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Exploration of Environmental Knowledge, Sustainability Awareness, Pro-Sustainability Behavioural Tendencies, and Sustainable Lifestyles among Prospective Economics Educators

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Abstract

Economic education is crucial for developing future educators who are economically proficient and possess strong sustainability awareness. This study comprehensively explores the environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles of 238 prospective economics teacher students. Utilising a quantitative descriptive survey method, data were collected via Likert-scale questionnaires through proportional random sampling. Results indicate that while environmental knowledge and sustainability awareness are fairly good, the integration of sustainability issues into current learning is limited. Pro-sustainability behaviours show promise in technology use and cultural value application, but involvement in environmental organisations remains minimal. Similarly, sustainable lifestyles are reflected in understanding life's meaning and relational well-being, yet they lack appreciation for non-human system involvement. The study concludes that strengthening economics education curricula with applicable and contextual sustainability content is vital. Furthermore, encouraging student participation in environmental communities and enhancing project-based learning, critical reflection, and interdisciplinary collaboration are essential. Ultimately, prospective economics teachers must be empowered to become agents of change for a sustainable future.

Keywords

Environmental Knowledge, Sustainability Awareness, Pro-Sustainability Behavioural Tendencies, Sustainable Lifestyles, Prospective Economics Educators

INTRODUCTION

Economic education plays a strategic role in shaping a generation that is not only competent in economics but also possesses environmental awareness and a commitment to sustainable development. In a global context continuously overshadowed by ecological crises such as climate change, pollution, and natural resource degradation, education is demanded to produce graduates with adequate sustainability literacy. In this regard, prospective economics teachers hold a crucial role as agents of change, instilling an understanding of the interconnectedness between economic activities and environmental sustainability in their students.

For this reason, mastering Environmental Knowledge is a must for prospective economics teachers. This knowledge not only broadens their understanding of the impact of economic activities on ecosystems but also forms the foundation for instilling sustainability values in every learning process (Liu et al., 2020). By possessing Environmental Knowledge, prospective economics teachers can explain how economic decisions like consumption, production, and investment affect environmental balance. At the same time, it encourages students to think critically and responsibly when making decisions focused on preservation. This preparation becomes highly relevant amidst various global challenges that demand solutions based on

sustainability principles. However, a significant gap exists in this aspect. Prospective economics teachers generally still possess limited environmental knowledge, and it's often not well-integrated with their understanding of economics. Even though sustainability issues are increasingly echoed, many cannot comprehensively connect economic concepts with ecological impacts. Consequently, economics teaching potentially remains in a conventional paradigm that focuses solely on economic growth and efficiency, without considering ecosystem sustainability.

In addition to environmental knowledge, Sustainability Awareness is a crucial competency that prospective economics teachers must possess. This awareness allows them to understand the interconnectedness between economic growth, social welfare, and environmental preservation as a unified concept of sustainable development (Alsaati et al., 2020). With Sustainability Awareness, prospective economics teachers don't just teach economic theory technically; they also instil values of social and ecological responsibility in their students. This awareness can transform a mindset from a sole profit orientation towards creating sustainable economic value.

Unfortunately, a gap still exists between the level of sustainability awareness and the actual implementation of real-world behaviour among prospective economics teacher students. Many of them understand the importance of the sustainability conceptually, but haven't shown consistency in daily behaviours that reflect sustainability principles. This is where Pro-Sustainability Behavioural Tendencies become crucial. This refers to the inclination to behave in ways that support sustainability, such as reducing energy consumption, choosing eco-friendly products, and applying circular economy principles. (Kriglstein, 2024). Without these behavioural tendencies, sustainability awareness tends to remain at the knowledge level without being accompanied by concrete actions.

Furthermore, prospective economics teachers must adopt Sustainable Lifestyles as part of their identity and daily practices. A sustainable lifestyle balances economic needs, environmental preservation, and social well-being through wise consumption, efficient resource management, and involvement in community sustainability initiatives. However, a gap phenomenon exists, indicating that even though prospective economics teachers possess sustainability knowledge and awareness, their lifestyles don't fully reflect these principles. Many still opt for energy-wasteful consumption patterns, minimal waste management, and limited involvement in sustainability-based social activities. (Böhme et al., 2022).

Ironically, this phenomenon occurs amidst increasing sustainability literacy at the global level. Many prospective economics teacher students understand environmental issues theoretically, but haven't successfully internalised these principles into their daily attitudes and behaviours. Yet, they have the potential to be influential role models in shaping the sustainability awareness and behaviour of the younger generation. This situation reveals a gap between knowledge, awareness, behaviour, and sustainable lifestyles that haven't been optimally integrated.

So far, studies on education for sustainable development among university students have primarily focused on environmental science, engineering, or general education disciplines (Cachero et al., 2023). Meanwhile, research specifically examining the conditions of environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles within the field of economics education remains very limited. This is despite the fact that the field of economics has a close connection to sustainability practices, especially concerning consumption and production decisions that have ecological and social impacts.

Furthermore, previous research has also tended to be fragmented, only discussing the relationship between two or three sustainability aspects partially. Studies that comprehensively capture the interconnectedness between environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles in a single comprehensive model, especially among prospective economics teacher students, are still rare. This gap highlights the significant need for more integrative research to understand the readiness of

prospective economics teachers in internalising sustainability values in cognitive, affective, and behavioural aspects.

Addressing this situation, this research becomes both relevant and urgent. UNESCO, through its Education for Sustainable Development (ESD) concept, has emphasised the importance of every discipline, including economics education, contributing to the achievement of the Sustainable Development Goals (SDGs). A comprehensive exploration of environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles in prospective economics teachers is necessary as a basis for strengthening curriculum and learning strategies in higher education.

This research aims to comprehensively explore the condition of these four aspects among prospective economics teacher students. The novelty of this study lies in the integration and simultaneous mapping of relationships between variables, which has not been extensively studied within the context of economics education. Through this research, we hope to generate findings that provide theoretical and practical contributions to the development of sustainability-based economics education, while also fostering the emergence of prospective economics educators who can embody and transmit sustainability principles in every aspect of life.

LITERATURE REVIEW

Environmental Knowledge

Environmental Knowledge refers to an individual's level of understanding about environmental systems, the relationship between humans and nature, and the impact of various activities on ecosystem balance (Liu et al., 2020). In the context of economics education, environmental knowledge is crucial because economic activities often directly involve the exploitation of natural resources and decision-making with sustainability implications. According to research by Olsson & Gericke, (2017) Integrating environmental knowledge into educational curricula can enhance students' understanding of the interconnectedness between economics and sustainability. However, in practice, prospective economics teachers often remain trapped in a conventional economic paradigm that emphasises growth without considering environmental carrying capacity. Therefore, strengthening Environmental Knowledge is an urgent necessity to equip prospective economics teachers with a more holistic perspective.

Sustainability Awareness

Sustainability Awareness involves a deep understanding of the importance of maintaining a balance between economic needs, environmental preservation, and social well-being within the framework of sustainable development (Cao et al., 2025). This awareness is crucial for shaping the mindset of prospective economics teachers so they don't just teach efficiency and growth, but also responsibility toward future generations (Tasdemir & Gazo, 2020). Research by Leal Filho et al., (2021) indicates that increasing Sustainability Awareness in students can encourage their involvement in sustainability issues and enhance their sensitivity to the socio-ecological consequences of economic policies. Nevertheless, high sustainability awareness doesn't always translate into actual practice. Therefore, sustainability-based education needs to be designed not only theoretically but also with practical application in mind.

Pro-Sustainability Behavioural Tendencies

Pro-Sustainability Behavioural Tendencies reflect the extent to which individuals demonstrate concrete actions that support sustainability in their daily lives (Kollmuss & Agyeman, 2002). These behaviours encompass various activities such as reducing energy consumption, waste management, using eco-friendly products, and participating in social activities related to environmental preservation (Stadlthanner et al., 2020)(Dasgupta & Pawar, 2020).

Research by (Corral-Verdugo et al., 2021) states that sustainability knowledge and awareness need to be internalised into daily habits to form consistent behaviour. However, there's still an intention-behaviour gap—a discrepancy between knowledge or awareness and actual behaviour—which is also found among prospective economics teacher students. This gap

highlights the need for an educational approach that can bridge the cognitive realm with real-world practice.

Sustainable Lifestyles

Sustainable Lifestyles represent the application of sustainability values across various aspects of daily life, including consumption, production, transportation, and social participation (Kang et al., 2021). Within the educational context, it's crucial for prospective economics teachers to model sustainable lifestyles because they serve a dual function as educators and role models for their students. Several studies, such as that by (Yamane & Kaneko, 2021) affirm that students who lead sustainable lifestyles are better able to transmit sustainability values to others. Unfortunately, this lifestyle is often not yet an integral part of prospective economics teacher students' daily lives. Barr et al., (2011) research shows that factors like habits, social norms, and ease of access hinder the adoption of sustainable lifestyles.

While there has been much research partially discussing Environmental Knowledge, Sustainability Awareness, Pro-Sustainability Behavioural Tendencies, and Sustainable Lifestyles, studies that comprehensively examine the interconnections among all four are still very rare, especially in the context of economics education. Previous research tends to be fragmented and hasn't captured how knowledge and awareness can simultaneously influence sustainable behaviour and lifestyles (Leal Filho et al., 2019). Understanding this integration is crucial for designing more effective educational strategies to cultivate prospective economics teachers who not only grasp the theory but can also apply and transmit sustainability principles in their daily lives.

Research Gap and Study Contributions

Previous research on education for sustainable development has largely focused on students in environmental science, engineering, or general education fields (Summers et al., 2005). However, the field of economics education has received minimal attention. This is despite the fact that sustainability literacy from an economic perspective has unique dimensions, encompassing sustainable consumption-production decision-making and considering economic value that doesn't harm the environment or society. Therefore, this research aims to fill this gap by integratively exploring the four aspects of sustainability among prospective economics teacher students. In addition to contributing academically, this study is also expected to serve as a basis for developing sustainability-oriented curricula and teaching methods in economics education.

METHODS

This research employed a quantitative survey method and descriptive statistical analysis. This approach was chosen to depict the conditions related to environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles among prospective economics teacher students. The population for this study included all students enrolled in the Economics Education study program, batches 2021-2024, at the Faculty of Economics and Business, Universitas Negeri Semarang. A sample of 238 respondents was selected using proportional random sampling. Data was collected through the distribution of questionnaires designed based on indicators for each research variable: Environmental Knowledge, Sustainability Awareness, Pro-Sustainability Behavioural Tendencies, and Sustainable Lifestyles. The questionnaire comprised statements using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to measure the respondents' level of agreement with each statement. Before being used, the questionnaire underwent validity and reliability testing through a pilot study with a small group of students outside the research sample. The collected data were analysed using descriptive statistics with the aid of statistical software such as SPSS. Descriptive analysis was performed to calculate the mean, standard deviation, minimum, and maximum values. The results of this analysis aim to provide a general overview of the level of environmental knowledge, sustainability awareness, pro-sustainability behavioural tendencies, and sustainable lifestyles among prospective economics teacher students.

RESULTS AND DISCUSSION

The respondent data for the study are presented in Table 1.

Table 1. Respondent Demographic Data

Demography	Variables	Frequency
Age	< 20 tahun	183
	20 – 21 tahun	41
	22 – 23 tahun	12
	> 23 tahun	2
Gender	Male	42
	Female	196
Semester	2	35
	4	69
	6	70
	8	64
Have taken courses related to the environment or sustainability	Yes	238
	No	0
Participated in training, seminars, or workshops on sustainability or environmental issues.	<5	87
	5-10	109
	11-15	24
	>15	18
Current place of residence	Urban	61
	Suburban	82
	Rural	95
There are family habits related to environmental preservation	Yes, frequently	55
	Sometimes	172
	Never	11
Active in student organisations or communities related to environmental or social issues	Yes, campus organisations	37
	Yes, off-campus communities	9
	No	192
Your primary source of information on sustainability or environmental issues.	Social media (Instagram, TikTok, etc.)	58
	Mass media (TV, newspapers)	23
	University lectures/courses	116
	Friends/family	12
	Communities/Organisations	36
	Others	7
Duration of access to environmental and sustainability-related information	Every day	21
	Several times a week	142
	Once a month	89
	Less frequent than once a month	14
Experience participating in community service activities related to environmental or sustainable community empowerment.	<5 times	134
	6-10 times	51
	11-15 times	34
	>16 times	19
Participating in social entrepreneurship projects related to sustainability issues	<5 times	175
	6-10 times	48
	11-15 times	12
	>16 times	3

Source: Primary data processed (2025)

Based on demographic data from 238 student respondents, the majority are under 20 years old (183 individuals), female (196 individuals), and currently in semester 6 (70 individuals). All respondents have taken courses related to the environment or sustainability. Regarding additional training, 109 respondents have participated in 5-10 training sessions, seminars, or workshops on sustainability. Their current residences are distributed across rural areas (95 individuals), suburban areas (82 individuals), and urban areas (61 individuals). A significant portion of respondents report that their families engage in environmental preservation habits only sometimes (172 individuals), and 192 respondents are not active in environmental organisations. The primary sources of sustainability information for most respondents are university courses (116 individuals) and social media (58 individuals). Most access environmental information several times a week (142 individuals). Experience participating in community service activities related to the environment is most commonly less than 5 times (134 individuals), and a similar trend is seen with involvement in social entrepreneurship projects, which is also predominantly less than 5 times (175 individuals).

The indicators for Environmental Knowledge comprise the following: understanding of ecosystems, human impact on the environment, Earth's processes, cycles, and history, as well as Earth's resources, their utilisation, and conservation, as presented in Table 2.

Table 2. Environmental Knowledge of Prospective Economics Teacher Students

	N	Minimum	Maximum	Mean	Std. Deviation
Understanding how the relationship between energy flow in ecosystems and the sustainability of natural resources supports economic activities.	238	2.00	5.00	3.5924	0.93110
Knowing how the cycles of water, oxygen, and carbon in ecosystems can affect resource availability for economic activities.	238	2.00	5.00	3.4790	0.97953
Understanding the interconnectedness between inter-population dependencies within ecosystems and the sustainability of a natural resource-based economy.	238	2.00	5.00	3.5504	0.98704
Knowing the ecological factors that can influence the quantity and availability of natural resources serving as inputs in economic processes.	238	2.00	5.00	3.3739	0.89941
Knowing positive human actions for the environment, such as reforestation and the protection of endangered species, as efforts to maintain economic sustainability.	238	2.00	5.00	3.4076	0.89411
Understanding efforts to reduce water and air pollution as part of a sustainable economic development strategy.	238	2.00	5.00	3.4664	0.81967
Knowing the negative impacts of industrial waste and fossil fuel combustion on human health and ecosystem balance.	238	2.00	5.00	3.3950	0.90212

Understanding how air, water, and soil pollution resulting from economic activities can disrupt the preservation of natural resources that support the economy.	238	2.00	5.00	3.5000	0.86542
Understanding how geological processes and the Earth's water cycle influence the availability of natural resources that support economic activities.	238	2.00	5.00	3.4034	0.91236
Able to differentiate between weather and climate and understand the factors influencing changes in both, in the context of their impact on the economic sector.	238	2.00	5.00	3.3950	0.95218
Knowing the evidence of climate change from the ice ages to current global warming.	238	2.00	5.00	3.3319	0.99530
Understanding how global climate change can affect sustainable economic planning and policy.	238	2.00	5.00	3.3487	0.81664
Knowing the difference between renewable and non-renewable natural resources and their implications for economic activities.	238	2.00	5.00	3.3697	0.94904
Understanding various strategies for conserving Earth's resources, such as waste management and recycling practices, to support economic sustainability.	238	2.00	5.00	3.4916	0.82032
Knowing the impact of economic activities such as agriculture, deforestation, and mining on soil and water conditions.	238	2.00	5.00	3.4034	0.96188
Understanding the importance of water conservation and clean water supply methods, such as desalination and water purification, in supporting sustainable economic development.	238	2.00	5.00	3.3193	0.87567
Valid N (listwise)	238				

Source: Primary data processed (2025)

Based on the descriptive analysis of the 16 Environmental Knowledge indicators in Table 2, it was found that all indicators concerning respondents' understanding of the relationship between ecosystems, natural resource sustainability, and economic activities had scores ranging from 2 to 5. The highest mean score was 3.59, observed for the indicator on understanding the relationship between energy flow in ecosystems and natural resource sustainability for economic activities. Conversely, the lowest mean score was 3.32, for understanding the importance of water conservation and clean water provision methods like desalination. Generally, all indicators had a mean above 3, suggesting a fairly good level of understanding among respondents, though there's still room for improvement. This is especially true for aspects related to climate change, water conservation, and the economic impact on the environment, where mean scores were relatively lower than other indicators. Additionally, standard deviation values, ranging from 0.81 to 0.99, indicate some variation in understanding among respondents, although it's not excessively large.

Next is the aspect of Sustainability Awareness, which consists of 8 main indicators: Environmental Interest, Environmental Issues in Class, Environmental Protection in Daily Life, Environmental Practices at Home, Water Consumption Awareness, Energy Consumption Awareness, Recyclable Waste Practices, and Sustainable Debate in School.

Table 3. Sustainability Awareness of Prospective Economics Teachers

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Possesses a high interest in learning about environmental issues that impact sustainable economic development.	238	1.00	5.00	3.3487	0.89077
In economics lectures, environmental issues are frequently discussed as part of the material related to sustainable development.	238	2.00	5.00	3.3109	0.85928
Applies eco-friendly habits in daily life as a form of contribution to maintaining the sustainability of economic resources.	238	1.00	5.00	3.4706	0.93973
Accustoms oneself to practicing eco-friendly habits at home and educates family members about the importance of conserving resources for economic sustainability.	238	2.00	5.00	3.4706	0.84017
Always striving to conserve water usage as a form of care for the sustainability of water resources, which are also vital for economic activities.	238	2.00	5.00	3.4664	0.86963
Accustomed to turning off unused electrical appliances to conserve energy and support sustainable economic efficiency.	238	2.00	5.00	3.4412	0.91097
Accustomed to sorting recyclable waste as an effort to reduce waste and increase the economic value of used goods.	238	2.00	5.00	3.4706	0.83006

Discussion about environmental sustainability needs to be integrated into the economics education curriculum to equip prospective teachers with an understanding of the green economy.	238	2.00	5.00	3.7143	0.92907
Valid N (listwise)	238				

Source: Primary data processed (2025)

The descriptive analysis of the eight environmental awareness indicators, measured via questionnaire, reveals that all indicators have an average score above 3, with a minimum range of 1 to 5. The highest average score is 3.71 for the indicator on the importance of discussing environmental sustainability within the economics education curriculum. This highlights respondents' strong awareness of the need to integrate environmental education into economics learning. Conversely, the lowest average score is 3.31 is found in the indicator regarding how frequently ecological issues are discussed in economics lectures. Other indicators, such as applying eco-friendly habits at home, waste sorting, and water and energy conservation, show averages ranging from approximately 3.47 to 3.47, reflecting fairly good positive practices in daily life. The standard deviation values, which range from 0.83 to 0.94, indicate some variation in awareness levels among respondents. However, generally, the tendency toward attitudes and awareness regarding sustainability issues in an economic context is quite good, though it can still be improved.

The next aspect is pro-sustainability behavioural tendencies, with indicators of pro-sustainability behaviours including: emotional engagement with environment and culture, techno-cultural orientation, inclusive mindset, eco-spirituality, and societal expectations.

Table 4. Pro-sustainability Behavioural Tendencies of Prospective Economics Teachers

	N	Minimum	Maximum	Mean	Std. Deviation
Emotionally driven to integrate cultural values and environmental concerns into economics education to support sustainability.	238	2.00	5.00	3.4454	0.89251
Utilises technology and understands local culture in teaching sustainable economic concepts to students.	238	1.00	5.00	3.6176	0.92368
Believes that decision-making regarding sustainability issues in the economic field must involve various stakeholders from diverse backgrounds.	238	2.00	5.00	3.3487	0.98951

Believes that economic sustainability must be accompanied by a spiritual awareness that humans and businesses are part of the natural ecosystem and must be protected.	238	2.00	5.00	3.5546	0.92044
Understanding the important role of prospective economics teachers in meeting societal expectations to educate a generation that cares about social, economic, and environmental balance.	238	1.00	5.00	3.4748	0.98801
Valid N (listwise)	238				

Source: Primary data processed (2025)

Based on Table 4, all indicators show an average score above 3, with a minimum score range of 1 to 5. The highest average score is 3.62 for readiness to utilise technology and understand local culture in teaching sustainable economic concepts. This is followed by the conviction that economic sustainability must be accompanied by spiritual awareness, with an average of 3.55. Conversely, the lowest average score is 3.35, for the importance of sustainability decision-making involving various stakeholders. The level of emotional engagement with cultural values and environmental concern, as well as the understanding of prospective economics teachers' roles in meeting societal expectations, also shows good tendencies, with averages of 3.45 and 3.47, respectively. The variation in respondent answers is reflected by standard deviations ranging from 0.89 to 0.99. This indicates differences in the level of pro-sustainability behavioural tendencies among respondents, although their general awareness and readiness are quite good.

Next, we examine the aspect of sustainable lifestyles, formulated into 7 patterns developed within the Relational Lifestyle Framework (RLF). These seven patterns reflect the dimensions of sustainable thinking, being, and acting: From separation to interconnection, From human agency to intra-action with the more-than-human, From individuals to dividuals, From control to emergence, From mind–body dualism to embodiment, From individual well-being to relational well-being, From meaninglessness to meaningfulness.

Tabel 5. Sustainable Lifestyles Prospective Econimic Educators

	N	Minimum	Maximum	Mean	Std. Deviation
Understanding that economic activities must consider the interconnectedness between humans and nature as a unified socio-ecological system.	238	2.00	5.00	3.5588	0.98228
Belief that the transition to a sustainable economy must involve human engagement alongside non-human systems and beings.	238	1.00	5.00	3.3697	0.90815

Realising that, as a prospective economics teacher, my identity is shaped by social and environmental relationships that influence economic practices.	238	2.00	5.00	3.4244	0.90040
Believing that the transition towards economic sustainability should be built through collaboration and socio-ecological dynamics, rather than solely through human control.	238	1.00	5.00	3.4706	0.82496
Feel that direct experience and sensory involvement can strengthen my understanding of the relationship between economics and the environment.	238	2.00	5.00	3.4034	0.89837
Understanding that individual well-being in economic activities is closely linked to social well-being and environmental preservation.	238	1.00	5.00	3.5813	0.8791
Believe that adopting a sustainable lifestyle in an economic context gives me a deeper meaning in life and a contribution to sustainability.	238	1.00	4.00	3.718	0.9121
Valid N (listwise)	238				

Source: Primary data processed (2025)

The descriptive analysis of the seven Sustainable Lifestyles indicators, developed within the Relational Lifestyle Framework (RLF), reveals that all indicators have an average score above 3, with a minimum range of 1 to 5. The only exception is the indicator for finding meaning in life through a sustainable lifestyle, which has a maximum score of 4.

The highest average score is 3.72, for the belief that adopting a sustainable lifestyle within an economic context provides deeper meaning in life. This is followed by an average of 3.58 for the understanding that individual well-being in economics is linked to social and environmental well-being. The lowest average score is 3.37, for the belief that the transition to a sustainable economy must involve non-human beings and systems. Overall, the standard deviations, ranging from 0.82 to 0.98, indicate moderate variation in respondents' understanding and attitudes. These findings suggest that most respondents have a fairly good awareness of the importance of the interconnectedness of humans, nature, and the meaning of life in building a sustainable lifestyle. However, there's still room to strengthen understanding, particularly concerning the involvement of non-human systems in sustainable change.

Discussion

This research reveals that prospective economics teachers' understanding of environmental knowledge, particularly concerning the sustainability of natural resources and economic activities, falls into the "fairly good" category, with all indicators scoring an average above 3. The highest level of understanding was found in the relationship between energy flow in ecosystems and the sustainability of natural resources supporting economic activities. Conversely, the lowest understanding was related to the importance of water conservation and clean water provision methods like desalination and purification. This suggests that while basic ecological concepts are well-understood, awareness of specific issues such as water scarcity and climate change needs improvement. These findings align with studies by Hwang et al., (2017) which indicated that students' understanding of ecosystem-sustainable development linkages remains predominantly theoretical, lacking full practical implementation. This is further supported by Collado-Ruano & Segovia Sarmiento, (2022) who noted limitations in prospective teachers' knowledge of conservation and economy-based environmental policies. Theoretically, these results are consistent with Arcury, (1990) concept of Environmental Knowledge, which emphasises understanding basic ecology, human impact, and solutions for minimising environmental damage. The implication is a need to strengthen the economics education curriculum with more applied sustainability content, delivered through projects or case studies related to environmental and economic issues.

For environmental awareness, prospective economics teachers demonstrate a good level of awareness, with average scores above 3 across all indicators. However, the integration of environmental issues into lectures remains low (mean of 3.31). This finding suggests that while most respondents—who are predominantly under 20 years old (76.9%) and female (82.4%)—have taken environmentally related courses, the in-depth coverage of sustainability material in the classroom is still limited. This is despite all respondents (100%) taking sustainability-related courses, and over half have attended seminars, workshops, or training on environmental issues, albeit mostly with low frequency. These results align with transformative education theory and research by Ameyaw et al., (2019) and Sterling, (2016) which emphasise the importance of a curriculum that fosters critical awareness and encourages students to become agents of change. Therefore, it's crucial for educational institutions to strengthen environmental content in economics lectures so that students can comprehensively understand the connection between the green economy and sustainability.

In the dimension of Pro-Sustainability Behavioural Tendencies, students show a good level of pro-sustainability behaviour. The highest score (mean 3.62) was their readiness to leverage technology and understand local culture in sustainable economics education. However, students' active participation in environmental or social organisations remains low. Only 37 individuals are active in campus organisations, 9 in off-campus communities, and the remaining 80.7% are not actively involved. This indicates a gap between good awareness and actual implementation in socio-environmental activities. Theories of sustainable education by Schutz, (2000), the holistic ecology concept is crucial for building sustainability competencies rooted in culture, spirituality, and technology. Research by Fadeeva & Mochizuki, (2010) also emphasises the importance of strengthening practical competencies through the integration of culture and technology. Therefore, institutional encouragement is needed to increase student involvement in organisations and communities. Additionally, the curriculum needs strengthening to equip students with the cross-sector collaboration skills currently lacking, as reflected by the low score in multi-stakeholder decision-making.

In the sustainable lifestyle aspect, students show a good tendency to understand and adopt sustainable living, with the highest score (mean 3.72) for the indicator of finding meaning in life through a sustainable lifestyle. This aligns with Deci & Ryan, (2008) theory of eudaimonic well-being and Berkes (2010) socio-ecological systems theory, both of which emphasise the crucial interconnectedness of humans, nature, and non-human systems. Despite this, demographic data indicate that most students rarely participate in community service activities

related to the environment—the majority (56.3%) have participated fewer than 5 times—and their involvement in social entrepreneurship projects is also limited. Furthermore, the diverse living environments of students (95 in rural areas, 82 in suburban areas, and 61 in urban areas) can influence their perspectives and opportunities for practising sustainable lifestyles. Research by Huckle & Wals, (2015) supports the importance of relational awareness in education. Therefore, the implication is a need for increased hands-on field experiences to build stronger critical awareness among students.

Finally, this research also reveals that students' access to sustainability information is still predominantly through campus lectures, followed by social media, and then communities/organisations. However, the frequency of information seeking is not yet optimal, with only 21 students accessing information daily, while the majority do so only a few times a week. Therefore, strengthening learning strategies based on direct experience, critical reflection, and community collaboration is crucial. This will ensure that students not only possess knowledge and awareness but are also able to implement sustainability values in real life. By doing so, the education of prospective economics teachers is expected to produce competent educators who are sensitive to global issues and capable of preparing students to be part of the solution for a sustainable future.

CONCLUSION

This research concludes that prospective economics teachers demonstrate a fairly good level of knowledge, awareness, behavioural tendencies, and sustainable lifestyles, with average scores above three across all measured aspects. Their understanding is highest regarding the relationship between energy flow in ecosystems and the sustainability of economic resources, while their understanding of water conservation and climate change still needs improvement. Awareness of the importance of sustainability is also quite good, especially in promoting the integration of sustainability issues into the economics education curriculum, though the frequency of environmental discussions in class remains low. Pro-sustainability behavioural tendencies are evident in their readiness to leverage technology and understand local culture, but student participation in environmental organisations and multi-stakeholder decision-making is limited. In terms of sustainable lifestyles, students show positive attitudes, particularly in finding meaning through sustainable living and understanding socio-environmental well-being, though awareness of the involvement of non-human systems in sustainability is still lacking. This condition is influenced by the demographic characteristics of respondents, who are mostly young, female, live in rural or suburban areas, and have limited experience in community service activities and social entrepreneurship projects.

Therefore, it's essential to strengthen the economics education curriculum to be more applicable and contextual. This can be achieved through: Project-based approaches, Case studies, and Cross-disciplinary collaborative learning to enhance students' sustainability competencies. Educational institutions also need to encourage active student involvement in environmental organisations, social communities, and community service and social entrepreneurship activities to bolster their practical experience. Furthermore, students should be facilitated to access sustainability information more intensively through various media and equipped with inclusive decision-making skills involving diverse stakeholders. Strengthening relational and spiritual awareness between humans, nature, and non-human systems is also crucial for building a holistic perspective in sustainable economics. This way, prospective economics teachers can become educators who not only possess academic competence but also social and environmental sensitivity to prepare future generations for a more sustainable future.

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