

# Education for Sustainable Development (ESD) in Post-modernity: A Case Study of Japanese Value Manifestation in Vocational Education in Greater Mekong Sub-Region Country

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## Abstract

Realists believe vocational education and training (VET) serves global economic-oriented goals. Consequently, a Perennialism-based curriculum is implemented to emphasize market-relevant skills. However, in the Greater Mekong Sub-Region (GMS), the reality of vocational education falls short of promoting skilled labor and requires improvement. Since its establishment in 1992, major power countries like Japan played a crucial role after the Second World War by adopting a prominent foreign policy of official development assistance (ODA) to enhance Human Resource Development (HRD) for the region's economic development. As part of its ODA strategies, Japan has assisted VET in the region while simultaneously promoting its own value of Kaizen under its system of KOSEN to improve HRD with green skills. This research explores Kaizen's value in Education for Sustainable Development (ESD), specifically in Thailand and Vietnam's Mekong emerging economic powers. The study seeks to promote knowledge, situational awareness, and cultural relativism in developing meaningful green skills by considering a 3-pillar of environment, socio-culture, and economy within a postmodernist framework. The research employed a qualitative approach and semi-structured interviews. Four respondents from Thai and Vietnamese institutions were selected using purposive sampling techniques. The findings revealed that the pragmatic implementation of Kaizen in Thai and Vietnamese VET had fostered green skills and environmental awareness influenced by a constructive culture. Importantly, the postmodernist-based curriculum provides a platform for diverse perspectives, challenging the absolute Western global agenda claim and advocating for the decolonization of local values through a concept known as Cosmo-localism, which aligns with the foundation Kaizen since the 1950s.

## 1. Introduction

Vocational Education and Training (VET) can be vital to a nation's economic development and social welfare. VET is widely recognized as a powerful instrument for increasing productivity and sustainability, with a central focus on workforce development. VET is intended as a critical propelling force for human resource development and has grown increasingly important, particularly in developing countries, such as Thailand and Vietnam, with the

increasing VET proportion from 14% in 1980 to 25% in 2020 (ILO, 2021; Smith et al., 2020). UNESCO (2019) and Cedefop (2020) define VET as a comprehensive education and training activity that empowers individuals with the required technical knowledge, know-how, and skills in various vocations or occupations to secure qualified employment related to occupations and social life (UNESCO, 2019; Cedefop, 2020). Vocational Education and Training (VET) has historically played a crucial role in integrating diverse groups into the national economy. Yet, it has often neglected its potential as a transformative force in education, focusing instead on producing skilled labor primarily for economic growth (Allais, 2017). As a result, VET has ascribed more limited roles, merely providing skills for particular jobs.

In the context of postmodernity and the complex challenges posed by anthropogenic phenomena, it is crucial for Vocational Education and Training (VET) to include a curriculum that encompasses not only the economic aspect but also two other dimensions: the environment and the social-cultural sphere (Brown & McCowan, 2018; Pisoni, 2018). Postmodernism, with its critique of universal truths and its advocacy for localized, context-specific knowledge, aligns with the principles of ESD by promoting curricula that are adaptable, culturally relevant, and environmentally conscious. This theoretical perspective supports the integration of ESD within VET systems, ensuring that education is not only about economic productivity but also about fostering sustainable and socially just practices. Policies and practices should be implemented to address these aspects in order to achieve Sustainable Development (SD) (Paryono, 2017). Environmental degradation and the disregard for ecological sustainability are deeply intertwined with the dominance of neoliberal economic policies that prioritize short-term gains over long-term environmental stewardship. This has led to significant ecological crises as education systems, including VET, are increasingly influenced by globalization, which often marginalizes local cultures and prioritizes the interests of dominant economic powers (Bonnett, 2016). Sustainable development requires a fundamental reorientation of our priorities, where environmental sustainability is recognized as the foundation upon which economic and social systems are built, rather than treating the environment as an externality subordinate to economic growth (Purvis et al., 2019). The urgent need for VET to balance the three pillars of sustainable development was emphasized during the Third International Congress in 2012 (McGrath et al., 2018). The increasing complexity of global challenges, especially those related to climate change, highlights the critical role of Technical and Vocational Education and Training (TVET) in equipping learners with the skills necessary for sustainable development. TVET must be integrated within the broader framework of Education for Sustainable Development (ESD), fostering critical thinking, transformative learning, and empowering individuals to act as agents of change in their communities (UNESCO, 2017).

In Thailand and Vietnam, two emerging economic power countries in the Mekong Region, vocational education and training (VET) aims to provide students with specialized skills for specific jobs, often neglecting other areas of liberal education (Weerasang, 2017). Consequently, there is now a shortage of skilled labor, posing challenges to achieving significant economic progress (Chalapati & Chalapati, 2020). Moreover, Thailand and Vietnam have reformed their VET systems in accordance with the 4.0 policy, which emphasizes the development of high-tech skills, digital literacy, and support for startups and online businesses (UNEVOC, 2018; AG, 2014). This gradual transformation of VET towards lifelong learning and a learning society is primarily driven by the economic activity it fosters, influencing the establishment of enduring perennials-curricula. To improve the long-term quality and quantity of Thai and Vietnamese VET, the presence of industrialized countries, such as Japan, has played a crucial role through their Official Development Assistance (ODA) and the increasing demand from the Japanese automotive industry (Chalapati & Chalapati, 2020). Japan's ODA has significantly impacted the vocational education system, particularly in Thailand and Vietnam, by introducing the concept of KOSEN, an Engineering College that focuses on instilling the value of Kaizen in teaching and learning activities. This approach emphasizes the habitual action of waste and environmental management (Juwitasari & Miyake, 2022). The manifestation of KOSEN has been recognized for institutionalizing education in terms of Pierre Bourdieu's concepts of social capital, cultural capital, and economic capital, ultimately contributing to human capital development (Bourdieu, 2011)..

## 1.1 The Objective of The Study

The existing VET curriculum remains overemphasized in economic development. In the current era of postmodernity, the complexity of anthropogenic phenomena outweighs the paradigm shift needed to address the pillars of Sustainable Development: environment, socio-culture, and economy. The global agenda is pushing for VET to align with Sustainable Development (SD), with a particular focus on creating green vocational education. However, interpreting and implementing this concept within local contexts can be challenging, especially in developing countries where the shortage of skilled labor hinders the creation of sustainable nations.

The presence of a leading industrial country, such as Japan, has a significant influence on achieving SD and shaping the VET curriculum. Hence, the purpose of this paper is to analyze Japan's involvement in contributing to Education for Sustainable Development (ESD) in the VET systems of Thailand and Vietnam. The analysis will focus on a pragmatism-based curriculum, examining three key aspects: 1) conceptualizing knowledge, 2) addressing

situational factors, and 3) embracing cultural relativism. These factors are essential for developing meaningful green skills in the context of these countries. The focus on conceptualizing knowledge ensures that the educational content is not only aligned with industry demands but also equips students with the cognitive tools needed for innovation in sustainability. By addressing situational factors, the study acknowledges the unique challenges and opportunities presented by the socio-economic and environmental landscapes of Thailand and Vietnam, thus tailoring the curriculum to be both effective and practical. Cultural relativism, as a guiding principle, ensures that the curriculum respects and incorporates local traditions and values, which is vital for the acceptance and success of sustainable practices within these communities.

## 2. Literature Review

The quality of education today extends beyond the mere imparting of knowledge and skills. It also encompasses personal development (Acquah et al., 2017). In addition, it requires a highly skilled workforce capable of adapting to and addressing the emerging global crises of the postmodern era (Alieksieieva et al., 2023; Antoniuk et al., 2022). The dissemination of knowledge has undergone significant transformations, reflecting the evolution of education in the postmodern era. This evolution encompasses a broader scope than traditional vocational education and training (VET), primarily focused on professional activities (Zaporozhchenko et al., 2021). However, the complex nature of the current educational landscape, combined with outdated strategies and approaches concerning the environment, sociocultural factors, and economic aspects, has created a "value-action gap" between what we know should be done for the world, such as environmental preservation and combating climate change, and what we actually do in reality. The ambiguity and contested interpretations of 'sustainability' within the framework of Education for Sustainable Development (ESD) highlight the ongoing debates and challenges in integrating this concept uniformly across educational systems (Sterling, 2016). Regrettably, VET has often been stigmatized and confined within narrow parameters that dictate its role and conditions. Raffe (2018) states that The historical divide between liberal and vocational education has been a defining characteristic of European educational systems since the 19th century, with liberal education traditionally encompassing fields such as the arts, law, and medicine, categorized as general university education. On the other hand, non-liberal education focused on vocational training, which focused on practical skills for specific trades and was considered lower status. This limited perception of vocational education was perpetuated by the Industrial Revolution preceding the 19th century, hindering progress in efforts to educate and equip workers with new skills, as the expectation was for work to be contingent upon a specific company. Consequently, vocational education reinforced the status quo, perpetuating social class divisions and gender disparities (Mujtaba et al., 2023).

In the postmodern era, education has become a crucial factor for integrating individuals into the labor market in modern societies. Structural changes, such as technological advancements, globalization, and curriculum reforms, are necessary to transform individuals into contributing members of society by instilling values and fostering intellectual problem-solving competencies. This shift aims to emphasize cultural and political content rather than purely economic aspects (Zaporozhchenko et al., 2022). Failure to provide the younger generation with knowledge and adaptable skills can result in significant vulnerability, particularly in terms of employment difficulties and the risk of poverty (Pisoni, 2018). Vocational education and training (VET) traditionally aim to prepare individuals for employment, contribute to societal well-being, and enhance productivity. However, there is a growing need to reform VET curricula to adopt a more pragmatic approach that fosters democratic values and empowers learners to pursue their interests and talents, ultimately enabling them to make meaningful contributions to society (Billet, 2016). Therefore, the education policy for VET needs to go beyond human rights-based and human capital approaches and adopt a comprehensive theoretical approach, such as the critical capability approach (Amegah, 2022). Critical thinking is essential for empowering individuals to evaluate and reflect on their beliefs and decisions, thereby fostering a more engaged and participatory democracy (Davies & Barnett, 2015).

Schools serve the purpose of creating a social space that nurtures cultural values and prepares students for life beyond the boundaries of vocational education systems in accordance with postmodernism (Tarat & Sindrecharak, 2020). Prominent philosophers like Pierre Bourdieu, Georg Kerschenstiner, and John Dewey have significantly contributed to modernizing the VET system. Pierre Bourdieu's work focused on creating social, cultural, symbolic, and economic capital within the school setting (Bourdieu, 2011). Moreover, Georg Kerschenstiner and John Dewey contributed to the VET curriculum by emphasizing social inclusion and cohesion, developing moral values and social skills, and promoting active learning while upholding the principles of democracy for the benefit of the state and local community. These efforts transformed social class and gender inequality circumstances while embracing the concept of lifelong learning in VET during the postmodern era, which prioritizes social justice and the idea of inclusive education (Antoniuk et al., 2021).

As mentioned above, VET often focuses narrowly on meeting immediate labor market demands, which can limit its potential to contribute to the development of social capital—a critical asset for fostering long-term societal benefits and cohesion (Avis, 2016). VET has increasingly been aligned with the goals of human capital

development and economic growth, often at the expense of social capital. This alignment with neoliberal agendas tends to overlook the moral and ethical dimensions of education, prioritizing market efficiency over the broader social good and reducing state responsibility in the process (Allais, 2018). The erosion of social capital within VET systems is largely driven by the pressures of capitalist development, which prioritize economic efficiency over community building. In VET, social capital is critical for enhancing productivity, as it is built upon trust, social engagement, and the establishment of strong networks and partnerships (Zancajo, 2019). The process of building trust within vocational education and training systems is essential for enhancing problem-solving capacities and fostering greater participation in economic activities (Putnam & Garrett, 2017). Social capital plays a crucial role in creating synergies between networks and institutions. When effectively integrated into VET, it fosters connections between social capital, human capital, and broader economic and social well-being. This integration ultimately enhances the contributions of VET to the global economy (Field, 2016). Beyond the postmodern perspective, the global challenges of ecological, social, and economic development underscore the importance of developing human capital within VET. This development requires fostering a skilled workforce capable of addressing environmental issues through the use of sustainable technologies and maintaining infrastructures that reduce pollution and mitigate climate change (Gupta & Bandyopadhyay, 2016).

Although social capital in VET has faced challenges, cultural capital has significantly shaped schools and the education process to enhance habitual activities and work. Cultural capital encompasses symbolic and informational resources for action that are embodied or incorporated (e.g., values, skills, knowledge), objectified (e.g., books, tools), and institutionalized (e.g., educational degrees, professional titles) (De Clercq et al., 2016). The influence of a leading industrial powerhouse, such as Japan, helps contextualize working habits through its culture. Japan's Kaizen culture, developed since the 1950s, has contributed to the country's reputation for excellent work performance (Arsyad, 2021; Ohno, 2021). Kaizen, as a life philosophy, embodies the approach of continuous improvement linked to the 5S principles (Seiri-sorting, Seiton-setting in order, Seiso-shining, Seiketsu-standardize, and Shitsuke-sustain) (Ohno, 2021). Japan's ODA supports VET systems in Thailand and Vietnam, with a particular emphasis on the integration of KOSEN-Kaizen practices. For instance, the effectiveness of KOSEN-Kaizen practices in enhancing technical education and promoting sustainability aligns with the conclusions drawn by Filho (2015), who emphasizes the role of educational frameworks in advancing sustainable development goals.

In relation to postmodernity, integrating local and global communities holds the potential to achieve sustainability and resilience in an alternative and dynamic manner. Cosmolocalism emerges as a vibrant horizon for social transformation, transcending ambiguous global agendas (Schismenos et al., 2020), particularly through Green Technical Vocational Education and Training (Green-TVET). By engaging in concrete actions and activities at the local level, such as Kaizen, a realistic picture can be painted for achieving Sustainable Development goals.

Furthermore, while previous studies have generally advocated for integrating ESD in VET to improve environmental awareness and skills (McGrath & Powell, 2016), this study highlights the practical challenges and successes of implementing such frameworks in developing countries. The findings contradict some earlier research that suggests a uniform approach to ESD integration, instead arguing for the necessity of context-specific adaptations to ensure effectiveness and relevance. This study's contribution to the academic discourse on ESD and VET lies in its detailed examination of the cultural and situational factors that influence the success of educational initiatives like KOSEN-Kaizen. By comparing these findings with existing literature, this research underscores the importance of localized adaptations in the pursuit of sustainable educational outcomes.

## 2.1 Conceptual Framework

The study explores the potential of VET curriculum reform in response to global crises and environmental concerns, particularly with the presence of powerful industrial countries like Japan, a major force for human resource development in the Greater Mekong Subregion (GMS). The theoretical framework of postmodernity, characterized by skepticism towards grand narratives and an emphasis on pluralism and relativism, provides a foundation for integrating Education for Sustainable Development (ESD) within VET systems. Postmodernity challenges the traditional, economically driven narratives of vocational education by promoting a more holistic approach that includes environmental and socio-cultural dimensions. Establishing a VET pragmatism-based curriculum, as mentioned in the objectives of the study, emphasizes conceptualizing knowledge, addressing situational factors, and embracing cultural relativism. These aspects were selected because they represent the critical dimensions necessary for adapting vocational education and training (VET) to the challenges of sustainable development. Conceptualizing knowledge refers to how educational content is structured to promote not just technical skills but also critical thinking and problem-solving abilities, which are essential for addressing complex environmental and social issues. Addressing situational factors involves considering the specific economic, social, and environmental contexts of Thailand and Vietnam, ensuring that the curriculum is relevant and responsive to local needs. Embracing cultural relativism is crucial in a postmodern framework, as it acknowledges the importance of integrating local cultural values and perspectives into education, thereby fostering a more inclusive and contextually appropriate approach to sustainable development. This shift aligns

with ESD's goals, which advocate for transformative learning that empowers individuals to contribute to sustainable practices. By deconstructing the dominant economic-focused paradigms, postmodernity enables the reimagining of VET curricula to include sustainability as a core component, thus supporting the study's objectives of promoting green skills and environmental awareness within Thailand and Vietnam's VET systems.

Figure 1 illustrates the bilateral relationship between Japan as the donor and recipient countries within the Greater Mekong Subregion (GMS), with a focus on vocational education and training (VET) for economic and human resource development (HRD). The diagram is divided into three main sections: Japan's contributions, the recipient countries' adaptations, and the outcomes in the context of sustainable development. Japan contributes by providing Official Development Assistance (ODA) and implementing the KOSEN model in VET systems. It showcases the transfer of educational methodologies, technical expertise, and cultural values such as Kaizen. Thailand and Vietnam, as recipient countries, have adapted these contributions within their local contexts. This includes integrating Japan's educational frameworks with local socio-economic and cultural considerations, including focusing on the development of green skills, enhanced technical capabilities, and the promotion of sustainable development goals (SDGs).

Consequently, economic development objectives take precedence in establishing a continuous curriculum for personal development. However, the emergence of environmental issues and anthropogenic phenomena presents complex challenges and obstacles. Leveraging the cultural capital provided by institutions like KOSEN and the cultivation of Kaizen, the curriculum establishment has shifted from focusing on "know-how-to" to "why-how-what." This shift aligns with the pragmatic ideals of postmodernism and emphasizes democratic education, which encompasses the three pillars of social culture, environment, and economy within Sustainable Development. Education is seen as a tool to achieve the Sustainable Development Goals (SDGs).

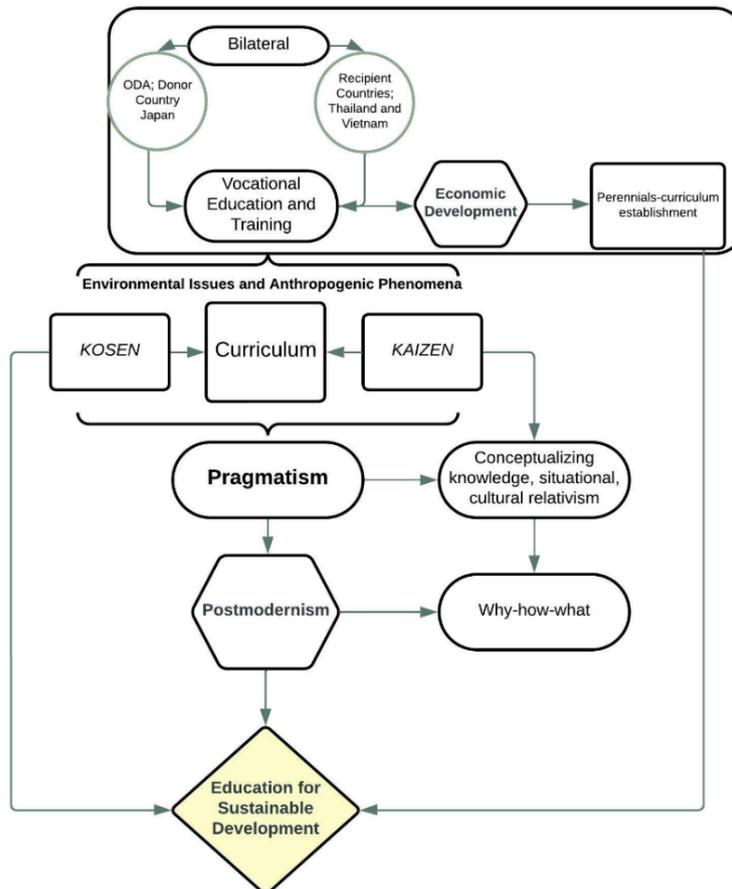


Fig. 1 Conceptual framework

Additionally, the diagram in Figure 1 supports the study's conceptual framework by encapsulating the complex relationships between international educational aid and local educational practices. It visually conveys how Japan's ODA is not merely a transfer of resources but a collaborative process that involves significant adaptation to local contexts. This adaptation is crucial for ensuring that VET systems in Thailand and Vietnam are not only technically sound but also culturally relevant and sustainable. The diagram, therefore, serves as a blueprint for understanding the broader implications of international cooperation in education, highlighting the need for context-sensitive approaches to achieve the intended sustainable development outcomes.

### 3. Methodology

#### 3.1 Research Design and Data Collection

This study employed a qualitative research approach, which was deemed appropriate for exploring the complex, context-specific impacts of Japan's Official Development Assistance (ODA) on Vocational Education and Training (VET) systems in Thailand and Vietnam. The choice of a qualitative methodology allowed for an in-depth understanding of the nuanced ways in which these educational models have been adapted to local contexts.

Semi-structured interviews were selected as the primary data collection method because they offer a balance between structure and flexibility. This approach enabled the researchers to ask consistent questions across interviews while allowing respondents the freedom to elaborate on their experiences and insights. This was particularly important in capturing the diverse perspectives of educators, policymakers, and other stakeholders involved in the implementation of VET and ESD initiatives.

The secondary data analysis was employed to complement the interview data, providing a broader context and validating the findings against existing literature and reports. This method involved the systematic review of relevant documents, including government reports, academic studies, and international organization publications that are from relevant reports by the Japan International Cooperation Agency (JICA), academic and research articles, and credible sources such as UNESCO and UNEVOC. The use of these multiple data sources allowed for the triangulation of findings, providing a more robust and comprehensive understanding of the impact of Japan's ODA on VET systems in Thailand and Vietnam.

The combination of primary and secondary data sources ensured a comprehensive analysis that was both contextually rich and grounded in established research. The interviews focused on various aspects of Japan's ODA and the impact of Japan's VET system, specifically in curriculum development, teaching and learning activities, and the overall VET system in the respective countries. The interviews were conducted via Zoom, each session lasting 45 to 60 minutes and recorded for data analysis. The collected data were coded and analyzed in alignment with the study's objectives.

#### 3.2 Research Sample

The respondents for this study were selected using a purposive sampling method involving four individuals from Thai and Vietnamese institutions. It was deemed appropriate given the study's focus on individuals with specific knowledge and experience related to Japan's Official Development Assistance (ODA) and the implementation of KOSEN-Kaizen practices in vocational education and training (VET). Purposive sampling allowed for the intentional selection of participants who could provide in-depth insights into the research questions, ensuring that the data collected was both relevant and rich in context.

The inclusion criteria for participants were as follows:

- 1) Having more than five years of professional experience in VET and human resource development (HRD) programs influenced by Japan's ODA.
- 2) Demonstrating a deep understanding of the bilateral relationship between Japan and the Greater Mekong Subregion (GMS), particularly in the educational sector.
- 3) Having direct experience with the implementation of KOSEN and Kaizen principles in educational settings in Thailand and Vietnam.

The exclusion criteria were:

- 1) Professionals with less than five years of experience in the relevant fields.
- 2) Individuals lacking substantial knowledge of the Japan-GMS educational initiatives or the KOSEN-Kaizen model.

These criteria ensured that the selected respondents were the most capable of providing the detailed and contextually relevant information needed to answer the study's research questions. By focusing on individuals who met these strict criteria, the study was able to gather data that was both focused and highly relevant to the objectives of understanding the impact of Japan's ODA on VET systems in Thailand and Vietnam.

#### 3.3 Data Analysis

The exploratory case study aimed to validate the established theory (Miles et al., 2014). The collected data were coded and analyzed using distinct approaches tailored to the nature of the data sources. For the semi-structured interviews, thematic analysis was employed to identify recurring themes and patterns across the responses. This involved coding the transcripts and grouping the codes into broader themes that aligned with the study's objectives. For the secondary data, a comparative analysis was conducted, focusing on contrasting the findings from the reports with the interview data to draw connections and highlight discrepancies or confirmations of the

primary data. The analysis began with an initial open coding phase, where the interview transcripts were reviewed line-by-line to identify key concepts and recurring themes. This was followed by axial coding, where the initial codes were grouped into broader categories that reflected the core aspects of the study, such as the impact of Japan's ODA on VET systems and the integration of sustainable practices.

Following the transcription of the interview data, thematic analysis was applied to explore how the respondents articulated the influence of Japan's KOSEN and Kaizen on the VET systems in Thailand and Vietnam. This method was chosen to allow for an in-depth understanding of the participants' perspectives within the context of pragmatism and postmodernism (Mfinanga, 2019). The study sought a comprehensive understanding of the phenomenon based on a grounded theory approach, incorporating empirical data to inform theoretical abstractions (Pisoni, 2018). For the secondary data, a comparative analysis was utilized, wherein the data from various reports and documents were systematically compared with the interview findings to assess the consistency and broader applicability of the themes identified.

Theoretical frameworks, particularly postmodernism and Education for Sustainable Development (ESD), were integral to this analysis. Postmodernism, with its emphasis on deconstructing traditional narratives and embracing multiple perspectives, guided the interpretation of how local cultural contexts influenced the adoption of Japan's educational models. ESD provided a lens through which to assess the effectiveness of these models in promoting sustainable development within VET systems. This framework helped deconstruct the dominant educational paradigms, allowing the study to reveal how local traditions and values were integrated into the VET curricula. ESD, on the other hand, provided a framework for assessing the sustainability of these educational practices, particularly how they promoted environmental stewardship and social equity. By applying these frameworks during the coding process, the analysis was able to connect the empirical findings with broader theoretical debates, offering a nuanced understanding of the intersection between global educational models and local contexts. Furthermore, these frameworks informed the coding categories, ensuring that the analysis not only captured the practical outcomes of Japan's ODA but also critically examined the broader socio-cultural and environmental implications.

The final stage of the analysis involved selective coding, where the most significant categories were identified and their relationships to the study's research questions established. This process allowed for the development of a cohesive narrative that connected the empirical data with the theoretical insights provided by postmodernism and ESD.

### 3.4 Ethical Considerations

Before commencing the study, respondents were thoroughly informed about the research's objectives and methodologies, both verbally and in writing, to ensure strict adherence to research ethics. Anonymity was rigorously maintained, as participants were not required to reveal their identities, thereby ensuring complete confidentiality. Informed consent forms, which clearly outlined the study's aims, potential benefits, and risks, were provided to all participants. Every effort was made to meticulously document and impartially present the collected data. Furthermore, all ideas and sources were accurately cited in accordance with the relevant citation standards.

## 4. Results and Discussion

### 4.1 Japan's ODA to VET in Thailand and Vietnam

In both countries, VET is conducted at three levels of the education system: 1) upper secondary level, 2) post-secondary level, and 3) university level (UNEVOC, 2018; AG, 2014). The VET systems in Thailand and Vietnam are gradually being transformed to align with the global agenda, particularly the 4.0 policy. In Thailand, known as Thailand 4.0, VET aims to boost the nation's economy through technology, creativity, innovation, and research and development (AG, 2014). This initiative is supported by the National Economic and Social Development Plan No. 11, 2012-2016 (Suyaprom & Manmee, 2018). The Vocational Education Commission in Thailand has revised various educational competencies, including cognitive abilities, process skills, system skills, mathematics, and science content, to adapt to the demands of technology manufacturing (KenanAsia, 2020).

Similarly, in Vietnam, the Industrial Revolution 4.0 has influenced VET to enhance the competitiveness of the Vietnamese economy through innovation and technology integration, as outlined in government decision policy no. 2239/QĐ-TTg on the Vocational Education Development Strategy for the 2021-2030 period, with a vision to 2045 (Toan et al., 2022). Vietnamese VET aims to develop data literacy, digital skills, and readiness for 4.0 technologies (APEC, 2022). Considering Thailand's 4.0 policy and Vietnam's Industrial Revolution 4.0 strategy, the standard VET curriculum in the region focuses on enhancing technology skills, online industries, and related robotics, in line with a pragmatist curriculum. The curriculum transformation aims to introduce Society 5.0, where students must master innovative and creative technologies. Economic development remains the primary goal of the curriculum, aligned with globalization, while also addressing sociocultural aspects, which are traditional goals

of VET. However, environmental issues still need to be addressed. Therefore, the need to provide human resources in line with the 4.0 agenda has led to the involvement of donor countries, particularly Japan.

Historically, Japan's Official Development Assistance (ODA) has been in place since the end of the Second World War in 1954, with the aim of promoting peace. Over time, Japan's ODA has served as a crucial tool for Tokyo's foreign policy, serving various purposes such as investment, building confidence, finding bilateral solutions, and showcasing global leadership and economic power. Japan has significantly enhanced its international influence through development cooperation efforts, notably through the establishment of the Japan International Cooperation Agency (JICA), which plays a pivotal role in promoting sustainable development globally (Nishiguchi & Katada, 2016).

Human resource development (HRD) has been a key component of Japan's ODA, with a focus on technological cooperation. This has involved dispatching Japanese experts to assist in vocational education and training (VET) and sending officials from recipient countries to Japan. Table 1 illustrates the allocation of Japan's funds for social infrastructure, services, and education in Thailand and Vietnam. In 2016, Thailand received 21% of the total ODA allocation, while Vietnam received 17.17% in the same category. Education has become a significant sector of aid provided by donor countries.

In 2016, Japan established a liaison office for the National Institute of Technology (KOSEN) in Thailand as part of bilateral cooperation. In 2017, KOSEN established a liaison office in Vietnam. According to a JICA representative in Thailand in January 2021, JICA provides technical support for the program. JICA serves as the aid coordinator, assisting with the organization of activities and the dispatch or acceptance of experts, as expressed by JICA officials in Thailand and Vietnam:

*KOSEN was created to enhance human resource development by empowering skilled individuals for the green industry.*

**Table 1** Japanese ODA Shared in Thailand and Vietnam in 2016

Social Infrastructure, Service and Education	Countries	Bilateral ODA (US\$ Million)	Share (%)
	Thailand	6,923.7	21
Vietnam	3,597.54	17.11	

Source: (TICA, 2022; MOFA, 2017)

#### 4.2 Impact of KOSEN-Kaizen Practices in Thailand and Vietnam

Prior to the establishment of KOSEN in Thailand and Vietnam, KOSEN was formed in 1962 and classified within the formal Japanese education system. KOSEN, which stands for "KOTou SENmon gakkou," meaning "higher school of technology" or "university-level institution" in English (Araki, 2010; Aburatani et al., 2010), is designed for students aged 15 to 19 and focuses on developing problem-solving and creative abilities. The curriculum of KOSEN aims to strike a balance between liberal arts and engineering subjects. In terms of liberal arts, the main subjects include mathematics, science, physics, and English, while the major subjects are related to engineering.

Following the CDIO syllabus and the Japan Accreditation Board for Engineering Education (JABEE) standards (Ohno, 2021), KOSEN published a model core curriculum in 2012, which encompasses fundamental skills, specialized skills, and cross-disciplinary skills (KOSEN, 2012). KOSEN also offers a wide range of general subjects such as languages (English, Japanese, and other foreign languages), chemistry, biology, physics, mathematics, social sciences (history, modern society, geography, ethics, philosophy, and law), physical education and health, music, and arts. Engineering courses include business administration, industrial design, environment and humans, and intellectual property (Araki, 2010). According to Aburatani, Sittichiyapak, and Kano (2010), KOSEN students are taught about the Sustainable Development Goals (SDGs) concerning the global agenda.

The teachers at the liaison offices of KOSEN in Thailand and Vietnam stated,

*KOSEN builds skilled human resources in engineering and fosters individuals who contribute to society through problem-solving skills and creativity.*

They further explained that.

*Kaizen, a Japanese productivity tool, is integrated into KOSEN's teaching and learning activities, particularly in students' practicum. Kaizen is applied in the students' practicum to promote the 5S values of Seiri (sorting), Seiton (setting in order), Seiso (shining), Seiketsu (standardize), and Shitsuke (sustain).*

Additionally, the syllabus concept incorporates the Plan-Do-Check-Action (PDCA) cycle to ensure the implementation of Kaizen in the training process (Ohno, 2021).

Referring to Kaizen in implementation in Thailand and Vietnam, Kaizen has led to a significant improvement in the efficiency of technical education programs, particularly in the automotive sector. A study conducted by

Juwitarsari and Miyake (2022) revealed that students trained under the KOSEN system in Thailand exhibited higher levels of problem-solving skills and environmental awareness, which directly contributed to their employability in green industries. In Vietnam, the adoption of Kaizen principles has been credited with enhancing the quality of engineering education, as evidenced by the increased number of graduates who successfully transitioned into roles within sustainable energy sectors (Ohno, 2021). These examples underscore the practical effectiveness of the KOSEN-Kaizen model in fostering both technical skills and sustainable practices in the Greater Mekong Subregion.

Through the application of 5s-Kaizen, students are guided in managing materials related to environmental preservation during their practicum. The consistent use of Kaizen encourages students to reflect on their decision-making and adopt the Kaizen methodology as part of their social and cultural working approach. One of the key outcomes observed was the increased awareness of environmental issues among students. This was achieved through curriculum adjustments that incorporated sustainability topics into technical subjects, such as engineering and technology. Students were not only taught about the importance of sustainability but were also engaged in hands-on projects that required them to apply green practices in real-world scenarios. For example, in Thailand, KOSEN students participated in projects focused on waste reduction and energy efficiency in manufacturing processes, which not only enhanced their technical skills but also deepened their understanding of environmental impacts.

In Vietnam, the development of green skills was particularly notable in sectors such as renewable energy and sustainable agriculture. The KOSEN curriculum was adapted to include modules on sustainable energy systems, which equipped students with the knowledge and skills needed to contribute to the country's growing green economy. As a result, graduates from the KOSEN program have been increasingly sought after by industries that prioritize sustainability, highlighting the effectiveness of the ESD integration in fostering a workforce capable of supporting sustainable development goals (SDG) 8, Decent Work and Economic Growth (Juwitarsari & Miyake, 2022).

### 4.3 Local Value for Educational for Sustainable Development (ESD) and Its Cosmolocalism

The establishment of KOSEN is not merely focused on producing skilled labor, but it can also cultivate social agents. KOSEN graduates are considered engineering specialists and essential change agents for long-term social capital in their respective regions. KOSEN was established in both regions in 2016 and 2017 as part of the Japanese government's initiative for human resource development and educational enhancement. The curriculum at KOSEN is balanced between liberal education and engineering subjects, with a strong emphasis on cultivating creativity and problem-solving skills. KOSEN has progressively transformed its curriculum through open dialogue with society and stakeholder feedback, aiming to align its outputs with societal needs (Yano, 2018). As was mentioned by one of the interviewers,

*KOSEN has transformed its curriculum progressively by engaging in an open dialogue with society and soliciting feedback from various stakeholders to communicate its output to society.*

This curriculum revision process equips students with the necessary knowledge, skills, and attitudes to understand their rights and responsibilities at the company and community levels. The philosophy of pragmatism plays a significant role in this context, as it views reality as a variable and dependent entity that is best understood through experience and observation, thus influencing changes in the workforce (Tan, 2006). Moreover, the purpose of KOSEN to contribute to society aligns with the pragmatist principle, as eloquently stated by John Dewey: "Man is a dynamic and mobile creature," leading to education's function in society (Sharma et al., 2018).

In 2012, the KOSEN curriculum underwent a substantial revamp in accordance with the CDIO syllabus and JABEE, which emphasize liberal education subjects. This revision reintroduced the Japanese concept of Kaizen, emphasizing the importance of green abilities and considering external, societal, and environmental contexts, particularly in the environment and human subjects.

Kaizen, meaning change and improvement, is a philosophy emphasizing continuous improvement and has been developed since 1950, often associated with the PDCA cycle (Ohno, 2021). In an educational context, Kaizen is accompanied by the 5S principles: Seiri (sorting to eliminate unnecessary tools), Seiton (setting in order), Seiso (shining to maintain a clean workspace), Seiketsu (standardizing to encourage interchangeability), and Shitsuke (sustaining for the long term). Teachers and students create a plan, execute it, evaluate the results, and take action or implement the plan together before the practicum. This approach is widely adopted during student practicums. The cultivation of Kaizen has become a prominent value in Japanese education. In fact, one interview with local educators indicates that the KOSEN-Kaizen approach has significantly improved the quality of technical education, particularly in areas such as precision engineering and green technology. For instance, one respondent from a Thai technical college noted that the Kaizen method had 'transformed our approach to waste management and resource efficiency, making our programs more relevant to the needs of modern industries.' Similarly, in Vietnam,

educators reported that students who completed the KOSEN program were more adept at applying sustainable practices in their work environments, as demonstrated by their involvement in high-profile projects related to renewable energy (Ohno, 2021).

In Thailand, the adaptation process faced challenges such as differing perceptions of authority and hierarchy in educational settings. Traditional Thai educational culture places a strong emphasis on respect for authority, which sometimes conflicts with the more collaborative and continuous improvement-focused Kaizen approach. However, through sustained efforts to localize the Kaizen principles, educators were able to integrate these practices into the Thai VET system by emphasizing respect for tradition while promoting a culture of continuous improvement. This adaptation was particularly successful in technical fields, where students quickly embraced the Kaizen methodology as a way to enhance their practical skills.

In Vietnam, the adaptation process was similarly complex, with initial resistance stemming from differences in educational philosophy and teaching methods. Vietnamese educational culture traditionally values rote learning and adherence to established practices, which posed a challenge for the implementation of the dynamic, problem-solving-oriented KOSEN model. However, by gradually introducing Kaizen principles through pilot programs and demonstrating their effectiveness in improving student outcomes, educators were able to gain acceptance among both students and faculty. The success of these adaptations is evident in the increased student engagement and the improved quality of technical education in both countries.

Additionally, incorporating environmentally friendly practices has gained traction in VET curriculums. Ghinaya and Masek (2021) state that up to 30 percent of VET programs have chosen eco-friendly materials for student practicums. This highlights the potential for environmental friendliness, which is further stimulated by the value of Kaizen. Integrating ESD and Kaizen within the spirit of cosmopolitanism establishes a balance between local and global aspects, respecting local values, culture, communities, and ecosystems while acknowledging their interconnectedness with the global community. Moreover, ESD and Kaizen practices intertwine with social and environmental considerations to achieve sustainability. In a broader sense, this approach encourages individuals to think critically about decision-making within local and global contexts. By embracing the philosophy of continuous improvement through Kaizen and adopting the principles of cosmopolitanism, ESD can be effectively implemented to cultivate a feasible and comprehensive approach aligned with sustainability goals and the local context.

#### **4.4 Greening VET vs. KOSEN-Kaizen in Postmodernity and VET Curriculum Transformation**

A major global concern is the escalating trend of depleting natural resources, climate change, deforestation, excessive carbon emissions, and non-biodegradable waste. Under the Sustainable Development 2030 agenda, the concept of the green economy emerges, emphasizing sustainable production structures and the creation of decent employment, which require economic climate change competencies or green skills (Saputri & Ediyono, 2020). However, vocational college curricula currently lack comprehensive action in this area (Kaliappan & Hamid, 2022). The greening of vocational education and training (VET) is seen as a crucial and interdependent concept for sustainable development. VET is an ideal platform for Education for Sustainable Development (ESD) as it encompasses the goals of the three pillars: environment, socio-cultural, and economy (UNESCO, 2010). Therefore, green TVET is established as an innovative initiative incorporating green technology to protect the environment and natural resources from the negative impacts of human activities.

Since the mid-2000s, the concept of 'Greening TVET' has been prominently featured in international declarations, such as the Bonn Declaration on Learning for Work, Citizenship, and Sustainability, which underscores the critical role of education in advancing sustainable development initiatives (UNESCO-UNEVOC, 2017). Technical and vocational education and training (TVET) is considered the master key to alleviating poverty, promoting peace, conserving the environment, improving the quality of life for all, creating sustainable employment, and contributing to sustainable development (Kieu et al., 2023). This agenda encourages integrating environmental and educational development within the government's top-down strategy, including establishing universal standards such as a low-carbon economy, renewable energy, and environmental preservation. Green TVET initiatives have been developed to support the growth of green economies and the creation of green jobs on both international and multilateral fronts. These initiatives incorporate frameworks such as Green Enhanced Skills Occupation (GESO), Green New and Emerging Occupations (GNEO), and Green Increased Demand Occupation (GIDO) to align vocational training with sustainability goals (UNESCO-UNEVOC, 2019). These frameworks are essential for greening TVET and are categorized into five greening TVET frameworks: 1) green campus for managing campuses, 2) green curriculum for integrating ESD, 3) green community for adapting communities, 4) green research for fostering research, and 5) green culture for promoting culture. However, these five greening frameworks are often considered ambiguous concepts and objectives that exist primarily in the Western context and need to be translated into the local context to achieve a balance between local and global objectives, with local culture playing a crucial role.

The greening of VET has largely been driven by a Western, top-down approach, which disseminates the concept through standardized frameworks and directives. Conversely, postmodernism challenges these universal models, advocating for the acceptance of cultural and situational relativism, which recognizes the diversity of local contexts and knowledge systems (McGrath & Powell, 2017). In postmodernism, the marginalization of academics is often motivated by political and ideological considerations. On the other hand, KOSEN employs Kaizen, which originates from a bottom-up approach to efficiency and sustainability, to promote a constructive culture in Japan. This approach provides students with clear direction and context for their everyday behavior. Kaizen in KOSEN cultivation promotes understanding of local context while preserving cultural heritage. In Japan, cultural values deeply influence everyday life, including the education system, where they shape what is regarded as important knowledge and cultural capital, thus guiding the development of educational content and practices (Yamamoto, 2016). Being a non-Western nation, Japan places great emphasis on cultural identity, reflected even in schools where cultural constructivism helps students develop a sense of ownership (Hang et al., 2015). Lev Vygotsky's theory posits that culture plays a pivotal role in shaping an individual's understanding, allowing them to interact with and interpret their experiences based on prior knowledge. This interaction occurs within social environments that are deeply embedded in political, cultural, and social contexts, thereby connecting the concepts of cultural capital and social capital (Daniels, 2016). In the context of Kaizen, a "step-by-step" approach is adopted, with a particular focus on sustainability and environmental consciousness. This approach involves maximizing the utilization of existing resources, implementing waste management practices, and minimizing the extraction of raw materials (Dantas et al., 2021).

In coping with global crises and anthropogenic phenomena, it becomes imperative to adopt a dominant pragmatic curriculum that aligns with new forms of economic, socio-cultural, and environmental concerns. Pragmatism advocates for active participation in democratic life through lifelong learning, suggesting that education should equip individuals with the skills and attitudes necessary for civic engagement. In response to the complexities of postmodernity, a pragmatic curriculum should align with progressive educational philosophies, which view schools as crucial social institutions for fostering democratic values. Additionally, it should incorporate reconstructionist approaches that emphasize multiculturalism and the preservation of cultural identity, thereby contributing to a broader sense of collective purpose (Biesta, 2015). The need for a paradigm shift responds to certain perceived sociopolitical and economic conditions and requirements (Brown & McCowan, 2018). The paradigm transition must transcend the limitations of modernity and neoliberal-capitalist ideology. Hence, the philosophy, theory, models, and purpose of vocational education and training (VET) transform. There is a need for VET reformation to address future challenges, including the recognition of multiculturalism, local values, knowledge, and philosophy in shaping students' everyday actions, as well as transforming the role of VET teachers and students as agents of social change. Current VET curricula predominantly emphasize market demand, job-specific training, and entry-level education. The curriculum typically integrates academic and vocational education or practical training. However, as transformation becomes necessary, the VET curriculum should maintain the integration of academic and vocational education to cultivate knowledge while emphasizing the concept of lifelong learning. In order to achieve the Sustainable Development Goals (SDGs), it is anticipated that the VET curriculum will incorporate additional knowledge in environmental sciences while concurrently enhancing the spirit of democracy, social function, and justice in the workforce. The transformation of the VET curriculum from pragmatism to postmodernism is detailed in Table 2.

**Table 2** Transformation of curriculum content and conceptual education in philosophy in VET

Elements	Existing Situation	Purposing Situation
Philosophy, Theory, Models and Purpose	<ul style="list-style-type: none"> <li>• Pragmatism with progressivist strand</li> </ul>	<ul style="list-style-type: none"> <li>• Pragmatism with a Postmodernist and reconstructionist strand</li> <li>• Critical perspective by shifting the paradigm of Sustainable Development into a hierarchy on the top of environment, socio-culture, and economy in Education for Sustainable Development, including local value and philosophy recognition</li> <li>• VET students and teachers directed as change agents in society</li> </ul>
Curriculum	<ul style="list-style-type: none"> <li>• Setting Education through market demand</li> </ul>	<ul style="list-style-type: none"> <li>• Lifelong learning concept</li> </ul>

- 
- Job-specific, entry-level training
  - Integration of Academic and Vocational Education
  - Integrated Academic and Vocational Education
  - More propositions on environmental sciences
  - Enhancing the spirit of democracy, social function, and justice in the workforce
- 

*Adopted from Rojewski (2009)*

In relation to the discussion of Cosmolocalism for the VET curriculum transformation in postmodernity, the study demonstrates the positive of integrating ESD into VET in Japan's KOSEN model. It becomes evident that the pragmatic approach of KOSEN-Kaizen, rooted in continuous improvement and efficiency, offers a practical model for embedding sustainable practices within VET curricula. However, as highlighted in the discussion on postmodernity, these practices must be adapted to local cultural contexts to be effective. Policymakers in Thailand and Vietnam should consider integrating KOSEN-Kaizen principles with localized green TVET frameworks to create a hybrid model that not only promotes sustainability but also respects and incorporates local values and traditions. This approach can guide educators in designing curricula that are both globally relevant and locally resonant, ensuring that students are equipped with the green skills necessary for the future workforce while also fostering a sense of cultural identity and social responsibility. Such a model can serve as a blueprint for other nations seeking to balance global sustainability goals with local educational needs, ultimately contributing to the broader discourse on sustainable development in VET.

## 5. Conclusion

The evolution of the Vocational Education and Training (VET) curriculum reflects a profound shift from pragmatism, which traditionally focused on practical, job-specific training, to a postmodernist approach that values localized knowledge and cultural diversity. Historically, VET has been driven by the pragmatic goal of preparing students for immediate entry into the workforce, often at the expense of broader educational objectives such as sustainability and social justice. However, as postmodernist perspectives gain traction, there is a growing recognition of the need to move beyond the one-size-fits-all model of education that Western ideals have long dominated. Postmodernism challenges this hegemony by advocating for a curriculum that is not only responsive to local contexts but also respectful of the multiplicity of truths that exist within different cultural frameworks.

In this context, the integration of local values into the VET curriculum becomes crucial for fostering sustainability. The Japanese concept of Kaizen, for example, has enriched global educational practices by demonstrating how continuous improvement and efficiency can be aligned with local cultural norms. This stands in contrast to the influence of neo-capitalist and political agendas that often prioritize major and liberal arts subjects over disciplines that address human and environmental concerns. The imbalance highlights the pressing need for a more holistic VET curriculum that prepares students not just for the labor market but also for their roles as active, informed citizens in a sustainable society.

Moreover, the concept of "Cosmo-Localism," introduced through the KOSEN model, offers a transformative approach to education by bridging the gap between global and local perspectives. "Cosmo-Localism" advocates for the nurturing of local communities within a global network, fostering a harmonious coexistence that respects and integrates local cultures while addressing universal challenges (Schismenos, 2020). By embracing this philosophy, the VET curriculum can transcend its traditional boundaries, promoting an educational framework that is both globally relevant and deeply rooted in local realities. This evolution represents a critical step toward a decolonized and more equitable educational system, where VET serves not only economic needs but also the broader goals of cultural preservation, environmental stewardship, and social justice.

## 6. Recommendations

The study concludes that the integration of Education for Sustainable Development (ESD) within Vocational Education and Training (VET) systems, particularly through Japan's KOSEN model, has shown positive results in promoting sustainability in education. However, to further enhance the effectiveness of these initiatives, several specific recommendations are provided for policymakers and educators:

1) Policymakers in Thailand and Vietnam should ensure that the integration of ESD principles within VET is adapted to the local cultural and socio-economic contexts. This involves working closely with local educators to identify the unique challenges and opportunities within their regions, thereby ensuring that the curriculum is both relevant and effective. In addition, policymakers should encourage stronger partnerships between educational institutions and industries, particularly in sectors that are key to sustainable development, such as renewable

energy and sustainable agriculture. These partnerships can provide students with hands-on experience in applying green skills in real-world settings.

2) Educators should receive targeted training on how to incorporate ESD principles into their teaching practices. This includes not only understanding the theoretical underpinnings of sustainability but also developing practical strategies for embedding these concepts into technical and vocational subjects and educators should continue to adopt the Kaizen approach of continuous improvement within their institutions. This practice not only enhances the quality of education but also fosters a culture of innovation and adaptability, which is essential for sustainability in education.

By implementing these recommendations, stakeholders in Thailand and Vietnam can further strengthen VET's role in promoting sustainable development and ensure that their educational systems are equipped to meet the challenges of the future.

## 7. Limitations

While the study provides valuable insights into the integration of Education for Sustainable Development (ESD) within Vocational Education and Training (VET) systems in Thailand and Vietnam, several limitations should be acknowledged, as follows:

- 1) One of the primary limitations is the sample size, which, due to resource constraints, was limited to a small number of respondents from selected institutions. This sample size may not fully capture the diversity of experiences and perspectives across the broader VET systems in these countries. Future research could address this limitation by including a larger and more diverse sample, encompassing a wider range of educational institutions and stakeholders.
- 2) Another limitation is the scope of data, which focused primarily on qualitative insights derived from semi-structured interviews and secondary sources. While this approach provided an in-depth understanding, it may benefit from being supplemented with quantitative data, such as surveys or longitudinal studies, to provide a more comprehensive analysis of the impact of ESD integration.
- 3) Additionally, the study concentrated on the specific contexts of Thailand and Vietnam, which, while providing detailed case studies, limits the generalizability of the findings to other regions. Future research could explore the application of the KOSEN-Kaizen model in other Southeast Asian countries or beyond to assess its adaptability and effectiveness in different cultural and socio-economic contexts.
- 4) Lastly, the rapid changes in global educational and environmental landscapes suggest the need for continuous monitoring and evaluation of the integration of ESD within VET. Future research could focus on longitudinal studies that track the long-term outcomes of these educational reforms, particularly in relation to evolving sustainability challenges and technological advancements.

By addressing these limitations and pursuing these areas for future research, scholars and practitioners can build on this study's findings to further advance the integration of ESD within VET systems globally.

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## Conflict of Interest

The author declares that she has no conflicting interest in doing this research.

## Author Contribution

*The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.*

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