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The university as a cultural actor in promoting students' responsibility toward environmental sustainability: An environmental humanities perspective

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ABSTRACT

Responsibility toward environmental sustainability has become a central challenge for higher education institutions due to its direct impact on raising students' awareness and shaping their behaviors toward the environment. This study aims to assess the role of Prince Sattam bin Abdulaziz University in promoting responsibility toward environmental sustainability among students and to explore ways to enhance such role. The study followed the descriptive-analytical method. It relied on a structured questionnaire that included 362 male and female students from various colleges and academic levels. The questionnaire focused on four main dimensions: the role of the university administration, faculty staff members, academic courses, and student activities, in addition to a special section on ways to enhance environmental responsibility. The results showed that the university achieves a very high level in promoting responsibility toward environmental sustainability across all dimensions, with the role of faculty staff members and academic courses being the most influential on students' awareness and behavior, followed by student activities and university administration. Students emphasized the importance of integrating sustainability in curricula, organizing training programs and workshops, supporting innovative student initiatives, enhancing community partnerships, and utilizing digital technologies to raise environmental awareness. The study concluded that the integration of university policies and educational practices is a key factor in promoting responsibility toward environmental sustainability. It also emphasized the need to continuously develop programs and activities to ensure the consolidation of sustainable environmental behavior among students.

KEYWORDS: environmental sustainability, university responsibility, higher education, students' awareness

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Introduction

During the last decades of the 20th century and the beginning of the third millennium, the world witnessed a noticeable increase in the severity of environmental crises, including air, water, and food pollution, alongside climate changes that have become a direct global threat to the stability of ecosystems and human life (Najmi & El-Sayed, 2023). These crises are no longer merely scientific or technical issues but have become widespread problems with social, cultural, and ethical dimensions (Maartensson & Loi, 2022).

This growing awareness of the environmental crisis is reflected in the increasing global interest in sustainability issues, and in international reports, conferences, and studies that called for the greening of various sectors and the promotion of sustainable practices (Ismail & Abdellatif, 2024). In 2005, governments have begun integrating environmental sustainability (ES) into their public policies. However, universities have adopted these principles since 2008, eventually leading to their ranking according to global sustainability indicators (UI Green Metric World University Ranking, 2022).

In this context, universities have become key institutions in promoting ES in the new millennium. Their role is no longer limited to imparting environmental knowledge but has expanded to include integrating environmental, economic, and social dimensions into their policies, educational practices, research, and community activities (Probst et al., 2019). Universities with a focus on ES are defined as higher education institutions that aim to minimize negative environmental, economic, and social impacts resulting from their activities, while supporting societal transition toward sustainable lifestyles. ES is also defined as a set of activities aimed at avoiding the depletion or degradation of natural resources, ensuring long-term environmental quality, and meeting present needs without compromising the rights of future generations (Pettinger, 2018; University of Waterloo, 2021).

Higher education institutions play a pivotal role in achieving sustainable development)SD) by raising students' awareness of sustainability issues and fostering their attitudes toward balancing its three pillars: environment, economy, and society (Kalsoom & Khanam, 2017). Education for SD contributes to providing interactive learning environments that help develop the values, skills, and practical competencies necessary to support sustainable behavior, as forming sustainable attitudes is a key element in understanding and promoting positive environmental behavior (Probst et al., 2019). The concept of SD is based on collective responsibility grounded in economic development, social justice, and environmental protection as a foundation for the well-being of current and future generations (Illahaqi et al., 2021). Recent studies have shown a growing interest among university students in ES issues in the face of challenges related to climate change and the depletion of natural resources (Judge et al., 2022).

Environmental issues in the 21st century have become a global concern due to their direct impact on vital sectors such as agriculture, water, energy, health, transportation, coastal areas, and SD (Maartensson & Loi, 2022). Improving quality of life requires making fundamental changes in individuals' attitudes, behaviors, and lifestyles toward the environment (Kolenatý et al., 2022). The trend toward sustainability is a general response that reflects an individual's awareness of environmental issues that are important to them (Al-Naqbi & Alshanna, 2018). Hence, developing environmental responsibility and sustainable behavior has become a primary goal of scientific research and educational policies. Many studies have emphasized the importance of instilling sustainable attitudes in learners at various educational stages (Kalsoom & Khanam, 2017; Probst et al., 2019), making the integration of social responsibility into university curricula and activities essential for achieving a sustainable future (Tomás et al., 2023).

These trends align with Saudi Arabia's Vision 2030, which has made ES one of its main pillars under the theme of a 'Vibrant Society,' alongside the pillars of a 'Thriving Economy' and an 'Ambitious Nation.' Since its launch in 2016, the vision has emphasized the importance of protecting the environment, improving energy consumption efficiency, and preserving natural resources as a responsibility towards future generations (Safahi, 2021; Najmi & Al-Sayyid, 2023). Saudi Vision 2030 also emphasizes achieving ES alongside financial and social sustainability and the sustainability of infrastructure.

Although universities are committed to promoting social responsibility through various policies and activities, these efforts still suffer from lack of reach and low engagement within the university community which leads to limited awareness and effective participation (Tomás et al., 2023). A study by Condori & Reyna (2019) shows that a large proportion of a public university community in central Peru believe that university social responsibility is

insufficient and that there is a clear weakness in social participation and organizational management. In contrast, Probst et al. (2019) affirm that the university plays a fundamental role in preparing qualified students capable of making a positive impact on the environment and society through scientific research and civic and social engagement.

In light of the complexity of contemporary environmental issues, environmental humanities have emerged as a field of knowledge that focuses on the value-based, cultural, and ethical dimensions of the environmental crisis. From the perspective of environmental humanities, environmental crisis is not only due to economic and industrial practices but also to prevailing patterns of thought and awareness, and the cultural relationship between humans and nature (Orr, 2004). From this perspective, the university stands out as an influential cultural actor in reshaping environmental responsibility and awareness, not only through the transmission of scientific knowledge but also by building values, shaping academic discourse, and fostering environmental responsibility as an ethical and behavioral consciousness that reflects students' understanding of the impact of their actions on ecosystems and their readiness to bear the consequences (Sterling, 2010).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has emphasized that higher education represents a fundamental pillar for achieving SD goals, particularly the fourth goal related to quality education and the thirteenth goal related to climate action, through the integration of sustainability into university policies and practices (UNESCO, 2017). However, integrating sustainability solely as a knowledge-based content remains insufficient unless it is incorporated as a comprehensive educational culture reflected in academic discourse, teaching methods, and daily practices on campus.

In light of the above, the study's problem is related to the need for deeper understanding of the university's role as a cultural actor in promoting environmental responsibility among students, especially amid the dominance of instrumental approaches that reduce sustainability to its technical or administrative aspects. Therefore, this study aims to assess the role of Prince Sattam bin Abdulaziz University (PSAU) in promoting students' responsibility toward environmental sustainability and to explore ways to activate this role, with focus on the value-based, cultural, and ethical dimensions of university educational practices.

Literature Review

Responsibility towards Environmental sustainability as Being a Contemporary Conceptual Framework

Environmental sustainability is one of the key concepts in contemporary environmental discourse, as it refers to the study of how natural systems function, their diversity, and their ability to survive, ensuring environmental balance, protecting natural resources, addressing issues of poverty and hunger, improving education and health, achieving social justice, and combating climate change and pollution (Mason, 2019). From an educational perspective, environmental sustainability is defined as an educational process aimed at developing individuals' awareness of global environmental issues, building their knowledge, attitudes, and skills to enable them to make responsible decisions, and modifying their behaviors towards protecting the environment in a sustainable manner (Al-Dafrawi, 2019).

The concept of environmental sustainability is related to the role of institutions in achieving a balance between development requirements and environmental preservation. In this context, the university's role is defined by its ability to sustain itself and remain resilient in facing environmental challenges, adopting effective programs with added value, while maintaining its educational, research, and community functions without harming natural resources (Al-Omari & Al-Areeni, 2020).

Environmental sustainability responsibility is defined as an ethical obligation arising from an individual's awareness of the impact of their behavior on the natural and social environment, and their willingness to make decisions that preserve its sustainability for future generations (Jonas, 1984). International agendas, starting with the United Nations Conference on Environment and Development in 1992, have emphasized the importance of environmental education and its role in achieving SD, as well as the necessity of integrating sustainability responsibility into university education (United Nations Agenda, 1992).

The United Nations 2030 Agenda for Sustainable Development has further reinforced this approach by setting 17 global goals, emphasizing the role of universities in achieving them (Sach, 2015; Madime et al., 2023). Responsibility is considered a key element in environmental, economic, and social sustainability, as it contributes to improving the quality of life and is reflected in attitudes and behaviors that support building stable communities (Blaique et al., 2023). Environmental awareness is closely related to social responsibility,

representing one of the pathways to achieving SD (Al-Hamdan & Al-Azmi, 2022; Al-Arabi & Omar, 2023).

Saudi Arabia's Vision 2030 has made environmental sustainability one of its national priorities through goals related to reducing pollution, protecting land and marine environments, improving waste management efficiency, optimizing energy use, and developing sustainable environmental policies (Saudi Vision 2030 Media Center, 2016). The National Program for Environmental Awareness and Sustainable Development is also one of the national transformation initiatives, aiming to instill individual and collective responsibility towards the environment (National Center for Meteorology, 1442 AH).

These efforts are reinforced by national initiatives such as 'Green Saudi Arabia' and 'Green Middle East,' which were launched to address increasing environmental challenges, in line with the objectives of Vision 2030 (Saudi Press Agency, 1442 AH; Ministry of Environment, Water and Agriculture, 2024). Al-Salmi et al. (2022) emphasize that raising environmental awareness among Saudi citizens is a fundamental requirement to achieve the desired environmental sustainability.

The University as a Cultural Actor in Promoting Responsibility Towards Environmental Sustainability

Recent literature confirms that universities are among the most important actors in achieving environmental sustainability, due to their educational and social roles and their direct impact on shaping the awareness of individuals and society and promoting responsibility towards the environment. The university is not merely an educational institution, but a socially and environmentally responsible organization that contributes to reducing increasing environmental risks and leads social and environmental development pathways through research and innovation (Rieg et al., 2021).

Education is considered the cornerstone in achieving SD, as it helps raise awareness, reinforce attitudes, and change individual and societal behaviors toward sustainability (Mora et al., 2020). Ambusaidi & Al Washahi (2016) emphasize that a shift towards sustainable behaviors cannot be achieved without effective education capable of fostering positive attitudes among individuals. Universities also contribute to building sustainable communities through education and awareness, linking theoretical knowledge with practical application (Almudara et al., 2023).

Universities differ from other educational institutions due to their direct connection to all dimensions of SD: social, economic, cultural, environmental, and political, as they represent the intellectual and scientific leadership in society and are responsible for addressing its contemporary challenges (Amir, 2011). Studies indicate that achieving environmental sustainability requires fundamental changes in individual and collective behaviors, making it a key focus of scientific research and educational policies in universities (Probst et al., 2019).

The role of the university goes beyond producing knowledge to shaping social awareness and building cultural values. Bourdieu (1988) emphasizes that educational institutions play a pivotal role in reproducing or transforming dominant cultural structures. In the context of sustainability, the university stands out as a cultural actor capable of reshaping students' relationship with the environment through the intellectual models and educational practices it provides (Al-Otaibi, 2022).

In this context, universities play a crucial role as drivers of social change in the environmental field, by linking academic life with practical reality, guiding students' awareness toward environmental issues, and developing curricula, courses, and university activities (Blaique et al., 2023). The literature also emphasizes the necessity of developing university programs to broaden students' horizons and increase their awareness of how to interact with and preserve the environment (Al-Najjar, 2019). Najmi and Al-Sayed (2023) highlight the importance of enhancing universities' responsibility toward environmental sustainability as a characteristic of green organizations that seek to balance the demands of development with the preservation of the environment and society.

Environmental humanities emerged in response to the need to move beyond purely scientific approaches to the environmental crisis by integrating philosophy, literature, history, and cultural studies in analyzing the human-environment relationship. Researchers in this field argue that environmental challenges reflect a crisis of meaning and values as much as they reflect a mismanagement of resources (Heise, 2016).

Education for sustainability in higher education focuses on integrating environmental values into the institutional culture of the university, rather than merely including them in the curriculum. Sterling (2010)

emphasizes that a real shift towards sustainability requires a change in educational thinking patterns, moving from knowledge-transmission-based education to education based on critical thinking, systems thinking, and ethical responsibility.

Based on the previous discussion, it is evident that environmental sustainability represents a cognitive, educational, and cultural issue, and that the university plays a pivotal role that is not limited to transferring environmental knowledge, but extends to enhancing value awareness and building responsibility towards environmental sustainability among students. Additionally, the literature on environmental humanities reveals the importance of the cultural and ethical dimension in addressing the environmental crisis, which reinforces viewing the university as a cultural actor influential in reshaping humanity's relationship with nature. Accordingly, this theoretical framework provides a solid scientific basis for investigating the role of the university in fostering responsibility toward environmental sustainability among students, in light of the requirements of SD and Saudi Arabia's Vision 2030.

Methodology of the Study

Based on the objectives and questions of the study, the researchers adopted the descriptive-analytical method. (this method is suitable for studying educational and social phenomena and can be used to describe and analyze the role of the university as a cultural actor in promoting responsibility towards environmental sustainability among students) , due to its suitability for studying educational and social phenomena, and its ability to describe and analyze the role of the university as a cultural actor in promoting responsibility towards environmental sustainability among students. The researchers believe that the method will help them reveal means of activating the role of the university within a framework that aligns with SD goals and Saudi Arabia's Vision 2030.

Population and Sample of the Study

The study population consisted of all male and female students at PSAU. The study sample was selected using the convenience sampling method. It included (362) students; (213) male students and (149) female students, distributed across various academic disciplines. The number of students from scientific colleges was (254), compared to (108) students from humanities colleges. The average age of the sample members was (20.27) years, with a standard deviation of (2.56), which provides an appropriate representation of the study population and contributes to enhancing the reliability of the results and their generalizability.

Tools of the Study

Based on the study's objectives and research questions, the researchers designed a questionnaire to measure students' opinions on the university's role in promoting responsibility towards environmental sustainability and ways to activate it. The questionnaire consisted of two main parts:

1. Demographic data; i.e. (college, gender, specialization).
2. Questionnaire sections:
   - First section: The role of the university in promoting responsibility towards environmental sustainability, which included (24) items distributed across four main dimensions, namely:
   - University administration (6 items)
   - Faculty staff members (6 items)
   - Academic courses (6 items)
   - Student activities (6 items)
   - Second section: Ways to activate the university role in promoting responsibility towards environmental sustainability, which included (8) items.

The questionnaire relied on the five-point Likert scale to determine the degree of responses from the sample individuals, according to the following scale: (Very High, High, Moderate, Low, Very Low), with relative weights assigned as (5, 4, 3, 2, 1) respectively.

Validity of the Study Tool

To verify the validity of the questionnaire's content, it was initially reviewed by five faculty-staff members

specialized in education and environmental studies, to assess the clarity of the items, the accuracy of their wording, and their suitability for the study's objectives. The reviewers' agreement rates ranged between 80% and 100%, indicating that the instrument possesses an appropriate level of content validity the questionnaire was adopted after incorporating the suggested modifications.

Internal Consistency

To verify the validity of internal consistency, the questionnaire was applied to a pilot sample consisting of 132 male and female students from outside the main sample. The Pearson correlation coefficient was calculated between the score of each item and the total score of the dimension to which it belongs, as well as between the scores of the dimensions and the total score of the axis. The results showed that all correlation coefficients were statistically significant at the 0.01 level, and their values ranged between 0.511 and 0.809, which confirms the internal consistency of the questionnaire items with their dimensions.

Stability of the Tool of the Study

To verify the stability of the questionnaire, the researchers used both:

- Cronbach's alpha coefficient,
- Gutman split-half formula.

The stability value using the Gutman formula was 0.715, while Cronbach's alpha coefficient was 0.881, both of which exceed the scientifically acceptable threshold (0.70), indicating that the instrument possesses a high degree of stability and reliability.

Data Analysis

The study data were analyzed using IBM SPSS version 23, employing the following statistical methods:

- Arithmetic means,
- Standard deviations,
- Pearson correlation coefficient,
- Cronbach's alpha coefficient,
- Independent Samples T-test; to detect the significance of differences between students' average responses according to gender and field of study.

The researchers set specific criteria for interpreting the arithmetic means and determining the level of the university's engagement in promoting responsibility towards environmental sustainability and ways to activate it from the students' perspective, according to the five-point Likert scale, as shown in Table (1).

Table (1) Criteria for Interpreting Mean Scores

Level	**Mean Range**	**Percentage Range**
Very High	≥ 4.2	≥ 84%
High	3.4 - < 4.2	68% - < 84%
Medium	2.6 - < 3.4	52% - < 68%
Low	1.8 - < 2.6	36% - < 52%
Very Low	< 1.8	< 36%

Results

Question One: "What is the reality of the role of the university (university administration, faculty staff members, academic courses, student activities) in promoting responsibility towards environmental sustainability among students, from the students' perspective?"

To answer this question, the arithmetic means and standard deviations of the responses of the study sample were calculated for the four dimensions of the questionnaire (first axis) and the overall score, according to the five-point Likert scale.

Table (2)

Arithmetic means, standard deviations, and the actual level of the university's role in promoting responsibility towards environmental sustainability according to the axes and total score.

Dimension	M	SD	Percentage	Level	Rank
Staff members	4.63	0.56	93%	Very High	1
Curricula	4.55	0.64	91%	Very High	2
Students' activities	4.34	0.73	87%	Very High	3
University administration	4.42	0.69	88%	Very High	4
Total score of the first section	4.48	0.65	90%	Very High	-

It is evident from Table (2) that the role of the university in promoting responsibility towards environmental sustainability among students was very high across all dimensions and the overall score, with an overall mean of 4.48. The dimension of faculty members ranked first, followed by the dimension of courses, then student activities, and finally university administration. This ranking reflects the centrality of the cultural and educational role of the university professor and academic content in building environmental responsibility among students.

Table (3)

The arithmetic means, standard deviations, and the university's actual level in promoting responsibility towards environmental sustainability according to the items and dimensions

Items	*M*	*SD*	Percentage	Level	Rank
Dimension One: Role of University Administration in Promoting Responsibility Towards Environmental Sustainability					
1. The University administration is keen to incorporate environmental sustainability into its vision and institutional mission.	4.75	0.46	95%	Very High	1
2. The University administration supports environmental initiatives that raise students' awareness of environmental responsibility.	4.62	0.58	92%	Very High	3
3. The University administration provides a campus environment that supports sustainable practices (energy conservation, waste management).	4.48	0.71	90%	Very High	4
4. The University policies contribute to promoting responsible environmental behavior among students.	4.21	0.83	84%	Very High	6
5. The University administration encourages students to participate in environmental programs and projects.	4.35	0.76	87%	Very High	5
6. The University administration's decisions reflect a clear concern for environmental sustainability issues.	4.68	0.52	94%	Very High	2
Overall mean for Dimension One	4.42	0.69	88%	Very High	
Dimension Two: Role of Faculty Staff Members in Promoting Responsibility Towards Environmental Sustainability					
7. Faculty members are keen to raise students' awareness about the importance of environmental sustainability.	4.77	0.43	95%	Very High	1
8. Faculty members link course content to contemporary environmental issues.	4.61	0.57	92%	Very High	4
9. Faculty members encourage students to adopt responsible behaviors toward the environment.	4.72	0.49	94%	Very High	2
10. Faculty members contribute to developing students' critical thinking about environmental issues.	4.66	0.55	93%	Very High	3
11. Faculty members use teaching strategies that support sustainable environmental values.	4.53	0.62	91%	Very High	5
12. Faculty members serve as positive role models for students by adhering to proper environmental practices.	4.47	0.68	89%	Very High	6
Overall mean for the Dimension Two	4.63	0.56	93%	Very High	
Dimension Three: Role of Academic Courses in Enhancing Responsibility Towards Environmental Sustainability					

Items	*M*	*SD*	Percentage	Level	Rank
13. Academic courses include topics related to environmental sustainability	4.70	0.54	94%	Very High	2
14. Academic courses contribute to the development of students' awareness of environmental responsibility	4.77	0.45	95%	Very High	1
15. Academic courses help students understand global and local environmental challenges.	4.64	0.60	93%	Very High	3
16. Academic courses promote values and positive attitudes towards environmental protection.	4.58	0.66	92%	Very High	4
17. Academic courses link academic knowledge with real-world environmental applications.	4.41	0.74	88%	Very High	5
18. Academic courses contribute to developing students' skills in solving environmental problems.	4.19	0.86	84%	Very High	6
Overall mean for Dimension Three	4.55	0.64	91%	Very High	
Dimension Four: Role of Student Activities in Promoting Environmental Sustainability					
19. Student activities contribute to raising students' awareness of environmental sustainability issues.	4.58	0.63	92%	Very High	3
20. Student activities encourage students to participate in environmental volunteer work.	4.52	0.67	90%	Very High	4
21. Student activities develop positive attitudes towards environmental conservation.	4.44	0.71	89%	Very High	5
22. Student activities contribute to turning environmental knowledge into practical behavior.	4.31	0.79	86%	Very High	6
23. Student activities enhance a collective sense of responsibility towards the environment.	4.71	0.56	94%	Very High	1
24. Student activities contribute to building a university culture that supports environmental sustainability	3.54	1.01	69%	Very High	2
Overall mean for Dimension Four	4.34	0.73	87%	Very High	
Overall total for the first axis of the questionnaire	4.48	0.65	90%	Very High	

Table (3) shows the mean scores and standard deviations for the university's current level in promoting responsibility towards environmental sustainability, distributed across four main dimensions: university administration, faculty members, courses, and student activities. Each dimension is measured by several items, and the table also shows the percentages and overall level for each item and dimension, in addition to the ranking.

Dimension One: Role of University Administration in Promoting Responsibility Towards Environmental Sustainability

The averages of the items ranged between 4.21 – 4.75, with most items rated very high, except for the item related to enhancing university policies for responsible environmental behavior (4.21), which was rated high. The overall arithmetic mean for this dimension is 4.42 (88%), reflecting a very high level of awareness and institutional participation in promoting responsibility towards environmental sustainability with items related to integrating sustainability within the institutional vision and supporting environmental initiatives standing out.

Dimension Two: Role of Faculty Staff Members in Promoting Responsibility Towards Environmental Sustainability

The items average ranged between 4.47 and 4.77. All the items are rated as very high, with the highest score given to the item related to raising students' awareness of the importance of environmental sustainability (4.77), followed by encouraging students to adopt environmentally responsible behaviors (4.72). The overall average

for this dimension is 4.63 (93%), reflecting a very high level of educational commitment and environmental guidance by faculty staff members. It also reflects the members' central role in enhancing students' environmental awareness and responsibility.

Dimension Three: Role of Academic Courses in Enhancing Responsibility Towards Environmental Sustainability
The averages of the items ranged between 4.19 and 4.77, with most of them rated very high, except for the item on developing environmental problem-solving skills (4.19), which was rated high. The overall arithmetic mean for this dimension is 4.55 (91%), reflecting the effectiveness of academic courses in integrating environmental values, raising students' awareness of responsibility towards the environment, with items related to developing students' awareness and understanding of environmental challenges standing out.

Dimension Four: Role of Student Activities in Promoting Responsibility Towards Environmental Sustainability
The items average ranged between 3.45 and 4.71, with the majority of items rated very high. The item on building a university culture that supports environmental sustainability scored the lower end of the average (3.45), but it still falls within a high level. The overall arithmetic mean for this dimension is 4.34 (87%), reflecting a good level of student participation and engagement in environmental activities, with prominence of the role of volunteer activities and scientific competitions in fostering a sense of collective responsibility.

Overall Total for the First Axis
The overall mean for the first axis is 4.48 with a standard deviation of 0.65 and a percentage of 90%, reflecting a very high level of the university engagement in promoting responsibility towards environmental sustainability across the four dimensions. The role of faculty staff members and academic courses particularly stands out in enhancing students' environmental awareness and responsibility, while the role of university administration and student activities appears solid but requires further expansion in some areas to strengthen the institutional culture supporting sustainability.

Question Two: "What are the ways to activate the role of PSAU *in promoting responsibility toward environmental sustainability from the students' perspective?"*
To answer this question, the arithmetic means and standard deviations of the students' responses in the second part were calculated, as illustrated in the following table:

Table (4) Arithmetic means, standard deviations, and ways to activate the role of PSAU in promoting responsibility towards environmental sustainability from the students' perspective.

item	mean	SD	percentage	level	Rank
25. Integrating environmental sustainability concepts more deeply into academic courses	4.77	0.45	95%	Very high	1
25. Organizing environmental training programs and workshops for students	4.65	0.54	93%	Very high	3
27. Supporting innovative student initiatives in the field of environmental sustainability	4.72	0.49	94%	Very high	2
28. Strengthening partnerships between the university and environmental organizations in the local community	4.48	0.63	90%	Very high	5
29. Employing digital technologies to raise awareness about environmental sustainability among students	4.54	0.58	91%	Very high	4
30. Encouraging student scientific research related to sustainable environmental issues	4.42	0.66	88%	Very high	6

31. Developing clear university policies that focus on promoting environmental responsibility among students	3.80	0.91	76%	Very high	8
32. Motivating students financially and morally to adopt positive environmental practices	4.18	0.79	84%	Very high	7
The overall arithmetic mean for the second axis of the questionnaire	4.51	0.61	90%	Very high	

The table indicates that students believe activating the university's role in promoting responsibility towards environmental sustainability requires, first, integrating environmental sustainability concepts into curricula and university programs (4.77) and, second, supporting innovative student initiatives (4.72), reflecting the importance of academic integration and practical application. It also highlights the role of workshops and training programs (4.65) and the use of digital technologies to raise awareness (4.54) as effective means to enhance environmental responsibility.

On the other hand, clear university policies (3.80) and the material and moral incentives for students (4.18) were relatively less valued, indicating the need for greater official and institutional attention to enhancing environmental responsibility. The overall average of 4.51 confirms that students believe the university plays a very significant role in activating environmental responsibility, with the potential to strengthen certain practical and organizational aspects to achieve a greater impact.

Discussion

Discussion of the result of Question One: This result can be interpreted as indicating a very high level of the university effectiveness in promoting responsibility towards environmental sustainability across the four dimensions from the students' perspective. Here, the role of faculty staff members and courses is particularly notable in raising awareness about environmental responsibility among students. This result can be interpreted as follows:

Dimension One: Role of University Administration in Promoting Responsibility Towards Environmental Sustainability

The results of the study indicate that the administration of PSAU plays an influential role in promoting students' responsibility towards environmental sustainability, with an overall average of 4.42 (88%), reflecting a very high level of awareness and participation in university environmental policies and practices. This result can be explained from several aspects. First, the administration's clear institutional commitment to integrating sustainability into the institutional vision and mission reflects what recent studies have emphasized regarding the necessity of institutional orientation to support sustainable practices, as noted by Pettinger (2018) and the University of Waterloo (2021). Second, the effective support for environmental initiatives and programs by the administration provides an encouraging environment for student participation. This is highlighted by Condori & Reyna (2019) regarding the role of universities in empowering students to actively engage in societal and environmental issues. Third, university policies and administrative decisions influence the promotion of positive behaviors among students, in line with the recommendations of Tomás et al. (2023) which stressed the importance of integrating social responsibility and sustainability into university policies to enhance environmental interaction and participation.

Dimension Two: Role of Faculty Staff Members in Promoting Responsibility Towards Environmental Sustainability

The study results showed that faculty staff members represent a key element in promoting environmental responsibility among students, with an overall average of 4.63 (93%), reflecting a very high level of commitment and awareness. This can be explained in relation to different aspects. First, the faculty's dedication to raising students' awareness of contemporary environmental issues and climate change challenges reflects what Probst et al. (2019) and Ambusaidi & Al Washahi (2016) indicated regarding the role of effective teaching in

shaping sustainable attitudes and behaviors in learners. Second, employing educational strategies that support environmental values, including critical discussions and analysis of environmental problems, enhances students' ethical awareness and stimulates systemic thinking, as emphasized by Sterling (2010) in his environmental humanities studies on integrating values and knowledge in higher education. Third, faculty members serving as role models by adopting sustainable environmental practices reinforces learning by doing and encourages students to adopt responsible behaviors toward the environment this is also confirmed by Maartensson, and Loi (2022) regarding the impact of positive role models in motivating students' environmental engagement.

Dimension Three: Role of Academic Courses in Enhancing Responsibility Towards Environmental Sustainability
The results show that the courses effectively contribute to enhancing students' environmental responsibility, with an overall average of 4.55 (91%), indicating active student engagement in sustainability issues. This can be explained from several perspectives. First, integrating environmental sustainability topics into the courses provides students with the knowledge necessary to understand local and global environmental challenges, aligning with what Mason (2019) and Al Dufrawi (2019) pointed out regarding the importance of education in building awareness and making responsible decisions. Second, linking academic knowledge to practical application through real case studies and field projects enhances critical thinking and the ability to solve environmental problems, as noted by Almudara et al. (2023) concerning the role of applied education in promoting environmental responsibility. Third, developing students' environmental problem-solving skills contributes to strengthening their positive environmental behaviors and preparing them to make responsible decisions, which is supported by Illahaqi et al. (2021) in terms of the significance of applied education in SD.

Dimension Four: Role of Student Activities in Promoting Responsibility Towards Environmental Sustainability
The results indicate that student activities play an active role in enhancing students' environmental responsibility, with an overall average of 4.34 (87%), reflecting a high level of participation and engagement. First, participation in volunteer activities and environmental competitions provides a practical experience for translating knowledge into actual behavior, which was highlighted by Al-Naqbi & Alshanna (2018) and Mora et al. (2020) regarding the impact of practical interaction in reinforcing sustainable behavior. Second, fostering a spirit of collective responsibility through student activities reflects the close relationship between environmental awareness and social responsibility, as explained by Al-Hamdan & Al-Azmi (2022) in their studies on the role of teamwork in developing positive attitudes toward environmental protection. Third, these activities contribute to building a university culture that supports environmental sustainability, in line with UNESCO (2017) recommendations, which emphasized the need to integrate sustainability into the institutional culture of the university rather than relying solely on the academic content, thereby promoting the development of sustainable ethical and behavioral awareness among students.

Discussion of the result of Question Two
The results of the second question showed that students believe that ways to activate the role of PSAU in promoting environmental sustainability include integrating concepts of sustainability into curricula, organizing training programs and environmental workshops, supporting innovative student initiatives, and enhancing partnerships with environmental institutions in the local community, in addition to employing digital technologies, encouraging scientific research, and motivating students both materially and morally to adopt positive environmental practices. Students' ratings for these items ranged between an arithmetic mean of 3.80 and 4.88, reflecting a high level of awareness and willingness to actively participate in applying environmental sustainability concepts.

These results can be interpreted from several perspectives. First, students emphasize the importance of incorporating sustainability concepts more deeply into university curricula, as this allows for building comprehensive environmental knowledge and linking theory to practical application, which enhances the ability to make responsible decisions and adopt sustainable behaviors (Mason, 2019; Al-Dafrawi, 2019). Second, students indicate that organizing training programs and environmental workshops provides interactive learning environments that enable them to acquire practical skills for applying environmental concepts. This in turn supports the findings of Ambusaidi & Al Washahi (2016) and Probst et al. (2019) regarding the effectiveness

of experiential learning in promoting sustainable attitudes and behaviors. Third, supporting innovative student initiatives is an effective way to enhance active participation and stimulate critical thinking and innovation in the field of environmental protection, aligning with what Maartensson, and Loi (2022) and Tomás et al. (2023) confirmed about universities' ability to empower students to create tangible environmental and social impact. Fourth, students emphasize the importance of partnerships with local environmental organizations, as they provide opportunities to apply academic knowledge in practical settings, reflecting the recommendations of Almudara et al. (2023) on linking higher education with the community to deepen students' understanding of sustainability dimensions. Finally, students believe that employing digital technologies to raise environmental awareness, encouraging student-led scientific research, and providing tangible and intangible incentives represents an effective strategy for promoting participation and sustainable behavior, which aligns with Sterling (2010) and UNESCO (2017) regarding the importance of integrating technological tools and motivation in building a sustainable institutional culture and fostering ethical and behavioral responsibility towards the environment.

Conclusion

The study indicates that PSAU plays a pivotal role in promoting environmental sustainability responsibility among students, as the arithmetic means for each of the four study dimensions reflect a high level of awareness and participation in fostering sustainable environmental behavior. Data analysis shows that the dimension related to faculty staff members recorded the highest average, reflecting a strong appreciation for the members' role in guiding students, educating them, and serving as role models in adopting positive environmental behaviors, in addition to integrating environmental values into educational and interactive practices.

The role of the university administration stands out as a fundamental institutional factor in supporting and activating responsibility toward environmental sustainability through formulating clear visions and policies, and implementing initiatives and programs aimed at raising students' awareness and encouraging responsible environmental practices. This reflects the university's commitment to integrating sustainability within its organizational and cultural structures, enhancing students' level of environmental commitment and responsibility, and translating it into tangible practical behavior.

The role of academic courses in enhancing environmental knowledge and positive attitudes among students is evident, through integrating sustainability topics, linking theoretical knowledge to practical applications, and providing opportunities to develop skills in solving environmental problems. This integration of academic content and practical practices helps students understand contemporary environmental challenges and prepares them to make sustainable decisions that reflect their awareness of environmental responsibility.

At the same time, the study's results emphasize that student activities play an effective role in translating knowledge into practice, by encouraging volunteering, participating in environmental initiatives, fostering a sense of collective responsibility, and building a university culture that supports sustainability. These activities reflect the university's ability to create a stimulating learning environment for interaction and practical application, contributing to the establishment of sustainable behaviors among students.

The results also indicate that activating the role of the university in promoting responsibility towards environmental sustainability requires a variety of strategies, including expanding environmental content in curricula, organizing training programs and workshops, supporting innovative student initiatives, enhancing community partnerships, utilizing digital technologies, and encouraging student scientific research. This confirms that building environmental responsibility among students goes beyond transferring knowledge to developing sustainable values, practices, and behaviors that align with the national vision for sustainability, thereby enhancing the university's ability to contribute to fostering an environmentally conscious generation capable of addressing local and global environmental challenges.

Accordingly, it can be concluded that PSAU possesses strong potential to support and activate responsibility towards environmental sustainability among students, with the possibility of extending its impact through further comprehensive and integrated programs and initiatives, reflecting the university's commitment to achieving a sustainable educational environment and a university community that is responsible towards the environment.

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