



Education for Sustainable Development Awareness, Attitudes, and Actions: A Quantitative Study of In-service Teachers in Vietnam

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ABSTRACT

In the context of growing global and national efforts to integrate sustainability into teacher education, understanding how teachers perceive and enact the Sustainable Development Goals is essential for strengthening education for sustainable development. This study investigated the awareness, attitudes, and actions of 158 Vietnamese in-service teachers across the economic, social, and environmental domains of the Sustainable Development Goals. A 51-item questionnaire grounded in UNESCO's learning objectives for the 17 Sustainable Development Goals was administered using a four-point Likert scale, and the mean interpretive scale adapted from Alico and Guimba (2015) was used for interpretation. Data were analyzed using descriptive statistics, Pearson correlation, and one-way ANOVA in SPSS 26. Findings revealed high levels of awareness and attitudes, but only moderate-to-high levels of action. The lowest scores were observed for Sustainable Development Goal 10 in awareness, Sustainable Development Goal 5 in attitudes, and Sustainable Development Goal 14 in actions. Although awareness and attitudes were strongly correlated, their associations with actions were considerably weaker, indicating a persistent attitude-action gap. No significant differences were found across gender or teaching levels. These results highlight a clear knowledge-practice gap and suggest that teacher education programs in Vietnam should more explicitly integrate locally relevant sustainability issues, participatory pedagogies, and institutional support structures to translate teachers' strong cognitive and affective orientations into consistent classroom practice.

1. INTRODUCTION

The adoption of the United Nations 2030 Agenda for Sustainable Development has repositioned schools and universities as engines of societal transformation (UNESCO, 2020). At the heart of this repositioning is Education for Sustainable Development (ESD), a pedagogical orientation that seeks to equip learners with the competencies, values, and dispositions needed to build just and sustainable societies (Wiek et al., 2011; Brundiers et al., 2021). According to UNESCO (2017), education is not only a dedicated goal (Sustainable Development Goal 4) but also a key enabler for all other Sustainable Development Goals (SDGs). Within this vision, teachers occupy a uniquely consequential position: they translate global sustainability commitments into the everyday experience of classrooms, shape how students interpret environmental, economic, and social challenges, and model the dispositions and behaviors that young people carry into adult life (UNESCO, 2020; Rieckmann, 2018).

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Achieving this reorientation is especially demanding because ESD addresses problems that are interdisciplinary, value-laden, and action-oriented. Teachers are expected not only to know about environmental protection, economic growth, and social equality, but also to foster in their students the capacity to analyze complex systems, to reason normatively, and to act responsibly in local and global contexts (UNESCO, 2017; Rieckmann, 2018). A considerable body of research, however, documents a recurring gap between what teachers know or value about ESD and what they actually do in the classroom. Teachers across diverse settings report high conceptual awareness and favorable attitudes toward ESD, yet often struggle to embed ESD systematically in pedagogy, assessment, and school routines (Laurie et al., 2016; Sunthonkanokpong & Murphy, 2019; Baena-Morales et al., 2021). This attitude-action gap is now one of the most frequently discussed findings in ESD research, and it underscores that awareness-raising alone is insufficient to deliver on the ambitions of SDG 4, Target 4.7, which represents the global commitment by UN member states to ensure that all learners, by 2030, acquire the knowledge and skills needed to promote sustainable development through ESD, human rights education, global citizenship, and related approaches (UNESCO, 2016).

In Vietnam, there is a growing emphasis on incorporating ESD into education at all levels. This commitment has been reinforced by ongoing collaboration between the Ministry of Education and Training (MOET) and UNESCO to develop a national framework for ESD across educational stages. Vietnam has also experienced substantial curriculum reform, including the General Education Curriculum 2018, which foregrounds competency-based learning and creates new opportunities for integrating ESD. However, bridging the gap between understanding ESD and enacting it in the classroom remains challenging. Kieu et al. (2016) showed that Vietnamese teacher trainees often possess basic conceptual awareness of ESD but lack the confidence and practical capacity to integrate the SDGs into lessons, a limitation they attributed to traditional top-down teaching methods, large class sizes, and limited resources for experiential learning. Subsequent studies have similarly shown that ESD in Vietnam is recontextualized unevenly across teachers, schools, and subjects (Nguyen, 2018, 2019; Nguyen et al., 2021). Given that Vietnam's in-service teachers are the primary implementers of this reform, it is important to understand how well they currently understand, value, and enact ESD. Such insights can indicate whether Vietnam's educational workforce is ready to nurture the next generation of sustainable citizens, or whether further structural and pedagogical support is needed.

To address this need, the present study examines three conceptually related but empirically distinct dimensions of Vietnamese in-service teachers' ESD engagement, namely awareness, attitudes, and actions, corresponding to the cognitive, socio-emotional, and behavioral domains that identified by UNESCO (2017) as the core ESD learning outcomes. The study pursues three objectives: (1) to describe levels of ESD-related awareness, attitudes, and actions among in-service teachers in Vietnam; (2) to determine whether these levels differ significantly by gender; and (3) to determine whether they differ across five teaching levels (primary, secondary, upper-secondary, higher education, and freelance). These objectives are operationalized through the following research questions:

(1) What levels of ESD-related awareness, attitudes, and actions are demonstrated by in-service teachers in Vietnam?

(2) Are there significant differences in awareness, attitudes, and actions between male and female in-service teachers?

(3) Are there significant differences in awareness, attitudes, and actions across different teaching levels (primary, secondary, upper-secondary, higher education, and freelance)?

2. LITERATURE REVIEW

2.1. Education as a Key Strategy for Sustainable Development

Education is now positioned as both an end and the principal means through which the 2030 Agenda will be realized, a role consolidated in Sustainable Development Goal 4 (Quality Education) and its transformative Target 4.7 (UNESCO, 2016). Target 4.7 specifically commits United Nations member states (that is, signatory national governments) to ensure that by 2030 all learners acquire the knowledge and skills needed to promote sustainable development, encompassing ESD, human rights, gender equality, global citizenship, and appreciation of cultural diversity (UNESCO, 2016). Education for Sustainable Development (ESD) is therefore framed as the connective tissue linking sustainability, human rights, and democratic participation, because informed and critical citizens are a prerequisite for the structural change that the SDGs demand (Sunthonkanokpong & Murphy, 2019; UNESCO, 2020). UNESCO (2020) argues that ESD empowers learners of all ages to make informed decisions and take responsible

actions for environmental integrity, economic viability, and a just society, a formulation that positions learners as agents rather than passive recipients of change.

ESD is most effectively delivered through interdisciplinary, participatory, and place-based pedagogies rather than the simple addition of sustainability content to existing subjects (Laurie et al., 2016). This is underpinned by a competency-based view in which systems, normative, strategic, and interpersonal competencies enable students to navigate complex sustainability challenges (Wiek et al., 2011; Brundiers et al., 2021). At the institutional level, ESD achieves its transformative potential only when curricula, pedagogy, governance, and community partnerships are aligned through a whole-institution approach that engages the head, hands, and heart simultaneously rather than merely transmitting information (Mogren et al., 2019; Kioupi & Voulvoulis, 2019; Sipos et al., 2008; Sterling, 2011). Evidence from higher education confirms both the promise and the unevenness of this implementation, with progress hampered by weak leadership, fragmented curricula, and limited staff capacity (Leal Filho et al., 2021, 2023).

Taken together, the literature positions ESD less as one curricular topic among many and more as the enabling infrastructure for the 2030 Agenda, provided it is reoriented from knowledge transmission to transformative learning (UNESCO, 2020).

2.2. Conceptual Framework of Education for Sustainable Development

The conceptual foundation of this study draws on UNESCO's learning objectives for the SDGs, which organize ESD outcomes into three domains: cognitive, socio-emotional, and behavioral (UNESCO, 2017). The cognitive domain is concerned with knowledge and understanding, the socio-emotional domain with values, attitudes, and motivation, and the behavioral domain with action-oriented competence and concrete practice. This structure provides a clear basis for interpreting the study's three variables as awareness, attitudes, and actions. In this sense, awareness refers to teachers' cognitive recognition of sustainability issues and SDG-related concepts, rather than merely surface familiarity with the term "sustainability" (UNESCO, 2017; Rieckmann, 2018). The same tripartite logic has been used in sustainability education research that explicitly examines knowledge, attitudes, and behaviors as linked but distinct dimensions of ESD outcomes (Michalos et al., 2011).

Within this framework, attitudes belong to the socio-emotional dimension because they reflect teachers' beliefs, values, dispositions, and willingness to engage with sustainability in principled ways. This matters because ESD is not only about transmitting information; it also seeks to shape how learners evaluate sustainability problems and whether they consider them worthy of action (UNESCO, 2017). Empirical work has similarly shown that sustainability attitudes can be assessed as a separate construct alongside awareness and behaviors, especially in studies of teachers (Sunthonkanokpong & Murphy, 2019). In teacher education, this distinction is important because teachers may express positive attitudes toward sustainability while still lacking sufficient knowledge or consistently enacted practices, which means attitudes cannot be assumed to automatically translate into action (Sunthonkanokpong & Murphy, 2019; Baena-Morales et al., 2021).

The behavioral dimension is captured in this study as actions, which refers to the extent to which teachers translate sustainability-related understanding and commitment into practice. This aligns with the action-competence tradition in environmental and sustainability education, which argues that the goal of ESD is not passive awareness but the capacity to act meaningfully on sustainability issues (Jensen & Schnack, 1997; Isac et al., 2022). In the same vein, sustainability education research has treated behaviors as a distinct outcome that can be fostered through ESD experiences and curriculum design (Braßler & Sprenger, 2021; Kalsoom & Khanam, 2017). For this reason, examining awareness, attitudes, and actions together offers a more complete picture of how teachers engage with ESD, because the three domains are conceptually related yet empirically not identical. Assessing them in combination is therefore appropriate for understanding the extent to which ESD implementation in Vietnam is influencing not only what teachers know, but also how they think and what they do in practice (UNESCO, 2017; Sunthonkanokpong & Murphy, 2019).

2.3. Education for Sustainable Development in Vietnam

Vietnam has gradually aligned its education agenda with ESD since the United Nations Decade of Education for Sustainable Development (2005-2014). Subsequent collaboration between MOET and UNESCO has aimed to mainstream ESD into the national curriculum and syllabus, with attention to knowledge, skills, and attitudes across educational levels. These developments show that ESD in Vietnam is not merely a rhetorical commitment but has

been progressively translated into policy instruments and curriculum planning, even though the move from policy to practice remains a major challenge (Kieu et al., 2016).

Empirical studies suggest that the Vietnamese ESD context is shaped by local interpretations and implementation constraints. Nguyen (2018) found that geography teachers' understandings of ESD in Vietnam did not fully correspond to UNESCO's dimensions and were influenced by practical experience, teacher training, the national curriculum, and social perceptions. Nguyen (2019) similarly showed that teachers and educational stakeholders in Vietnam did not hold a single, stable interpretation of ESD, supporting the argument that ESD is always recontextualized within specific sociocultural and institutional settings. At the level of pedagogical practice, Nguyen et al. (2021) demonstrated that ESD was recontextualized in geography lessons in Hanoi rather than implemented uniformly. These findings together suggest that Vietnam has made meaningful progress in policy commitment and curricular attention, but the implementation of ESD in teacher education and classroom practice is still uneven and context-dependent. The present study, therefore, complements existing Vietnamese ESD research by examining how in-service teachers across five teaching contexts currently combine awareness, attitudes, and actions.

3. MATERIALS AND METHODS

3.1. Research Design

A descriptive survey design was employed to characterize Vietnamese in-service teachers' ESD-related awareness, attitudes, and actions and to explore group differences across demographic and occupational variables. This design was appropriate given the study's descriptive and comparative aims, and its focus on current levels of three constructs rather than causal relationships. A structured questionnaire based on UNESCO's learning objectives for the 17 SDGs was administered to a heterogeneous sample, enabling both descriptive and comparative analyses.

3.2. Participants

The study involved 158 in-service teachers from five educational levels spanning the full range of formal and non-formal teaching contexts in Vietnam: primary (Grades 1-5, $n = 28$), secondary (Grades 6-9, $n = 21$), upper-secondary (Grades 10-12, $n = 19$), university lecturers ($n = 36$), and freelance teachers ($n = 54$). Freelance teachers are defined here as educators working independently outside formal school or university employment, including private tutors and center-based instructors, representing a rapidly growing segment of the Vietnamese workforce that largely operates outside institutional ESD policy structures. Including all five groups allows assessment of whether ESD awareness, attitudes, and actions are distributed evenly across teaching contexts, or whether institutional affiliation shapes ESD enactment, a question particularly relevant given Vietnam's documented uneven ESD implementation (Nguyen, 2018, 2019; Nguyen et al., 2021). Participants were recruited by convenience sampling (January-April 2024) via professional networks, teacher associations, and institutional contacts across Ho Chi Minh City and surrounding provinces. The gender composition was relatively balanced: 85 female and 73 male teachers. Although the sampling procedure was convenience-based, the demographic breakdown (Table 1) provides transparency and allows readers to assess representativeness for exploratory, group-level comparisons.

Table 1. Demographic Characteristics of Participants (N = 158)

Variable	Category	N=
Educational Level of Teaching	Primary	28
	Secondary	21
	Upper-Secondary	19
	University Lecturers	36
	Freelance	54
Gender	Male	73
	Female	85

3.3. Research Instruments

The data were collected using a 51-item questionnaire adapted from Sunthonkanokpong and Murphy (2019), which was originally constructed based on UNESCO's SDG learning objectives and therefore maps directly onto the cognitive, socio-emotional, and behavioral domains of ESD (UNESCO, 2017). The questionnaire contains three sections corresponding to the study variables: awareness, attitudes, and actions. For the awareness and attitudes sections, a four-point Likert agreement scale was used (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). For the actions section, a four-point frequency scale was applied (1 = never, 2 = sometimes, 3 = usually, 4 = always).

The questionnaire was originally developed in English and then translated into Vietnamese to ensure accessibility and clarity for participants. The translation process emphasized both linguistic accuracy and cultural adaptation, following widely accepted practices including forward- and backward-translation, expert panel review, and harmonization to ensure conceptual equivalence across languages (Cruchinho et al., 2024). The questionnaire was pilot-tested to assess validity and reliability, and the pilot results demonstrated excellent internal consistency, with Cronbach's alpha coefficients of 0.934 for awareness, 0.950 for attitudes, and 0.942 for actions. Following minor revisions for clarity and contextual appropriateness, the final questionnaire was administered. The revised version maintained high reliability (0.923 for awareness, 0.959 for attitudes, and 0.941 for actions), indicating excellent consistency across all three variables.

3.4. Data Collection and Analysis

The questionnaire was administered via Google Forms. Participation was voluntary and responses were anonymous to reduce social desirability bias (Podsakoff et al., 2012). Informed consent was obtained from all participants, no personally identifiable information was collected, data were stored on password-protected servers, and ethical approval was granted by the relevant institutional review board prior to data collection. Responses were exported to Excel and imported into SPSS 26 for analysis.

Descriptive statistics (mean, SD) were calculated for each construct and interpreted using the four-point scale adapted from Alico and Guimba (2015): Low (1.00-1.74), Moderately Low (1.75-2.49), Moderate-High (2.50-3.24), and High (3.25-4.00) (Table 2).

Table 2. Four-point interpretive scale adapted from Alico and Guimba (2015)

Mean Range	Interpretation
1.00 - 1.74	Low
1.75 - 2.49	Moderately Low
2.50 - 3.24	Moderate-High
3.25 - 4.00	High

Pearson correlation analysis was then applied to investigate the relationships among teachers' ESD-related awareness, attitudes, and actions, in order to identify how these three constructs are connected and whether the cognitive, socio-emotional, and behavioral domains of ESD cohered empirically in the Vietnamese sample. For inferential analysis, one-way ANOVA was performed to examine whether significant differences existed in ESD awareness, attitudes, and actions across gender and across the five occupational groups. The significance level was set at 0.05, consistent with conventional practice in educational and social science research (Cohen, 1994). Prior to all inferential analyses, the assumptions of normality (Shapiro-Wilk test), homogeneity of variance (Levene's test), and linearity were checked and confirmed as satisfactory. Effect sizes were calculated alongside significance tests: eta-squared (η^2) for ANOVA comparisons and r values for correlations, to support practical interpretation beyond p -values alone. Because six ANOVA comparisons were conducted across three constructs and two grouping variables, a Bonferroni-adjusted alpha of .008 (.05/6) was also considered when interpreting borderline results, to reduce the risk of Type I error. All 158 responses were retained for analysis; no missing data or incomplete questionnaires were identified. This analytic strategy ensured that both overall patterns and group-level differences were systematically explored.

4. RESULTS AND DISCUSSIONS

4.1. In-service Teachers' Awareness, Attitudes, and Actions

*Mean Score Interpretation**Table 3. Overall Mean Score on the in-service teachers' awareness, attitudes, and actions*

No.	Construct	Mean	Standard Deviation	Score Mean Interpretation
1	Awareness	3.47	.421	High
2	Attitudes	3.51	.511	High
3	Actions	3.14	.578	Moderate-High

Table 3 presents the overall mean scores for in-service teachers' ESD-related awareness, attitudes, and actions. Teachers reported high awareness ($M = 3.47$, $SD = .421$) and attitudes ($M = 3.51$, $SD = .511$), while actions ($M = 3.14$, $SD = .578$) reached only a moderate-high level. The lowest-scoring goals were SDG 10 for awareness, SDG 5 for attitudes, and SDG 14 for actions, suggesting that issues of inequality, gender, and marine ecosystems are the weakest points in teachers' ESD engagement.

This pattern aligns with UNESCO's (2017) framework, which notes that the behavioral domain is the most difficult to develop as it requires sustained opportunities to act rather than merely know or value. The result is a textbook instance of the attitude-action gap documented across international ESD research (Laurie et al., 2016; Sunthonkanokpong & Murphy, 2019; Baena-Morales et al., 2021). The pattern also differs from Sunthonkanokpong and Murphy (2019), whose Thai pre-service teachers showed high attitudes and actions but lower awareness, a reversal that is consistent with a career-stage interpretation: Vietnamese in-service teachers accumulate conceptual knowledge over years of practice, but face day-to-day constraints of overloaded curricula, time pressure, and limited resources that impede sustained ESD action (Kieu et al., 2016; Nguyen et al., 2021; Amézquita-Galindo & Losada Salgado, 2025).

The specific SDG-level weaknesses are interpretable in context. SDG 10 (reduced inequalities) scored lowest for awareness, reflecting that inequality-related goals require systems thinking not routinely developed in teacher training (Brundiers et al., 2021). SDG 5 (gender equality) was weakest for attitudes, consistent with the critique that gender remains under-treated in ESD (Rieckmann, 2018). SDG 14 (life below water) was lowest for action, unsurprisingly so for inland contexts where marine issues lack immediate local relevance, which underscores that place-based ESD generates stronger behavioral engagement than geographically remote topics (Laurie et al., 2016).

*Pearson Correlations**Table 4. Pearson Correlations among awareness, attitudes, and actions*

		AWARENESS	ATTITUDES	ACTION
AWARENESS	Pearson Correlation	1	.767**	.260**
	Sig. (2-tailed)		.000	.001
	N	158	158	158
ATTITUDES	Pearson Correlation	.767**	1	.311**
	Sig. (2-tailed)	.000		.000
	N	158	158	158
ACTIONS	Pearson Correlation	.260**	.311**	1
	Sig. (2-tailed)	.001	.000	
	N	158	158	158

** . Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation analysis revealed significant positive associations among awareness, attitudes, and actions. A strong positive correlation was found between awareness and attitudes ($r = .767, p < .001$), indicating that teachers who are more aware of sustainability issues also tend to hold more favorable attitudes. The correlation between awareness and actions was positive but weak ($r = .260, p < .001$), and attitudes and actions were also only moderately correlated ($r = .311, p < .001$). All correlations were significant at the 0.01 level (two-tailed).

This correlational pattern provides direct empirical support for the conceptual framework developed in Section 2.2, which drew on UNESCO (2017) and Michalos et al. (2011) to argue that the cognitive, socio-emotional, and behavioral domains of ESD are related but empirically distinct. The very strong awareness-attitudes correlation ($r = .767$) reflects the tight conceptual link between understanding a sustainability issue and evaluating it as important, consistent with Rieckmann's (2018) claim that affective engagement typically grows out of cognitive engagement rather than vice versa. The markedly weaker awareness-action and attitudes-action correlations indicate, however, that knowing and valuing are not enough: teachers who are cognitively and affectively invested in sustainability do not automatically translate that investment into consistent classroom practice.

This finding squarely supports the transformative-learning critique of information-centric ESD articulated by Sipos et al. (2008), Sterling (2011), and Lotz-Sisitka et al. (2015), all of whom argue that sustainability education must engage the "head, hands, and heart" simultaneously if it is to change behavior. In the Vietnamese sample, the head and heart are well aligned, but the hands are lagging. The attitude-action gap has been widely reported elsewhere; for example, Baena-Morales et al. (2021) found that Spanish pre-service teachers reported very positive sustainability attitudes but considerably lower sustainable behaviors, and Redman et al. (2021) observed in a systematic review of sustainability-competence assessment tools that action competence remains the least reliably measured and least consistently developed competency domain across programs. Consistent with these findings, the Vietnamese teachers in this study appear to value sustainability highly but still struggle to integrate it systematically into their teaching and daily routines.

From the perspective of the whole-institution literature (Kioupi & Voulvoulis, 2019; Mogren et al., 2019), the weak awareness-action and attitudes-action correlations also imply that individual teacher motivation alone is unlikely to close the gap. Mogren et al. (2019) show that sustainable school improvement requires the alignment of pedagogy, governance, curriculum, and school culture, and Leal Filho et al. (2021, 2023) report similar conclusions for higher education institutions: progress on SDG implementation depends less on individual champions than on institutional structures, leadership, and capacity. Applied to the present sample, the results suggest that Vietnamese in-service teachers have largely accomplished the individual-level prerequisites for ESD. Teachers in this sample are aware and positively disposed, they are aware and positively disposed, but the institutional prerequisites for routinized, integrated ESD action remain uneven across contexts, a pattern consistent with Nguyen (2019) and Nguyen et al. (2021) on the recontextualized and uneven implementation of ESD in Vietnamese schooling.

4.2. Comparisons between groups

Comparison between genders

Table 5. One-Way ANOVA Results for Awareness, Attitudes, and Actions by Gender ($N = 158$)

Construct	Male M (SD)	Female M (SD)	F	Sig.
Awareness	3.47 (.388)	3.48 (.450)	.874	.352
Attitudes	3.48 (.468)	3.55 (.546)	.424	.516
Actions	3.19 (.523)	3.10 (.622)	.337	.563

As shown in Table 5, no statistically significant differences were found between male ($n = 73$) and female ($n = 85$) teachers across all three constructs. Awareness scores were nearly identical ($M = 3.47$ vs. 3.48 ; $F = .874, p > .05$), attitudes were similarly close ($M = 3.48$ vs. 3.55 ; $F = .424, p > .05$), and actions showed no meaningful gender gap ($M = 3.19$ vs. 3.10 ; $F = .337, p > .05$). These results indicate that gender had no bearing on ESD-related orientations in this sample.

Comparison between levels of teaching

Table 6. One-Way ANOVA Results for Awareness, Attitudes, and Actions by Teaching Level

Construct	Primary M (SD)	Secondary M (SD)	Upper-sec. M (SD)	University M (SD)	Freelance M (SD)	F	Sig.
Awareness	3.51 (.475)	3.61 (.387)	3.43 (.356)	3.44 (.518)	3.45 (.352)	.729	.574
Attitudes	3.57 (.417)	3.57 (.662)	3.47 (.380)	3.52 (.558)	3.49 (.512)	.181	.948
Actions	3.16 (.490)	3.38 (.645)	3.26 (.339)	3.12 (.585)	3.01 (.631)	1.893	.115

Table 6 presents ANOVA results across five teaching levels. Awareness mean scores ranged narrowly from $M = 3.43$ (upper-secondary) to $M = 3.61$ (secondary), with no significant difference ($F = .729$, $p = .574$). Attitude scores were similarly uniform across groups ($F = .181$, $p = .948$), with means between 3.47 and 3.57. For actions, secondary school teachers reported the highest mean ($M = 3.38$) while freelance teachers reported the lowest ($M = 3.01$); the F -value of 1.893 approached a more noticeable difference but did not reach statistical significance ($p = .115$). These patterns suggest that ESD engagement is broadly distributed across teaching contexts. The action difference across teaching levels ($\eta^2 = .047$, a small effect) did not reach conventional significance and should be interpreted with caution; the trend for secondary school teachers to report somewhat higher action scores than freelance teachers is theoretically interesting but remains tentative in the absence of statistical support.

The absence of significant differences by gender and teaching level constitutes a meaningful finding that deserves careful interpretation in light of the literature review. Consistent with Sunthonkanokpong and Murphy (2019), who also found no significant differences in ESD attitudes and actions across program types among Thai pre-service teachers, the present Vietnamese sample exhibits a broadly shared ESD orientation. This pattern aligns with the argument developed in Section 2.1 that ESD, when institutionalized through national policy frameworks and curricular reform, tends to produce relatively homogeneous orientations across the teaching workforce (UNESCO, 2020; Laurie et al., 2016). In Vietnam specifically, the gradual mainstreaming of ESD since the Decade of Education for Sustainable Development (2005-2014) and the integration of ESD themes into the 2018 General Education Curriculum appear to have produced a generally uniform baseline of awareness and attitudes among in-service teachers, regardless of gender or teaching level.

However, not all international research supports this uniform picture. In Spain, Baena-Morales et al. (2021) reported that female teachers scored significantly higher than males in both ESD awareness and behavior, and the broader environmental-education literature suggests that women often express greater environmental sensitivity than men (Olsson & Gericke, 2017). Likewise, Isac et al. (2022) found differences across teaching levels, with primary teachers sometimes showing higher professional action competence for ESD than their secondary counterparts. The absence of such disparities in the present study may reflect several contextual factors. First, Vietnamese cultural norms of collective responsibility and the state's explicit emphasis on environmental protection in public discourse may flatten the gender gap commonly observed in more individualistic societies (Nguyen, 2019). Second, teacher training in Vietnam is institutionally unified under MOET, which means primary, secondary, and upper-secondary teachers are socialized into a comparable professional ethos regarding ESD. Third, the convenience sample used here may itself over-represent teachers who are already interested in ESD, compressing variation across subgroups.

The near-significant trend for secondary school teachers to report somewhat higher action ($M = 3.38$) than freelance teachers ($M = 3.01$) is nonetheless theoretically interesting. Secondary school teachers in Vietnam typically work within a school-based community with shared curricular goals, colleagues, and institutional accountability structures. These features correspond directly to the whole-institution conditions that Mogren et al. (2019) and Kioupi and Voulvoulis (2019) identify as preconditions for behavioral ESD outcomes. Freelance teachers, by contrast, operate in more individualized and commercial settings in which sustainability is less likely to be embedded in institutional expectations, and this structural difference plausibly explains the lower action scores in that subgroup. From a whole-institution perspective, the finding reinforces a central implication of the literature review: individual teacher awareness and attitudes are necessary but not sufficient for ESD action, and institutional supports remain decisive (Mogren et al., 2019; Leal Filho et al., 2021).

5. CONCLUSION

This study examined Vietnamese in-service teachers' awareness, attitudes, and actions regarding Education for Sustainable Development, and it revealed a consistent pattern in which awareness and attitudes were high, strongly intercorrelated, and evenly distributed across gender and teaching level, while reported actions remained comparatively moderate and more weakly linked to the cognitive and socio-emotional domains. Interpreted through the conceptual framework of UNESCO's (2017) three ESD domains, these findings show that Vietnamese teachers have secured the cognitive and socio-emotional preconditions for ESD but have not yet fully achieved the behavioral domain that Target 4.7 of SDG 4 ultimately demands (UNESCO, 2016, 2020).

The study contributes to educational theory by reinforcing and extending the attitude-action gap that is widely documented in international ESD research (Laurie et al., 2016; Sunthonkanokpong & Murphy, 2019; Baena-Morales et al., 2021), and by locating this gap within the Vietnamese ESD context, where prior studies have already highlighted uneven, recontextualized implementation (Nguyen, 2018, 2019; Nguyen et al., 2021; Kieu et al., 2016). The correlational evidence that awareness and attitudes are very tightly linked, while both are only weakly associated with action, provides direct empirical support for the transformative-learning argument that ESD must engage the head, hands, and heart simultaneously rather than assume that knowledge and values will automatically drive behavior (Sipos et al., 2008; Sterling, 2011; Lotz-Sisitka et al., 2015). The absence of significant differences by gender and teaching level, interpreted against international findings that do report such differences (Olsson & Gericke, 2017; Baena-Morales et al., 2021; Isac et al., 2022), suggests that national policy consolidation and culturally shared responsibility for sustainability may homogenize ESD orientations in Vietnam, making individual-level variables less diagnostic than institutional ones.

From a policy and practice perspective, the findings underscore that the next phase of ESD development in Vietnam should move beyond awareness-raising and concentrate on enabling teachers to translate sustainability knowledge and values into consistent classroom practice. This calls for more targeted professional development focused on sustainability competencies (Wiek et al., 2011; Brundiers et al., 2021), participatory and place-based pedagogical strategies (Laurie et al., 2016; Rieckmann, 2018), and whole-institution supports that embed sustainability in curriculum, governance, and school culture (Mogren et al., 2019; Kioupi & Voulvoulis, 2019). Priority attention should be given to the weakest domains identified in this study: SDG 10 (reduced inequalities), SDG 5 (gender equality), and SDG 14 (life below water) through locally meaningful reframings rather than the simple transposition of international materials. At the institutional level, school leaders and teacher-training providers could cultivate collegial structures and communities of practice that reduce the individualized burden of ESD enactment, especially for freelance and university-based educators who lack school-community accountability.

The implications of this study should be interpreted in light of its limitations. The reliance on self-reported data may overestimate actual classroom practices, and the convenience sample of 158 teachers, while demographically diverse, cannot be considered statistically representative of the Vietnamese teaching workforce. The cross-sectional design also limits inferences about how awareness, attitudes, and actions develop over time. Future research could adopt mixed-methods or longitudinal designs, incorporate classroom observations and student outcomes, and more systematically explore institutional and curricular factors to better understand how ESD can be effectively implemented in Vietnamese educational practice. Comparative work with other Southeast Asian contexts would also be valuable for testing the extent to which the findings reflect shared regional dynamics or specifically Vietnamese ones.

Overall, this study highlights the importance of bridging the gap between ESD knowledge and classroom action. Vietnamese in-service teachers show every sign of being ready in principle to serve as agents of ESD; closing the remaining action gap is less a matter of convincing them than of equipping and institutionally supporting them. Doing so is essential if Vietnam is to realize the ambition embedded in Target 4.7 and contribute meaningfully to the 2030 Agenda through its classrooms.

Conflict of Interest: No potential conflict of interest relevant to this article was reported.

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