($t(248) = 1.22$, $p = 0.225$, *Cohen's d* = 0.26), and Social ($t(248) = -0.35$, $p = .727$, *Cohen's d* = -0.08). These results suggest that simple conceptual awareness does not necessarily translate into a significantly different attitudinal profile among the participants.

Regarding environmental issues, **Table 2** showed that air pollution was considered the most serious environmental concern in Vietnam, as reported by 63.6% of respondents. This indicated that the majority of participants were highly concerned about deteriorating air quality, likely due to traffic emissions, industrial activities, and urban construction. Water pollution was the second most frequently mentioned issue, with 32.8% of respondents identifying it as a major concern. This reflected growing awareness of water contamination caused by industrial discharge, untreated domestic wastewater, and agricultural runoff. Noise pollution was cited by 15.2% of respondents, while thermal pollution was the least recognized issue, mentioned by only 7.2% of respondents. Although not as prominent as air or water pollution, these issues still affected a significant portion of the population, particularly in urban environments where traffic and construction noise were prevalent.

Regarding the scale, internal consistency was acceptable, with a Cronbach's alpha of 0.791. However, the four dimensions (Environment, Economy, Society, and Education) showed a more heterogeneous pattern of reliability. While the Education dimension demonstrated good internal consistency ($\alpha = 0.797$), the Environment ($\alpha = 0.553$), Economy ($\alpha = 0.551$), and Society ($\alpha = 0.595$) dimensions fell below the conventional threshold of 0.70 (**Table 3**). This pattern may partly reflect the relatively small number of items within each dimension (five items), which may contribute to lower Cronbach's alpha values independently of true item homogeneity (Hair et al., 2019; Nunnally & Bernstein, 1994). In addition, these dimensions may encompass conceptually diverse aspects of sustainability – for example, balancing environmental protection with economic development – rather than representing strictly unidimensional constructs. Consequently, findings related to the Environment, Economy, and Society dimensions should be interpreted with appropriate caution, as lower internal consistency may increase measurement error and reduce the precision of descriptive and inferential estimates. Further validation of the scale in larger and more diverse samples is warranted.

The construct validity of the measurement scale was examined using Exploratory Factor Analysis (EFA) with Principal Axis Factoring (PAF) and Promax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.797, and Bartlett's test of sphericity was significant ($\chi^2 = 1304.261$, $df = 190$, $p < 0.001$), indicating that the data were suitable for factor analysis. Following the theoretical framework of Biasutti and Frate (2017), the number of factors was fixed at four prior to extraction. The four-factor solution

Table 3. Students' attitudes Towards sustainable development

Item	Mean	SD	Min	Max	alpha
Environment component	**3.51**	**0.637**	**1**	**5**	**0.553**
1. When people interfere with the environment, they often produce disastrous consequences	3.58	1.028	1	5	
2. Environmental protection and people's quality of life are directly linked	4.23	0.910	1	5	
3. Biodiversity should be protected at the expense of industrial agricultural production	3.48	1.098	1	5	
4. Building development is less important than environmental protection	3.06	1.187	1	5	
5. Environmental protection is more important than industrial growth	3.19	1.079	1	5	
Economy component	**3.54**	**0.579**	**1**	**5**	**0.551**
6. Government economic policies should increase sustainable production even if it means spending more money	3.49	0.861	1	5	
7. People should sacrifice more to reduce economic differences between populations	3.09	1.081	1	5	
8. Government economic policies should increase fair trade	3.56	0.943	1	5	
9. Government economic policies should act if a country is wasting its natural resources	3.76	1.009	1	5	
10. Reducing poverty and hunger in the world is more important than increasing the economic well-being of the industrialized countries	3.78	0.930	1	5	
Society component	**4.22**	**0.531**	**2**	**5**	**0.595**
11. Each country can do a lot to keep the peace in the world	4.39	0.795	1	5	
12. The society should further promote equal opportunities for males and females	4.39	0.858	1	5	
13. The contact between cultures is stimulating and enriching	4.08	0.900	1	5	
14. The society should provide free basic health services	4.32	0.803	1	5	
15. The society should take responsibility for the welfare of individuals and families	3.95	0.936	1	5	
Education component	**4.20**	**0.647**	**1**	**5**	**0.797**
16. Teachers in college should use student-centred teaching methods	4.24	0.827	1	5	
17. Teachers in college should promote future-oriented thinking in addition to historical knowledge	4.25	0.852	1	5	
18. Teachers in college should promote interdisciplinarity between subjects	4.16	0.841	1	5	
19. Teachers in college should promote the connection between local and global issues	4.12	0.895	1	5	
20. Teachers in college should promote critical thinking rather than lecturing	4.22	0. 938	1	5	
Overall	**3.87**	**0.423**	**2**	**5**	**0.791**

accounted for 36.92% of the total variance, with extracted eigenvalues of 4.157, 1.580, 1.051, and 0.595, respectively. The Pattern Matrix indicated a factor structure that was broadly consistent with the original four-dimensional framework. Factor 1 (Education) was primarily defined by the five education-related items in the original scale, with factor loadings ranging from 0.581 to 0.790). Factor 2 (Environment) was defined by items emphasizing environmental protection over industrial growth (loadings = 0.634–0.789). Factor 3 (Society) was defined by items reflecting social responsibility and environmental awareness (loadings = 0.450–0.690). Factor 4 (Economy) was defined by items addressing sustainable production and fair trade policies (loadings = 0.510–0.654). The complete factor loading matrix is provided in **Appendix B**. Although the explained variance was modest, the extracted factor structure was generally consistent with the theoretical dimensions proposed by Biasutti and Frate (2017), supporting the retention of all items for subsequent analyses.

With regard to the four dimensions of sustainable development, **Table 3** indicated that university students generally exhibited positive attitudes towards sustainable development, with an overall mean score of 3.87 (*SD* = 0.423). According to the classification criteria for Likert scales (Best & Kahn, 2006), a mean score ranging from 3.41 to 4.20 reflects a positive level of perception, suggesting that the participants largely agree with the principles of sustainability. Among the components, the highest levels of agreement were observed in the society (mean score = 4.22) and education dimensions (mean score = 4.20), where students expressed strong agreement with statements related to gender equality, global peace, and student-centered teaching approaches. The environment component also received favorable responses, particularly regarding the link between environmental protection and quality of life, although students were less inclined to prioritize the environment over development (mean score = 3.51). In the economic dimension (mean score = 3.54), students acknowledged the importance of poverty reduction and sustainable policy-making but were less supportive of redistributive sacrifices. While these findings demonstrate a positive attitudinal baseline, they offer a strategic opportunity for educational policy. Rather than implying a deficit in current frameworks, these results suggest that higher education institutions could further enhance the integration of sustainability concepts into university curricula. By leveraging students' existing receptiveness to educational and social issues, such curricular refinements could more effectively translate positive attitudes into professional competencies.

Regarding the correlation between the four dimensions of sustainable development, the results showed that all dimensions were positively and significantly correlated ($p < 0.01$), indicating consistent pro-sustainability attitudes across domains. Notably, society and education had the highest correlation ($r = 0.555$), while environment and economy demonstrated a moderate correlation ($r = 0.360$), suggesting that support for environmental protection is somewhat aligned with sustainable economic values. The lowest correlation was observed between economy and education ($r = 0.245$), possibly reflecting weaker connections between students' economic values and educational views (**Table 4**).

Table 4. Correlation matrix between the four dimensions of sustainable development (n = 250)

Dimension	1. Environment	2. Economy	3. Education	4. Society
1. Environment	1			
2. Economy	.360**	1		
3. Education	.274**	.269**	1	
4. Society	.298**	.245**	.555**	1

Note. $p < 0.01$ (2-tailed). Listwise deletion was used for missing values

Finally, no significant differences in university students' attitudes towards sustainable development were observed according to gender or academic year. Levene's test indicated that the assumption of homogeneity of variance was satisfied for these comparisons (p = 0.094–0.943 for gender, p = 0.312–0.894 for academic year). For comparisons across fields of study, however, the homogeneity assumption was violated for Educational (Levene's p = 0.010) and Social (Levene's p = 0.001) dimensions. Accordingly, Welch's ANOVA was applied for these two analyses, whereas standard one-way ANOVA was retained for the Environmental and Economic dimensions, for which the assumption was satisfied (Levene's p = 0.819 and 0.240, respectively).

A statistically significant difference across fields of study was observed only for the Social dimension among the four dimensions examined (Welch's $F(4, 77.42) = 7.161$, $p < 0.001$, $\eta_\rho^2 = 0.077$), with business students reporting the highest endorsement (M = 4.53) and foreign language students the lowest (M = 4.06). The Educational dimension did not differ significantly across fields of study (Welch's $F(4, 77.71) = 2.294$, p = 0.067), and no significant differences were found for the Environmental and Economic dimensions ($p > 0.05$).

This study examined Vietnamese students' attitudes towards sustainable development using the Attitudes Towards Sustainable Development scale. The overall scale demonstrated acceptable internal consistency (Cronbach's α = 0.791), although three of the four subscales showed relatively low reliability (α = 0.553, 0.551, and 0.595, respectively) and should therefore be interpreted cautiously. This pattern is broadly consistent with the findings reported by Biasutti and Frate (2017) for the original scale. The analysis of correlations among the four dimensions of sustainable development revealed positive and statistically significant relationships between all dimensions. These findings are consistent with those reported by El-Hamed et al. (2022), who also observed strong and statistically significant correlations among all sustainable development goals.

In terms of student attitudes, the overall results indicated positive attitudes across all dimensions of sustainable development. These findings are in agreement with previous research conducted in various international contexts (Abu-Alruz et al., 2018; Anđić & Ćurić, 2020; Azhar et al., 2022; Balakrishnan et al., 2020; Biasutti & Frate, 2017; El-Hamed et al., 2022; Legaspi et al., 2024). These findings are consistent with the possibility that national sustainability initiatives may contribute to shaping students' perspectives, although the current design does not allow for causal attribution. The observed attitudes are consistent with Vietnam's broader emphasis on sustainability education, such as the MOET Action Plan (2017). However, the present study cannot determine whether these policy initiatives directly shaped student attitudes, as other external factors or cultural influences may also play a significant role. However, the findings contrast with the findings of Abu-Alruz et al. (2018), who reported that Jordanian students exhibited negative attitudes towards the environmental dimension of sustainable development. This discrepancy could potentially be attributed to variations in the implementation and emphasis of sustainable development education across different national contexts. However, in the absence of a harmonized comparative framework, this remains a tentative interpretation rather than an established explanation. Further cross-national research using standardized metrics would be required to empirically validate how different institutional and cultural frameworks influence student attitudes.

Additionally, the study found a statistically significant difference in students' attitudes within the Social dimension based on their field of study. Although the present study did not directly examine the mechanisms underlying this difference, one possible explanation is that students from different academic disciplines are exposed to varying educational experiences and value orientations. Such differences may influence how students perceive issues related to social equity, welfare, intercultural understanding, and collective responsibility, which constitute key elements of the social pillar of sustainable development. Therefore, the findings suggest that disciplinary background may serve as an important contextual factor shaping sustainability-related attitudes. This result aligns with the findings of Biasutti and Frate (2017), who observed that students from different academic backgrounds, specifically those in agriculture and psychology, held varying attitudes towards certain aspects of sustainable development. This underscores the need for more systematic integration of Education for Sustainable Development (ESD) across all programs - an issue documented in both developing and developed countries.

Finally, the lack of significant differences in attitudes by gender or academic year indicates that sustainability awareness and values may be shared broadly among Vietnamese youth. This uniformity contrasts with findings from Iran (Rezaei & Khodaei Motlagh, 2017) and China (Liu et al., 2022), where gender and academic year influenced attitudes. One possible explanation for this difference is that cultural factors or the increasing visibility of sustainability issues in public discourse and social media may shape student attitudes, although these mechanisms were not directly examined in this study.

Overall, the results of this study reinforce the importance of strengthening curricular integration, promoting active and interdisciplinary learning approaches, and ensuring that sustainability education is inclusive across fields. These efforts would support the long-term goal of fostering an attitudinal foundation that may enable young people to participate in Vietnam's sustainable development trajectory. While this

study focuses on perceptions, cultivating such positive attitudes is a critical prerequisite for potential future engagement in sustainable practices.

These findings carry several theoretical and practical implications. Theoretically, the findings provide descriptive evidence suggesting that a high level of conceptual awareness does not necessarily correspond to differentiated sustainability attitudes. The observed pattern indicates that awareness alone may be insufficient to explain attitudinal variation and warrants further investigation in future research. Furthermore, the finding that field of study - but not gender or academic year - was associated with the social dimension suggests that disciplinary context may play a more important role than commonly examined demographic characteristics in shaping sustainability attitudes among university students. Practically, the findings provide guidance for higher education policy and curriculum design. Given the generally positive attitudes observed across all dimensions, universities and policymakers, including those implementing Vietnam's MOET Action Plan (2017), may benefit from strengthening Education for Sustainable Development through discipline-specific curricula, interdisciplinary learning, and student-centered pedagogical approaches that help translate positive attitudes into sustainability competencies and long-term civic engagement.

CONCLUSIONS

This study explored Vietnamese university students' attitudes towards sustainable development using the Attitudes Towards Sustainable Development scale. The findings revealed that, overall, students demonstrated moderately positive attitudes across all four dimensions: environment, economy, society, and education. Among these, the highest levels of agreement were observed in the society and education components, suggesting that students place strong value on social equity and innovative teaching approaches. While the environment and economy dimensions also received favorable ratings, their relatively lower mean scores (3.51 and 3.54) indicate more moderate positions. This suggests a certain degree of ambivalence among students when navigating complex trade-offs, such as balancing environmental conservation with economic development. Importantly, the study identified no significant differences in attitudes based on gender or academic year, highlighting a relatively uniform perspective among students across demographic groups. However, statistically significant differences were found across fields of study, particularly in the social dimension, underscoring the need to tailor sustainability education according to disciplinary contexts.

Furthermore, the findings contribute to the literature by providing a multidimensional baseline from a Southeast Asian context. While the observed attitudes are consistent with Vietnam's broader emphasis on sustainability education, this study does not empirically determine whether specific policy initiatives directly shaped these attitudes. Based on these findings, further integration of sustainable development goals into university curricula could be considered a strategic opportunity, with particular attention to enhancing students' understanding of economic and environmental challenges.

Despite these insights, the study has several limitations that should be acknowledged. The use of convenience sampling limits the external validity of the findings beyond the surveyed institutions, and the descriptive nature of the analysis precludes any causal inferences. Additionally, the reliance on self-reported measures may be subject to social desirability bias. Because the face-to-face surveys were administered in a classroom setting at the end of courses, participants might have felt an implicit pressure to provide answers that align with socially or academically endorsed values regarding sustainable development, rather than reflecting their true personal attitudes. Although anonymity was emphasized to minimize this effect, future research could consider employing online self-administered surveys or indirect questioning techniques to further mitigate this potential bias and enhance the authenticity of responses. Furthermore, while the sample size (n = 250) was sufficient for the primary descriptive and associational analyses, the non-significant demographic differences (e.g., across gender and academic years) should be interpreted with caution, as these null findings may be subject to Type II error concerns due to constrained statistical power within specific sub-groups. Consequently, future investigations should employ probability-based sampling techniques and include a larger, more diverse set of universities across different regions of Vietnam to improve generalizability.

Despite these limitations, this study offers valuable insights that can inform educational planning and policy, contributing to the broader trajectory of achieving the SDGs 2030 through higher education reform.

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AI statement: The author stated that AI-based tools were used only for language editing, while all scientific content and conclusions are the author's own responsibility.

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APPENDIX A

Survey Questionaire

Hello! I am a lecturer at Ho Chi Minh City Open University. I am conducting a survey on 'Sustainable Development' to understand university students' perspectives. I highly appreciate your participation. I commit that all information provided will be kept strictly confidential and anonymous, and will be used solely for research purposes.

*Please mark an **X** in the box corresponding to your answer. Thank you very much. Have a great day!)*

Do you agree to participate in this survey?

Yes ☐

No ☐

Q.1: What is your gender?

Male ☐

Female ☐

Q.2: What is your current academic year?

First year ☐

Second year ☐

Third year ☐

Fourth year ☐

Other: .....

Q.3: Which university are you currently attending?

Ho Chi Minh City Open University ☐

HUTECH University ☐

Sai Gon University ☐

Ho Chi Minh City University of Education ☐

How old are you?:

Q.4: What is your major/field of study?

Q.5: Have you ever heard of the concept "Sustainable Development?

Yes ☐

No ☐

Q.6: In your opinion, what is the most significant environmental issue in our country today? *(Select all that apply)*

Air pollution ☐

Noise pollution ☐

Water pollution ☐

Thermal pollution ☐

Other:..... ☐

Q.7: Please indicate your level of agreement with the following statements.

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Items	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
1. When people interfere with the environment, they often produce disastrous consequences					
2. Environmental protection and people's quality of life are directly linked					
3. Biodiversity should be protected at the expense of industrial agricultural production					
4. Building development is less important than environmental protection					
5. Environmental protection is more important than industrial growth					
6. Government economic policies should increase sustainable production even if it means spending more money					
7. People should sacrifice more to reduce economic differences between populations					
8. Government economic policies should increases fair trade					
9. Government economic policies should act if a country is wasting its natural resources					
10. Reducing poverty and hunger in the world is more important than increasing the economic well-being of the industrialized countries					
11. Each country can do a lot to keep the peace in the world					
12. The society should further promote equal opportunities for males and females					
13. The contact between cultures is stimulating and enriching					
14. The society should provide free basic health services					
15. The society should take responsibility for the welfare of individuals and families					
16. Teachers in college should use student centred teaching methods					
17. Teachers in college should promote future oriented thinking in addition to historical knowledge					
18. Teachers in college should promote interdisciplinarity between subjects					
19. Teachers in college should promote the connection between local and global issues					
20. Teachers in college should promote critical thinking rather than lecturing					

Q.8: Beyond the points mentioned above, do you have any additional thoughts or opinions regarding the issue of sustainable development today?

.....

.....

APPENDIX B

Pattern Matrix from the Exploratory Factor Analysis

Item	F1 (Education)	F2 (Environment)	F3 (Society)	F4 (Economy)
When people interfere with the environment, they often produce disastrous consequences	-.113	.113	.690	-.004
Environmental protection and people's quality of life are directly linked	.097	-.191	.576	.033
Biodiversity should be protected at the expense of industrial agricultural production	-.069	.331	.450	.023
Building development is less important than environmental protection	.142	.789	-.017	-.056
Environmental protection is more important than industrial growth	.007	.634	-.063	.113
Government economic policies should increase sustainable production even if it means spending more money	-.106	.208	.070	.568
People should sacrifice more to reduce economic differences between populations	-.214	.067	.082	.510
Government economic policies should increase fair trade	.183	-.160	-.139	.654
Government economic policies should act if a country is wasting its natural resources	.153	-.065	.149	.314
Reducing poverty and hunger in the world is more important than increasing the economic well-being of the industrialized countries	.160	.346	.215	-.061
Each country can do a lot to keep the peace in the world	.423	.009	.092	.030
The society should further promote equal opportunities for males and females	.317	-.039	.389	.173
The contact between cultures is stimulating and enriching	-.006	-.013	.188	.179
The society should provide free basic health services	.381	-.120	.292	-.126
The society should take responsibility for the welfare of individuals and families	.416	.093	-.150	.010
Teachers in college should use student-centred teaching methods	.581	.015	.013	-.146
Teachers in college should promote future-oriented thinking in addition to historical knowledge	.696	.007	.050	-.122
Teachers in college should promote interdisciplinarity between subjects	.790	.069	-.080	.016
Teachers in college should promote the connection between local and global issues	.678	.000	-.014	.152
Teachers in college should promote critical thinking rather than lecturing	.640	.119	-.047	.018

Note. Extraction method: Principal Axis Factoring. Rotation method: Promax with Kaiser Normalization. Rotation converged in five iterations