Article

Students' Perception of Sustainable Development in Higher Education in Saudi Arabia

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Abstract: The role of higher education institutions in laying the foundations of sustainable development is undeniable. As the principal educators of tomorrow's leaders, such institutions can tremendously contribute to implementing and achieving the United Nations Sustainable Development Goals (SDGs). Many studies highlighted the significance of the students' awareness and the level of their active engagement as crucial elements in achieving the desired results. Therefore, measuring such awareness and its effect on their daily life and behavior is fundamental in implementing the SDGs. The current study employs an online survey to explore the awareness level of the United Nations Sustainable Development Goals (SDGs) in Saudi universities. SPSS will be utilized to generate the statistical results of the study. The importance of this study stems from the scarcity of research in the field, especially in Saudi higher education institutions. The current research fills in a significant gap at the national level as it provides future researchers and higher education leaders with the much-needed data to prepare strategic plans for future enhancement of the application of the SDGs. It will also propose a set of practical strategies that can be advanced to augment Saudi students' awareness of the SDGs and their possible application in their daily lives and practices.

Keywords: sustainable development goals; student awareness; sustainability opportunity; environmental conscious; sustainable curriculum; conceptualizations of sustainability

1. Introduction

In recognition of the United Nations' 2030 agenda of a decade of accelerated action against the world's biggest challenges, in September 2019, the UN Secretary-General called for intense mobilized actions on all levels to implement the proposed 17 Sustainable Developmental Goals across the globe. Implementation across governments, policies, and educational frameworks is highly encouraged to ensure the sustainability and continuity of the actions [1]. Nevertheless, it is crucial to realize that without a considerable understanding of the meaning of sustainability and its implementation in daily life, most exerted efforts by higher education institutions will not lead to the desired results. As educators in the Higher Education system in Saudi Arabia, we realized that there is an apparent lack of adequate comprehension of the whole meaning of sustainability, the United Nations Sustainable Development Goals (SDGs), and their possible implementation among students from different backgrounds. Undoubtedly, a clearer understanding of sustainability as a concept and its tight connection to daily lives can lead to more informed choices and enlightened decisions in the students' professional and personal lives. Therefore, measuring students' sustainability literacy, awareness, and perception of its meaning and implementation becomes an acute necessity.

The current study was motivated by the scarcity of academic research that investigates the students' perception of the SDGs and their implementation, particularly in Saudi Arabia, where the results of this study are expected to be considered crucial for information-based decisions in educational policy change. The study investigates the students' understanding of sustainable development (SD) in several higher education institutions in Saudi Arabia using descriptive and exploratory methods. It explores students' perspectives on SD by analyzing their understanding of the concepts and implementation of sustainability through a designed survey. It also measures the student's understanding of the different pillars of sustainability and their awareness of the difference that can be made through small daily measures. Additionally, it attempts to explore the correlation between the area of the student's study and their understanding of the concepts and, at the same time, explores the importance of extracurricular activities in that regard.

The objectives of the study: The study aims to (1) measure the students' perception of the main concepts of sustainable development, its implementation, and practices, (2) explore the adequacy of the current information about sustainable development in effecting change in students' lives, and (3) provide preliminary data for policymakers in higher education in Saudi Arabia to develop policies of transformative change in the curricula and teaching approaches.

Research Instrument: An online survey is designed to collect the data, and a statistical analysis using SPSS is employed.

2. Literature Review

This part of the research focused on a theoretical framework, where a summary of the previous studies' main points was introduced to evaluate their contribution to the understanding of the Sustainable Development Goals (SDGs) among students in different disciplines in higher education institutions in Saudi Arabia. This part helped to find the gap in the literature to be emphasized in the current study and to decide on and create the survey questions. Therefore, the literature review was divided into four main parts: sustainability awareness in higher education institutions, students' perception of sustainability in higher education, awareness of the SDGs among higher education students, and common aspects of sustainability and education.

2.1. Sustainability Awareness in Higher Education Institutions

The Association for the Advancement of Sustainability in Higher Education (AASHE) developed the Assessment and Rating System (STARS) to assess and evaluate the students' sustainability awareness in the institutions of higher education (IHE) in the US. This rating system compares students' awareness of sustainability among institutions and enables the sharing of information about sustainability practices in higher education institutions. The rating is designed to test five categories: academics (curriculum and research), engagement (campus level and public), operations (buildings, climate, energy, waste, water, etc.), planning and administration (wellbeing and work, diversity, investment, etc.), and innovation and leadership. Renée Harmon studied and assessed the students' sustainability education in higher education and found that the multiple-choice assessment tool was unsuitable [2]. Instead, the evaluation question style is appropriate for evaluating the students' knowledge about sustainability, as this type of question evaluates the participant's agreement with the examiner's point of view.

A growing competitive landscape and the need to draw in students have made it difficult for educational institutions to show themselves to the public in the best possible light [3]. Many previous studies described sustainability education as education that integrates the sustainability concept and highlighted the significance of applying nontraditional, creative, active, student-centered teaching methods for teaching sustainability concepts in higher education to enhance the students' engagement and critical thinking, such as problem-based learning, teamwork, and case-based learning [4–8]. Hedden confirmed M.K. et al. (2017) in their study, which highlighted the importance of incorporating active

learning in teaching sustainability, as it helps students learn through interaction, experience, and critical thinking to solve real sustainability problems [9]. Alkhayyal et al. (2019) defined sustainable development education as a dynamic concept that encourages students to undertake the responsibility of generating a sustainable future through enhancing training skills and public awareness [10]. Moreover, spreading sustainability awareness in the early stages of higher education is an important step to incorporate environmental culture within the campus community [9]. In addition, the outcomes of some studies showed the essential role of incorporating some courses in the first levels of the curriculum that involve students in different strategies and approaches to sustainability [11,12].

Recent studies emphasized the instructors' essential role in implementing sustainability strategies effectively [13,14]. Similarly, Alkhayyal et al. (2019) surveyed to assess the academic staff's awareness and applications of sustainability in the courses in universities in Saudi Arabia [10]. The findings showed the importance of raising the awareness rate by introducing a sustainability mission at the institutional level to integrate the sustainability concept in all colleges. Nowadays, helping higher education students contribute to sustainable development is considered the main goal for many universities through implementing new strategies to develop the core curriculum and cocurricular activities to enhance the student's skills and knowledge of sustainable development [15–17]. Accordingly, most of the previous studies agreed that the interdisciplinary educational approach is suitable for sustainability education, as solving social problems cannot be applied through one disciplinary approach.

Though P. Brian Fisher and Erin McAdams (2015) studied the topic from a different perspective, they stressed that the students' effect mainly depends on their conceptualization of sustainability [11]. They found that the students' awareness and perception of sustainability in the natural sciences, economics, and business are more environmentally conscious. Students in social science courses tend to incorporate notions of democracy, community, systemic change, and innovation into their conceptualizations of sustainability [11]. María Brito et al. (2018) surveyed teachers and students in some universities and high schools in Mexico to measure their satisfaction with the environmental, social, and economic indicators for sustainability [18]. The results showed that the students' and teachers' satisfaction levels were higher in universities than in high schools. Accordingly, they recommended enhancing knowledge about sustainability concepts and improving the content concerning activity planning and classroom approaches. As a result, numerous studies recommended curriculum enrichment and adopting more holistic multidisciplinary approaches to raise sustainability awareness among students [18–21].

2.2. Students' Perception of Sustainability in Higher Education

Few articles focused on the university students' perceptions of sustainability, and the majority found that most students associate sustainability with environmental preservation as the primary consideration of sustainability, while a lower percentage of the students mentioned social sustainability [2,22,23]. Similarly, Fumiyo Kagawa (2007) stated in his study that students associate the sustainability concepts with the environmental aspects and hardly correlate it with the social and economic aspects; such findings match the previous results and confirm a considerable knowledge gap regarding sustainable development's social and economic dimensions [24]. Moreover, on the level of KSA, Alsaati T. et al. (2020) conducted a questionnaire in seven Saudi universities within the Eastern province to measure the students' perception and knowledge of sustainability [25]. The results of surveying their lifestyle regarding sustainability showed that high percentages of students lack basic knowledge of sustainability related to energy consumption and renewable materials. Accordingly, the study recommended several actions to enhance the students' sustainability awareness, such as promoting sustainable behavior through on-campus and off-campus activities and encouraging the universities' initiatives.

Furthermore, Gareth Chaplin and Paul Wyton (2014) conducted a questionnaire among students living in UK student dormitories to discover their opinions about sustainable

living [26]. They found that most participants believe in the strong relationship between recycling and sustainability, and they stated that the recycling facilities' deficiency negatively affects sustainable living [26]. This result shows that students believe that recycling and sustainability are the same, and they cannot practice a sustainable lifestyle if they cannot easily access recycling facilities [26].

On the other hand, several studies focused on examining the results of integrating sustainability into higher education study programs and activities for undergraduate students by surveying their self-perceived knowledge [27]. Kaisu Sammalisto et al. (2016) compared the students' perceptions of sustainability in two cases: first, sustainability was integrated into the program as self-study activities and second, sustainability courses were offered in the programs [27]. The results showed that the students who studied sustainability courses had adequate knowledge and awareness compared to those who did not. Moreover, some other studies inspected gender in relation to the student's perception of sustainability [27–29]. The results showed that female students have more robust environmental behavior and knowledge, especially those studying in programs including sustainability courses.

2.3. Awareness of the SDGs among Higher Education Students

The Sustainable Development Goals (SDGs) are a set of seventeen objectives set by the UN General Assembly to be accomplished by 2030. The objective of the seventeen goals is "to secure a sustainable, peaceful, prosperous and equitable life on earth for everyone now and in the future" [30]. Consequently, UNESCO declared that education is the primary tool for achieving the SDGs through focusing on critical thinking, competencies, and skills and encouraging the future generation to promote sustainable development and share in the world's transformation [30,31]. Hence, education for sustainable development (ESD) requires collaborative teaching methods that motivate students to take action for sustainable development, promote their sustainable behavior, change their lifestyle, and consequently, boost the students' critical thinking to accomplish the primary goal of significantly contributing to the SDGs' achievement [25,32,33]. The student's ability to use knowledge and skills in a specific field, as well as to evaluate and analyze while solving issues and understanding situations in a range of contexts, is what is referred to as 21st-century abilities [34]. Therefore, Yuan X. et al. (2021) conducted a study to inspect the students' understanding, information sources, and knowledge about the SDGs through a questionnaire survey in a Chinese high school [33]. The study confirmed that the students' knowledge about the SDGs was limited; this confirms how important it is to integrate ESD (education for sustainable development) into the curriculum and to integrate extracurricular activities about the SDGs to raise their awareness.

2.4. Common Aspects of Sustainability and Education

Some recent studies focused on finding the relation and common ground between higher education and sustainability and described it through four aspects: future orientation, normativity as part of rationality, global perspective, and theory involved in practice. Thus, Richard B. and Jan C. Schmidt (2014) described the term higher education in sustainability (HES) as a reconstructed scenario method between sustainability and education and argued that this scenario strategy is essential to boost higher education's teaching strategies and employ its potential and competencies through promoting an integrated system that ensures the collaboration between theoretical courses and practical case study courses [35]. Furthermore, Cebrián, G. and Junyent, M. (2015) studied higher education students' perceptions regarding education for sustainable development (ESD), and the results highlighted the disconnection between the existing sustainability theoretical frameworks and the actual students' consciousness of ESD [36]. Thus, it is highly recommended that the education curriculum incorporates the ESD theoretical framework to promote the awareness and practice of ESD competencies among higher education students through interdisciplinary teaching and learning approaches [37,38]. Effective ESD in higher educa-

tion requires different teaching strategies and methods that positively impact the education practices, empowering and improving the instructors' and educators' teaching styles to achieve a successful learning experience.

On the other hand, Abubakar, I. et al. (2016) studied and evaluated the involvement of students in activities and projects focusing on environmental sustainability at the College of Architecture and Planning, University of Dammam in Saudi Arabia [39]. A total of 500 respondents from the seven universities of the Eastern Province in Saudi Arabia were assessed. The voluminous questionnaire was self-administrated and mainly focused on environmentally related lifestyle issues of sustainability such as choices of transportation to university, water usage, appliance choices, and purchasing of school supplies. No reference was made in this study to other SD topics such as gender equality or diversity. The results showed that students believe they lack opportunities for participation in sustainability activities and initiatives, especially the topics of transportation, energy, and water conservation. Most previous studies on this topic confirmed the importance of updating the curricula to integrate all sustainability aspects and dimensions (environmental, social, and economic).

3. Materials and Methods

To achieve the objective of the current study, we conducted an online survey to explore the level of awareness of the United Nations' Sustainable Development Goals (SDGs) in Saudi universities. The questionnaire survey was conducted among Saudi universities between October 2022 and May 2023. Faculty and students from various disciplines tested the questionnaires during the research design phase.

To develop the questionnaire, the Web of Science database was used, searching for different combinations of terms such as "Sustainable Development Goals", "SDG", "Perception", "University students", or "Awareness". The search reveals that there are various studies based on surveys regarding the SDGs in different universities around the globe [26–29,39]. Preliminary interviews with chosen students and a thorough literature assessment were used to develop these survey categories and items [40]. The questions of preliminary interviews focused on familiarity, awareness, and the importance of the SDGs. Subsequently, the perceptions of 10 students were taken as a pilot test to obtain feedback on the survey statements in terms of design, understandability, and clarity. We noted that some students found some statements ambiguous and, hence, we rephrased those statements to be more understandable. The final survey was then distributed to the prospective respondents via the Internet. The survey is divided into multiple sections.

The full questionnaire questions are shown in Appendix A. The questionnaire covered the following:

1. Questions about the respondent's demographic data (Q1–Q4).
2. Questions to investigate how "familiar" the respondent is with sustainability concerns (Q5–Q9).
3. Questions to investigate the respondent's attitudes and behaviors on campus (Q10–Q11).
4. Questions to investigate the respondent's opinions about sustainability and the Sustainable Development Goals in Higher Education in Saudi Arabia (Q12–Q18).

A 5-point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree), was used to score the questions. Here is an example:

- Students were asked to rate how much they agreed with this statement, ranging from 1 (strongly agree) to 5 (strongly disagree). The lower the number, the more favorable the students think the statement is.

Regarding research ethics, ethical approval was granted by the PSU Institutional Review (PSU IRB) committee to conduct the research (https://www.psu.edu.sa/en/irb (accessed on 12 November 2023)). The PSU IRB approval number was PSU IRB-2022-09-0119, dated 27 September 2022. The respondents gave consent for using the questionnaire to collect data, and anonymity was assured in the questionnaire.

This questionnaire was sent to three hundred and seventy-five students in Saudi Universities. We received 152 correctly filled out forms from all groups or a 40.53% return rate. The questionnaire survey used in this investigation has limitations. For example, biases in the outcomes and findings may be introduced by nonresponses. According to Alreck and Settle (2004), the low response rate may cause a severe problem with generalizing the findings, for instance, below 10% of the response rate [41]. However, because of this current study's increased response rate (40.53%), the impacts of nonresponse biases are negligible.

4. Results and Analysis

4.1. Demographic Analysis

A frequency distribution was constructed to characterize the frequency and proportion of categories under each demographic parameter to describe the sampling population.

The results of Table 1 indicated that most respondents were enrolled in Prince Sultan University (71.7%) and were women (90.1%). More than two-thirds of the respondents were enrolled in the College of Architecture & Design (73.0%). Lastly, one-third of the respondents were second-year undergraduates (57.9%), followed by fourth-year undergraduates (15.8%), third-year undergraduates (8.6%), first-year undergraduates (7.9%), and postgraduate students (7.9%).

Table 1. Frequency distribution—demographic analysis.

Main Category	Subcategory	Frequency	Percentage
Home University	Prince Sultan University	109	71.7%
	Princess Noura University	22	14.5%
	Others	21	13.8%
Gender	Male	15	9.9%
	Female	137	90.1%
Home Faculty	College of Architecture & Design	111	73.0%
	College of Computer & Information Systems	9	5.9%
	College of Engineering	6	3.9%
	College of Business Administration	7	4.6%
	Others	19	12.5%
Student Type	PYP Undergraduate	3	2.0%
	1st-year Undergraduate	12	7.9%
	2nd-year Undergraduate	88	57.9%
	3rd-year Undergraduate	13	8.6%
	4th-year Undergraduate	24	15.8%
	Postgraduate Student	12	7.9%

4.2. Frequency Distribution—Sustainability Pillars

The frequency and percentage of each sustainability pillar were calculated using the frequency distribution method, as indicated in Table 2. The findings showed that 77.0% of the respondents thought sustainability was related to environmental indicators. On the other hand, almost 40% of the participants thought it was more oriented toward social (46.1%), economic (42.1%), and cultural (40.8%) indicators.

Table 2. Frequency distribution—sustainability pillars.

Main Category	Subcategory	Frequency	Percentage
Sustainability Pillars	Environmental Aspects	117	77.0%
	Social Aspects	70	46.1%
	Economic Aspects	64	42.1%
	Cultural Aspects	62	40.8%

4.3. Frequency Distribution—Importance of SDG Goals

Frequency distribution was also produced to characterize the frequency and proportion of respondents' responses to the importance of the Sustainable Development Goals (SDGs), as shown in Table 3. The results indicated that most respondents considered all the Sustainable Development Goals (SDGs) essential, except for one SDG goal, i.e., Gender Equality (77.0%). All respondents considered these four SDG goals as important: Clean Water and Sanitation (98.7%), Responsible Consumption and Production (98.7%), Good Health and Well-being (98.0%), and Climate Action (98.0%).

Table 3. Frequency distribution—importance of SDG goals.

Main Category	Subcategory	Frequency	Percentage
Importance of SDG Goals	Clean Water and Sanitation	150	98.7%
	Responsible Consumption and Production	150	98.7%
	Good Health and Well-being	149	98.0%
	Climate Action	149	98.0%
	Affordable and Clean Energy	148	97.4%
	Peace, Justice, and Strong Institutions	147	96.7%
	Life Below Water	146	96.1%
	Quality Education	145	95.4%
	Partnerships for the Goals	144	94.7%
	Decent Work and Economic Growth	144	94.7%
	Zero Hunger	144	94.7%
	Industry, Innovation, and Infrastructure	143	94.1%
	No Poverty	142	93.4%
	Life on Land	122	80.3%
	Reduced Inequalities	121	79.6%
	Sustainable Cities and Communities	121	79.6%
	Gender Equality	117	77.0%

4.4. Frequency Distribution—Sustainability Opportunity

Frequency distribution was also computed to describe the number and percentage of sustainability opportunities available to the students, as shown in Table 4. The results indicated that most respondents found the availability of orientation programs on sustainability (59.9%) or student organizations that emphasize sustainability or the environment (59.9%) sufficient. Approximately 50% of the participants reported that job fairs and career counseling geared toward employment in sustainable firms were readily available (56.6%). A few respondents believed a student environmental center (39.5%) was available in an ecology hostel/house or sustainable dormitory (28.3%).

Table 4. Frequency distribution—sustainability opportunity.

Main Category	Subcategory	Frequency	Percentage
Sustainability Opportunity	Orientation Program(s) on Sustainability	91	59.9%
	Student Group(s) with an Environmental or Sustainability Focus	91	59.9%
	Job Fairs and Career Counseling Focused on Work in Sustainable Enterprises	86	56.6%
	Student Environmental Center	60	39.5%
	Ecology Hostel/House or Sustainable Dormitory	43	28.3%

4.5. Normality Test

The Shapiro–Wilk test was used to examine the normality of the variables under investigation, as shown in Table 5. The Shapiro–Wilk test was significant for all variables at the 5% level, according to the results (Recycling facilities: W (152) = 0.915, $p < 0.001$; Energy and Waste Facilities: W (152) = 0.913, $p < 0.001$; Sustainability and SDGs: W (152) = 0.720,

p < 0.001; University Facilities: W (152) = 0.971, *p* < 0.01; Teaching, Research, and Extracurricular Activities: W (152) = 0.954, *p* < 0.001; Awareness of SDGs: W (152) = 0.887, *p* < 0.001). This indicated that the assumptions of the normality test still needed to be met. However, the central limit theorem states that if the sample size, i.e., 152, is large enough (n > 30), the data are normal [42].

Table 5. Normality test.

	Shapiro–Wilk Test Statistic	df	*p*-Value
Recycling Facilities	0.915 ***	152	<0.001
Energy and Waste Facilities	0.913 ***	152	<0.001
Sustainability and SDGs	0.720 ***	152	<0.001
University Facilities	0.971 **	152	0.003
Teaching, Research, and Extracurricular Activities	0.954 ***	152	<0.001
Awareness of SDGs	0.887 ***	152	<0.001

** *p* < 0.01, *** *p* < 0.001.

4.6. Reliability Test

Cronbach's alpha was used to analyze the reliability of variables under study, as shown in Table 6. The results indicated that the Cronbach's alpha scores of the variables 'Recycling Facilities' and 'Sustainability and SDGs' fell within 0.70 and 0.80, thus indicating acceptable reliability. Furthermore, Cronbach's alpha scores of the variables 'Energy and Waste Facilities', 'Teaching, Research, and Extracurricular Activities', and 'Awareness of Sustainable Development Goals' fell within 0.80 and 0.90, thus indicating good reliability. Lastly, the Cronbach's alpha score of the variable 'University Facilities' fell between 0.90 and 0.95, thus indicating excellent reliability. Since all variables have Cronbach's alpha scores higher than 0.70, they were considered reliable.

Table 6. Reliability test.

Variables	No. of Items	Cronbach's Alpha	Reliability
Recycling Facilities	6	0.706	Acceptable
Sustainability and SDGs	2	0.753	Acceptable
Energy and Waste Facilities	3	0.815	Good
Teaching, Research, and Extracurricular Activities	4	0.821	Good
Awareness of SDGs	4	0.850	Good
University Facilities	6	0.902	Excellent

4.7. Descriptive Statistics

The average scores for each variable were described using the mean and standard deviation and the variability of responses from the average scores, as shown in Table 7. The results indicated that respondents believed that recycling facilities were critical to them (M = 1.50, SD = 0.4054). However, they disagreed on having sufficient energy and waste facilities (M = 3.98, SD = 0.8866). Furthermore, respondents strongly disagreed with considering the SDGs and sustainability as critical components for all universities in the KSA and felt they were not important in making universities an attractive place to study (M = 4.58, SD = 0.6047). In terms of university facilities, the respondents were neutral and neither agree nor disagree with their university's aim to save electricity, use water efficiently, manage waste efficiently, provide options for sustainable travel, protect biodiversity on campus, and adhere to environmental building standards (M = 3.47, SD = 0.8796). Furthermore, regarding teaching, research, and extracurricular activities, respondents neither agreed nor disagreed that university support is needed to live sustainably and that sustainability should be included in teaching, research, and extracurricular activities (M = 3.79, SD = 0.8425). Lastly, the respondents disagreed with being aware of the Sustainable Development Goals (SDGs) and having knowledge and interest in environmental sustainability (M = 4.25, SD = 0.7144).

Table 7. Descriptive statistics.

Variables	Mean	Standard Deviation
Recycling Facilities	1.50	0.4054
Sustainability and SDGs	4.58	0.6047
Awareness of SDGs	4.25	0.7144
Teaching, Research, and Extracurricular Activities	3.79	0.8425
University Facilities	3.47	0.8796
Energy and Waste Facilities	3.98	0.8866

4.8. One-Way ANOVA—Comparison of University Facilities, Teaching, Research, and Extracurricular Activities, and Awareness of SDGs among Universities

One-way ANOVA was used to compare university facilities, teaching, research, and extracurricular activities, and students' awareness of the Sustainable Development Goals (SDGs) among different universities, as shown in Table 8. Before analysis, Levene's test was conducted to analyze the equality of variances among universities. The results from Levene's test indicated that university facilities and teaching, research, and extracurricular activities have equal variance among different universities (University Facilities: $F = 1.482$, $p = 0.230$; Teaching, Research, and Extracurricular Activities: $F = 0.846$, $p = 0.431$). However, students' awareness of the Sustainable Development Goals (SDGs) was found to have unequal variance among different universities ($F = 11.009$, $p < 0.001$) [42]. The analysis proceeded because one-way ANOVA is robust against violations of homogeneity of variances. The matching one-way ANOVA results showed that there was a substantial variation in university facilities, teaching, research, and extracurricular activities, and students' awareness of the Sustainable Development Goals (SDGs) among different universities (University Facilities: $F (2, 151) = 10.228$, $p < 0.001$; Teaching, Research, and Extracurricular Activities: $F (2, 151) = 4.291$, $p < 0.05$; Awareness of SDGs: $F (2, 151) = 5.141$, $p < 0.01$). The mean and standard deviation also showed that respondents from Prince Noura University disagreed with the student's university facilities to a greater extent (M = 4.15, SD = 0.626) compared to respondents from other universities (M = 3.67 SD = 0.775) and respondents from Prince Sultan University (M = 3.30 SD = 0.874). Furthermore, the respondents from Prince Noura University disagreed with the university's teaching, research, and extracurricular activities to a greater extent (M = 4.18, SD = 0.741) compared to respondents from other universities (M = 3.99, SD = 0.752) and respondents from Prince Sultan University (M = 3.67, SD = 0.853). Moreover, the respondents from Prince Noura University disagreed with the students' awareness of the Sustainable Development Goals (SDGs) to a greater extent (M = 4.68, SD = 0.338) compared to respondents from Prince Sultan University (M = 4.18, SD = 0.734) and respondents from other universities (M = 4.12, SD = 0.761).

Table 8. One-way ANOVA: comparison of university facilities, teaching, research, and extracurricular activities, and awareness of SDGs among universities.

SDG Awareness	M (SD)	Levene's Test for Equality of Variances		One-Way ANOVA	
		F-Value	*p*-Value	F-Value	*p*-Value
University Facilities					
Prince Sultan University	3.30 (0.874)	1.482	0.230	10.228 ***	<0.001
Princess Noura University	4.15 (0.626)				
Others	3.67 (0.775)				
Teaching, Research, and Extracurricular Activities					
Prince Sultan University	3.67 (0.853)	0.846	0.431	4.291 *	0.015
Princess Noura University	4.18 (0.741)				
Others	3.99 (0.752)				
Awareness of SDGs					
Prince Sultan University	4.18 (0.734)	11.009 ***	<0.001	5.141 **	0.007
Princess Noura University	4.68 (0.338)				
Others	4.12 (0.761)				

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.9. Univariate ANOVA—Comparison of SDG Awareness among Sustainable Opportunities

Univariate ANOVA analysis was conducted to compare the students' awareness of the Sustainable Development Goals (SDGs) among sustainable opportunities, as shown in

Table 9. Before analysis, Levene's test was conducted to analyze the assumption of the equality of error variances, and equal variances were found among sustainable opportunities ($F_{(25, 126)} = 2.114$, $p < 0.01$). The results indicated that only two sustainable opportunities, including ecology hostel/house or sustainable dormitory and student group(s) with an environmental or sustainability focus, were significantly different in terms of students' awareness of the Sustainable Development Goals (SDGs) (Ecology Hostel: $F_{(1, 152)} = 4.769$, $p < 0.05$; Student Group: $F_{(1, 152)} = 10.258$, $p < 0.01$). The mean and standard deviation indicated that having an ecology hostel/house or sustainable dormitory created a substantial degree of disagreement with students' awareness of the Sustainable Development Goals (M = 4.53, SD = 0.6162) compared to not having it (M = 4.13, SD = 0.7206). Furthermore, having student organization(s) focused on sustainability or the environment also created a substantial degree of disagreement with students' awareness of the Sustainable Development Goals (M = 4.43, SD = 0.6019) compared to not having it (M = 3.96, SD = 0.7784). These two sustainable opportunities collectively caused 16.3% variances in students' awareness of the Sustainable Development Goals ($R^2 = 0.163$).

Table 9. Univariate ANOVA analysis—comparison of SDG awareness among sustainable opportunities.

	SDG Awareness		
	Categories	M (SD)	ANOVA F (*p*-Value)
Intercept			4090.547 (<0.001) ***
Student Environmental Center	No	4.18 (0.7271)	3.757 (0.055)
	Yes	4.34 (0.6902)	
Ecology Hostel/House or Sustainable Dormitory	No	4.13 (0.7206)	4.756 (0.031) *
	Yes	4.53 (0.6162)	
Orientation Program(s) on Sustainability	No	4.05 (0.7811)	0.050 (0.823)
	Yes	4.38 (0.6372)	
Student Group(s) with an Environmental or Sustainability Focus	No	3.96 (0.7784)	10.258 (0.002) **
	Yes	4.43 (0.6019)	
Job Fairs and Career Counseling Focused on Work in Sustainable Enterprises	No	4.04 (0.7724)	1.689 (0.196)
	Yes	4.40 (0.6256)	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.10. Univariate ANOVA—Comparison of Lifestyle Learning among Sustainable Opportunities

Univariate ANOVA analysis evaluated how different sustainable opportunities available in their current studies taught students to change their lifestyles, as shown in Table 10. Before analysis, Levene's test was conducted to analyze the assumption of the equality of error variances, and equal variances were found among sustainable opportunities ($F_{(25, 126)} = 1.550$, $p = 0.061$). The results indicated that no sustainable opportunities were significantly different in learning to change lifestyle through current studies ($p > 0.05$). The mean and standard deviation indicated that all sustainable opportunities, whether having or not having them, caused nearly neutral responses towards learning to change lifestyle through current studies. The coefficient of determination ($R^2 = 0.090$) was also minimal, indicating no effect of sustainable opportunities on learning to change lifestyle through current studies.

Table 10. Univariate ANOVA analysis—comparison of lifestyles among sustainable opportunities.

	Lifestyles		
	Categories	M (SD)	ANOVA F (*p*-Value)
Intercept			1484.231 (<0.001) ***
Student Environmental Center	No	3.67 (1.1589)	0.007 (0.934)
	Yes	4.02 (0.9654)	
Ecology Hostel/House or Sustainable Dormitory	No	3.65 (1.1170)	1.690 (0.196)
	Yes	4.21 (0.9401)	
Orientation Program(s) on Sustainability	No	3.49 (1.1637)	2.170 (0.143)
	Yes	4.02 (0.9998)	
Student Group(s) with an Environmental or Sustainability Focus	No	3.64 (1.1977)	0.038 (0.846)
	Yes	3.92 (1.0136)	
Job Fairs and Career Counseling Focused on Work in Sustainable Enterprises	No	3.52 (1.1667)	1.460 (0.229)
	Yes	4.03 (0.9875)	

*** $p < 0.001$.

4.11. Simple Linear Regression Analysis—Impact of Teaching, Research, and Extracurricular Activities on SDG Awareness

Simple linear regression analysis was used to determine the effect of teaching, research, and extracurricular activities on students' awareness of the Sustainable Development Goals (SDGs), as shown in Table 11. Considering teaching, research, and extracurricular activities as the primary sources of learning, such an analysis will determine their contribution toward students' awareness of the Sustainable Development Goals (SDGs). Firstly, the assumptions of simple linear regression were tested.

Table 11. Simple linear regression analysis—impact of teaching, research, and extracurricular activities on SDG awareness.

	β	t-Value	*p*-Value
Constant	2.752	11.577 ***	<0.001
Teaching, Research, and Extracurricular Activities	0.394	6.436 ***	<0.001
R^2	0.216		
F-value	41.428 ***		
p-value	<0.001		

*** $p < 0.001$.

The relationship between the variables 'Teaching, Research, and Extracurricular Activities' and 'SDG Awareness' was linear, as Pearson's correlation was significant at 5% (r = 0.465, $p < 0.001$). The data had no outliers, as the residuals ranged between -1.78 and 1.46, which did not exceed the threshold value of ±3. The scatterplot between the standardized residual and the standardized predicted value indicated that the points were randomly spread above and below the zero point, indicating homoscedasticity, as shown in Figure 1. The standard P–P plot showed that the regression line's residuals (errors) were customarily distributed, as shown in Figure 2. Hence, all assumptions were met, and linear regression analysis proceeded. The results from simple linear regression analysis indicated that the teaching, research, and extracurricular activities had a significant and positive impact on students' awareness of the Sustainable Development Goals (SDGs) (F (1, 151) = 41.428, $p < 0.001$). The beta value indicated that every one-unit increase in teaching, research, and extracurricular activities would increase students' awareness of the Sustainable Development Goals (SDGs) by 0.394 units. The coefficient of determination (R^2) of 0.216 indicated that only 21.6% of the variances in increased students' awareness of the Sustainable Development Goals (SDGs) were explained by teaching, research, and extracurricular activities.
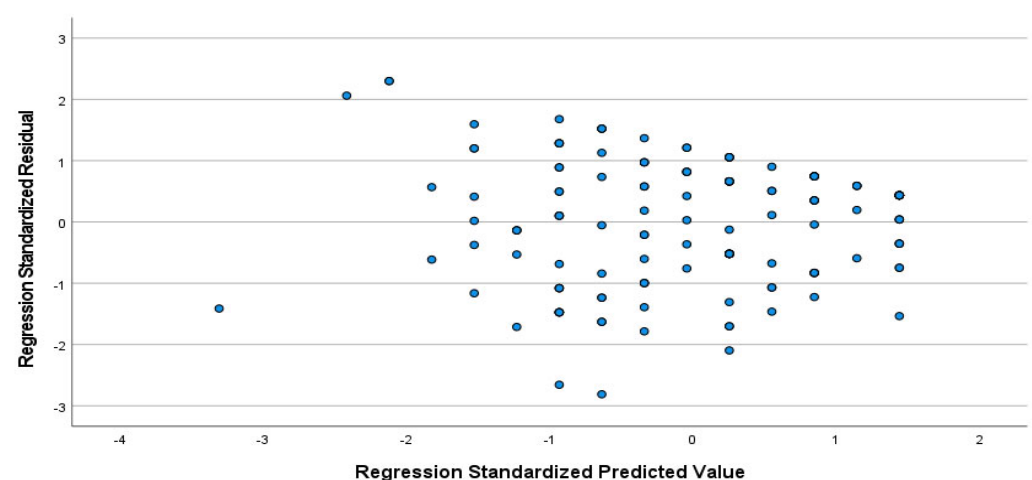
Figure 1. Scatterplot between standardized residual and standardized predicted values.
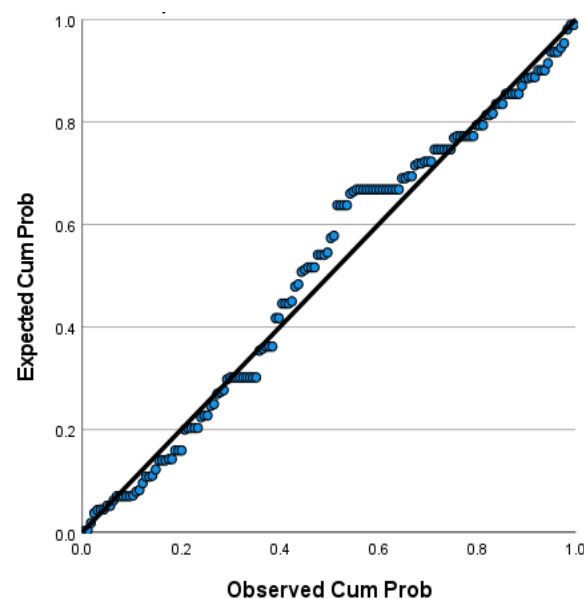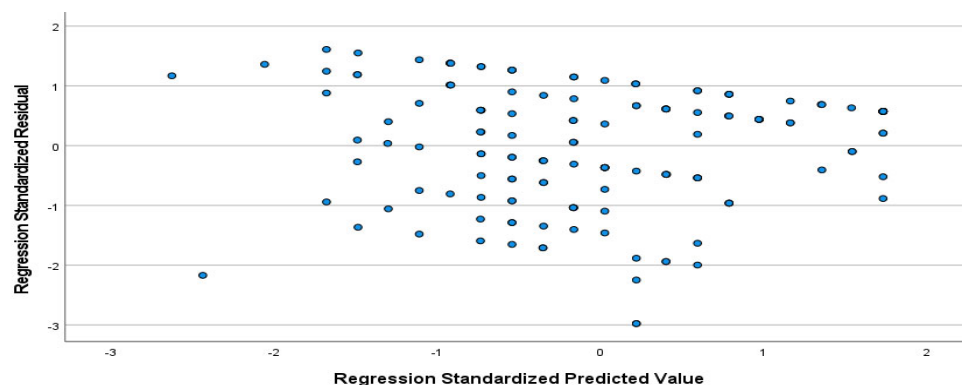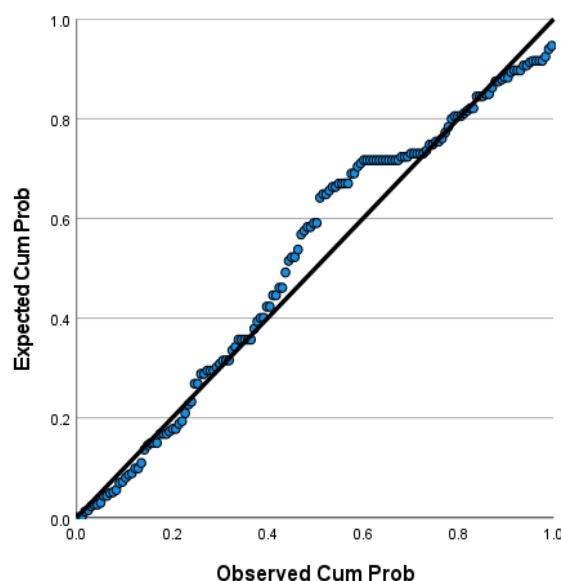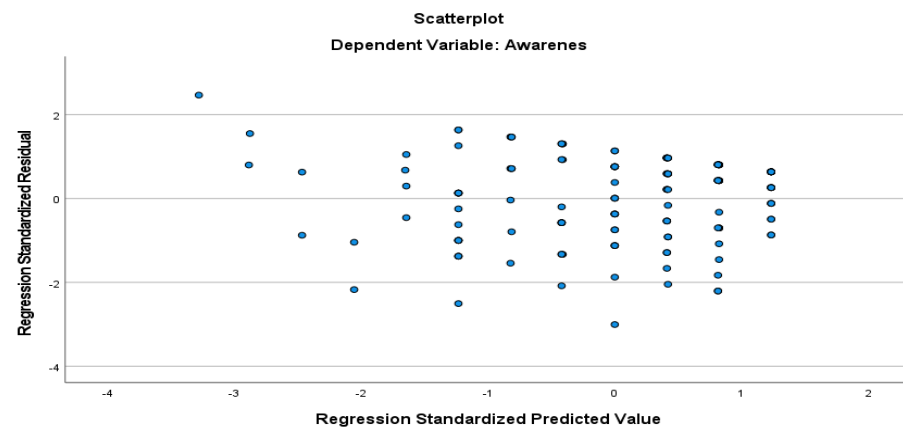
Figure 2. Normal P–P plot.

4.12. Simple Linear Regression Analysis—Impact of University Facilities on SDG Awareness

Simple linear regression analysis was used to determine the effect of university facilities on students' awareness of the Sustainable Development Goals (SDGs), as shown in Table 12. As university facilities can be designed in a way that does not harm the ability to meet future needs while meeting current needs, it is essential to analyze whether the available university facilities contributed to students' awareness of the Sustainable Development Goals (SDGs). For linear regression analysis, firstly, the assumptions were tested.

Table 12. Simple linear regression analysis—impact of university facilities on SDG awareness.

	β	t-Value	p-Value
Constant	3.422	15.053 ***	<0.001
University Facilities	0.237	3.735 ***	<0.001
R^2	0.085		
F-value	13.953 ***		
p-value	<0.001		

*** $p < 0.001$.

The relationship between the variables 'University Facilities' and 'SDG Awareness' was linear, as Pearson's correlation was significant at 5% (r = 0.292, $p < 0.001$). The data had no outliers, as the residuals ranged between -2.041 and 1.104, which did not exceed the threshold value of ± 3. The scatterplot between the standardized residual and standardized predicted value indicated that the points were randomly spread above and below the zero point, indicating homoscedasticity, as shown in Figure 3. The standard P–P plot indicated that the regression line's residuals (errors) were generally distributed, as shown in Figure 4. Hence, all assumptions were met, and linear regression analysis proceeded. The results from simple linear regression analysis indicated that university facilities had a significant and positive impact on students' awareness of the Sustainable Development Goals (SDGs) (F (1, 151) = 1.953, $p < 0.001$). The beta value indicated that every one-unit increase in university facilities would increase students' awareness of the Sustainable Development Goals (SDGs) by 0.237 units. The coefficient of determination (R^2) of 0.085 indicated that only 8.5% of variances in increasing students' awareness of the Sustainable Development Goals (SDGs) were explained by teaching, research, and extracurricular activities.

Figure 3. Scatterplot between standardized residual and standardized predicted values.
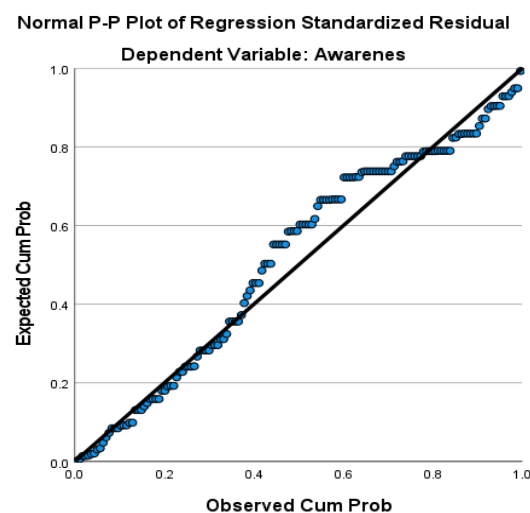

Figure 4. Normal P–P plot.

4.13. Simple Linear Regression Analysis—Impact of Recycling Facilities on SDG Awareness

Simple linear regression analysis was used to determine the effect of recycling facilities on students' awareness of the Sustainable Development Goals (SDGs), as shown in Table 13. As recycling facilities are usually considered key to adopting and maintaining sustainability, it is essential to analyze whether the importance of recycling facilities is reflected in the student's awareness of the Sustainable Development Goals (SDGs). For linear regression analysis, firstly, the assumptions were tested. The relationship between the variables 'Recycling Facilities' and 'SDG awareness' was linear, as Pearson's correlation was significant at 5% ($r = 0.377$, $p < 0.001$). The data had no outliers, as the residuals ranged between -1.995 and 1.638, which did not exceed the threshold value of ± 3. The scatterplot between the standardized residual and the standardized predicted value indicated that the points were randomly spread above and below the zero point, indicating homoscedasticity, as shown in Figure 5. The standard P–P plot indicated that the regression line's residuals (errors) were generally distributed, as shown in Figure 6. Hence, all assumptions were met, and linear regression analysis proceeded. The results from simple linear regression analysis indicated that recycling facilities had a significant and positive impact on students' awareness of the Sustainable Development Goals (SDGs) ($F_{(1, 70)} = 15.490$, $p < 0.001$). The beta value indicated that every one-unit increase in recycling facilities would decrease the students' awareness of the Sustainable Development Goals (SDGs) by 0.664 units. The coefficient of determination (R^2) of 0.142 indicated that only 14.2% of the variances in students' awareness of the Sustainable Development Goals (SDGs) were explained by recycling facilities.

Table 13. Simple linear regression analysis—impact of recycling facilities on SDG awareness.

|	β	t-Value	*p*-Value
Constant	5.241	25.312 ***	<0.001
Recycling Facilities	−0.664	−4.981 ***	<0.001
R^2	0.142		
F-value	24.811 ***		
p-value	<0.001		

*** $p < 0.001$.

Figure 5. Scatterplot between standardized residual and standardized predicted values.

Figure 6. Normal P–P plot.

4.14. Multiple Linear Regression Analysis—Impact of Sustainability Pillars on SDG Awareness

Multiple linear regression analysis was used to determine the effect of sustainability pillars being covered through the university course on students' awareness of the Sustainable Development Goals (SDGs), as shown in Table 14. In order to help students understand that four main sustainability pillars can be designed in a way that does not harm the ability to meet future needs while meeting current needs, it is essential to analyze whether the available university facilities were contributing to students' awareness of the Sustainable Development Goals (SDGs) or not. For multiple linear regression analysis, firstly the assumptions were tested: (i) the relationships between the variables 'Sustainability Pillars' and 'SDG Awareness' were not linear, as the Pearson's correlations were not significant at 5% (Sustainability Pillars—Environmental: r = 0.243, $p < 0.001$; Sustainability Pillars—Economic: r = −0.041, $p = 0.309$; Sustainability Pillars—Cultural: r = 0.137, $p < 0.05$; Sustainability Pillars—Social: r = 0.039, $p = 0.317$); (ii) there were no outliers in the data, as the residuals ranged between −2.032 and 1.068, which did not exceed the threshold value of ±3; (iii) the scatterplot between the standardized residual and standardized predicted value indicated that the points were

randomly spread above and below the zero point, indicating homoscedasticity, as shown in Figure 7; and (iv) the standard P–P plot indicated that the regression line's residuals (errors) were about generally distributed, as shown in Figure 8. Except for an insignificant correlation between the variables, all assumptions were met. The multiple linear regression analysis also indicated that all four main sustainability pillars have a significant impact on students' awareness of the Sustainable Development Goals (SDGs) (F (4, 151) = 3.279, $p < 0.05$). Moreover, the t-test for each sustainability pillar also indicated that environmental aspects of sustainability significantly influence students' awareness of the Sustainable Development Goals (SDGs) (t = 0.407, $p < 0.01$. However, economic, cultural, and social aspects of the sustainability pillars did not have a significant effect on students' awareness of the Sustainable Development Goals (SDGs) (Sustainability Pillars—Economic: t = −1.147, $p = 0.256$; Sustainability Pillars—Cultural: t = 1.593, $p = 0.116$; Sustainability Pillars—Social: t = −0.535, $p = 0.595$). The coefficient of determination (R^2) was 0.082, which indicated that 8.2% of the variances in students' awareness of the Sustainable Development Goals (SDGs) were caused by the environmental aspects of the sustainability pillars.

Table 14. Multiple linear regression analysis—impact of sustainability pillars on SDG awareness.

	β	t-Value	p-Value
Constant	3.785	28.066 ***	<0.001
Sustainability Pillars: Environmental	0.407	3.024 **	0.003
Sustainability Pillars: Economic	−0.118	−0.983	0.327
Sustainability Pillars: Cultural	0.196	1.596	0.113
Sustainability Pillars: Social	0.057	0.468	0.641
R^2	0.082		
F-value	3.279 *		
p-value	0.013		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
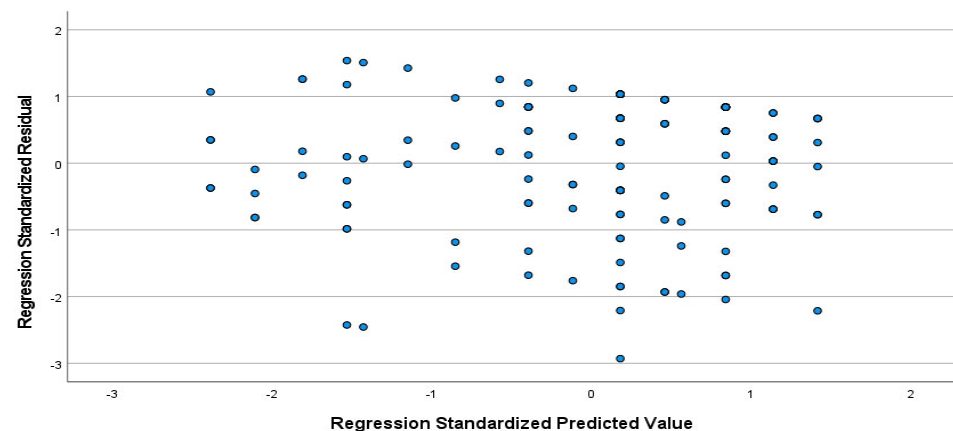
Figure 7. Scatterplot between standardized residual and standardized predicted values.
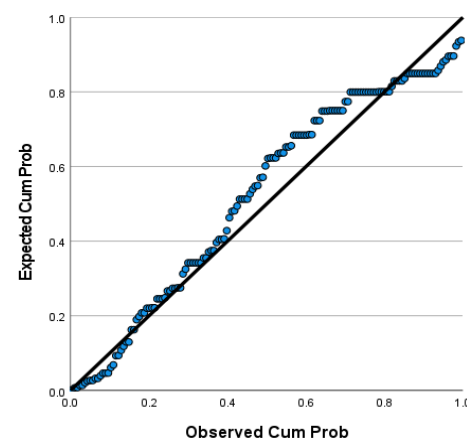
Figure 8. Normal P–P plot.

4.15. Association between Sustainable Development and Sustainability Pillars

The chi-square test of independence was conducted to analyze the relationship between sustainability opportunity and sustainable development, as shown in Table 15. The result indicated that there was a significant association between the variables (χ^2 (15) = 28.351, $p < 0.05$). In other words, the sustainable opportunities available to students are related to their perception and understanding of sustainable development relative to universities, colleges, courses, and themselves.

Table 15. Chi-square test of independence analysis—association of sustainability opportunity and sustainability development.

	Sustainability Development		
	Active Incorporation and Promotion of All Universities and Colleges	**Active Incorporation and Promotion of All Courses**	**Learning More about Sustainable Development**
Sustainability Opportunity	**n (%)**	**n (%)**	**n (%)**
Student Environmental Center	56 (47.1%)	51 (42.9%)	55 (46.2%)
Ecology Hostel/House or Sustainable Dormitory	40 (33.6%)	37 (31.1%)	40 (33.6%)
Orientation Program(s) on Sustainability	84 (70.6%)	77 (64.7%)	81 (68.1%)
Student Group(s) with an Environmental or Sustainability Focus	87 (73.1%)	81 (68.1%)	83 (69.7%)
Job Fairs and Career Counseling Focused on Work in Sustainable Enterprises	80 (67.2%)	73 (61.3%)	77 (64.7%)
χ^2	28.351 *		
p-value	0.019		

* $p < 0.05$.

4.16. Association between Sustainable Development and Sustainability Pillars

The chi-square test of independence was conducted to analyze the relationship between sustainable development and sustainability pillars, as shown in Table 16. The results showed no significant association between the variables (χ^2 (12) = 14.514, $p = 0.269$). In other words, sustainability pillars being covered through university study did not relate to students' perception and understanding of sustainable development relative to universities, colleges, courses, and themselves.

Table 16. Chi-square test of independence—association between sustainable development and sustainability pillars.

	Sustainability Pillars							
	Environmental		**Economic**		**Cultural**		**Social**	
Sustainable Development	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Active Incorporation and Promotion of All Universities and Colleges	110	76.9%	57	39.9%	54	37.8%	60	42.0%
Active Incorporation and Promotion of All Courses	101	70.6%	48	33.6%	50	35.0%	56	39.2%
Learning More about Sustainable Development	103	72.0%	56	39.2%	53	37.1%	62	43.4%
χ^2	34.057 ***							
p-value	<0.001							

*** $p < 0.001$.

5. Discussion

The study aimed to determine the importance of the student's awareness of sustainability concepts and test the level of their active engagement as a crucial element in achieving the desired results. The study's findings indicated that Prince Sultan University (PSU) students relatively agree that the university facilities, teaching, research, and extracurricular activities are geared to enhance their understanding of such concepts. It also indicated an advanced awareness of the Sustainable Development Goals (SDGs) compared to the other universities. This part of the finding is consistent with the study of Dagiliūtė et al.

(2018) [43], as green universities like Prince Sultan University (PSU) tend to have a significant role in sustainable development and a higher level of environmental information, which leads to a better attitude towards self-presentation as a green campus compared to non-green universities.

The study also found that university facilities, recycling facilities, teaching, research, and extracurricular activities significantly impact awareness of the Sustainable Development Goals (SDGs). These findings are consistent with the study of Al-Nuaimi Al and Ghamdi (2022) [44]. It explains that the learning community, program curriculum, and campus amenities are the primary sources of information for students learning about sustainability [44]. Curriculum and learning resources influence more than learning communities and campus amenities [44]. Comprehending the concept of sustainable development in higher education through the curriculum, community, and campus is the best approach to realizing and understanding sustainability for students in higher education [44].

The study also found that awareness of the Sustainable Development Goals (SDGs) has increased through ecology hostels/houses or sustainable dormitories and student organizations that concentrate on sustainability or the environment. The findings are opposed to the study of Abubakar et al. (2016) [39], which highlighted that only 28.3% of respondents believed that an ecology hostel/house or sustainable dormitory allows more understanding of the concepts of sustainability to students, while only 25.0% of respondents believed that student organizations that emphasize sustainability or the environment were a sustainability opportunity available to students [39].

One of the study's primary conclusions is that sustainability's environmental pillars are associated with awareness of the Sustainable Development Goals (SDGs). These findings are consistent with the study of Alahmari et al. (2019) [45], which describes that all higher educational institutions (HEIs) are required to minimize the impact of environmental factors on sustainability and hence lend to sustainable development. In other words, all higher educational institutions (HEIs) should concentrate on finding solutions to problems involving resources like computers, paper, and objects, as well as energy and transportation (including electricity, solar, wind, thermal, oil, gas, and coal). A possible solution to the problem is to limit the use of these resources and carefully dispose of any generated waste [45].

The study found that five forms of sustainability opportunities were not significantly associated with sustainable development. This indicated that all five forms of sustainability opportunities, including student environment centers, ecology hostels or sustainable dormitories, orientation programs on sustainability, student organizations that emphasize sustainability or the environment, job fairs, and career guidance that emphasizes employment in sustainable businesses, were actively incorporated and promoted at all universities and colleges, actively incorporated and promoted in all courses, and imparted more knowledge about sustainable development in an equal proportion across all categories. These findings are consistent with earlier studies like those of Hedden et al. (2017) and Fisher and McAdams (2015) [9,11]. Fisher and McAdams (2015) highlighted that the sustainability course significantly increases the student's results on the well-being of community index and systemic change and innovation index and does not significantly affect the students' scores on the ecosystems, nature, and eco-efficiency indexes [11]. Hedden et al. (2017) highlighted that the university has designed different sustainability courses specific to advanced subjects and disciplines [9]. Also, different on- and off-campus activities, job fairs, exhibitions, student environment centers, and orientation programs have been designed to spread awareness of sustainable development to students and faculty members [9]. The study found that the four sustainability pillars—environmental, economic, social, and cultural—were significantly associated with sustainable development. These findings are consistent with the study of Sabatini (2019) [46], which highlighted that culture, economy, society, and environment collectively design an ecosystem to achieve sustainable development. It explains that the economy represents money and resources in an organization that acquires, conserves, and researches cultural heritage artifacts. The organization re-

pays the community by adopting cultural values, improving economic development, and developing pro-environment and socially responsible behaviors among its members.

6. Limitations of the Study and Directions to Further Researchers

One of the study's main limitations is the considerably small number of participants from universities other than Prince Sultan University. Another limitation is the participants' gender, as most respondents are female students. A larger-scale investigation is recommended to examine the responses of numerous universities and students from different backgrounds. A more diverse student cohort and demographic distribution are also recommended to yield more comprehensive results. We emphasized testing the students' awareness and perceptions of sustainability and exploring their readiness to contribute and implement such concepts in their daily practices. Our overall goal was not to conduct formal theoretical research but rather to prepare the ground for future researchers in Saudi Arabia to learn from our findings. Furthermore, education and curriculum planners can find insightful guidance in our results, which can significantly assist in planning a more sustainability-oriented curriculum.

7. Conclusions

The study followed the method the Association for the Advancement of Sustainability in Higher Education (AASHE) applied, which uses an assessment rating to assess the students' understanding of sustainability in five categories in the US. A similarly designed questionnaire is employed here to assess the participants' perception of sustainability and its implications in Saudi Arabia. Several tools are used in the study. One-way ANOVA was used to compare university facilities, teaching, research, extracurricular activities, and students' awareness of the Sustainable Development Goals (SDGs) among universities. Univariate ANOVA analysis evaluated how different sustainable opportunities available in their current studies taught students to change their lifestyles. Simple linear regression analysis was used to determine the effect of teaching, research, and extracurricular activities on students' awareness of the Sustainable Development Goals (SDGs). A chi-square test of independence was conducted to analyze the relationship between sustainability opportunities and sustainable development. The research provides evidence that the understanding of sustainability among Saudi students is still in its early stages and requires additional work to consolidate the results. The results indicated that most participants associated sustainability with environmental linkage, which means a broader understanding of the concept and its connectedness to other economic and social aspects should be addressed. It reflected the narrow understanding of sustainability as a mere environmental aspect, disregarding its foundational roots in gender equality and other social meanings like poverty and equal social opportunities. Most students need help comprehending and associating the broader range of understanding of sustainability concepts. While the current investigation showed considerable interest in sustainability issues, it indicated that more specific and subject-focused units should be designed and added to the curricula to widen students' perspectives. HEIs can enhance the understanding of SD for their students via multiple and parallel options, but mainly through including core concepts that directly relate to SDs in the current curriculum such as issues related to gender equality, diversity, and poverty. These core concepts can be integrated into the current courses, while novice courses can be introduced as well. Such issues can also be presented through extracurricular activities to allow a broader and more informal understanding of the issues. Drawing attention to equal gender opportunities in society by providing case studies and promoting the students' involvement in societal initiatives can improve the wider understanding of the concepts. The study attained its goal of testing the preliminary understanding of sustainability. However, a more focused study should be carried out to measure the understanding and possible implementation of specific goals. Detailed and more specific investigations should be made available to curricular designers and instructors as guidelines for the curriculum and extracurricular activities.

Appendix A

Appendix A.1 Sustainability Awareness Survey

This research is being conducted by a group of researchers at Prince Sultan University PSU. Purpose of Study: The purpose of this research is to explore the understanding of Sustainable Development Goals (SDGs) among students in different disciplines in higher education institutions in Saudi Arabia. The Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. Who Can Participate: If you are currently enrolled as a student at any Saudi university, you are eligible to participate. Undergraduate and graduate students are welcome to participate. Procedure: In order to participate, you need to complete this online survey. Your participation in this online survey is completely anonymous. Your participation in the survey indicates you read this consent information and agreed to participate in this anonymous survey. Participation Time: Participation time varies from 15 min to 25 min.

1. **What is your home university?** Your answer:
2. **Gender:**
   - Male
   - Female
3. **What is your home faculty?** Your answer:
4. **What type of student are you?**
   - PYP undergraduate
   - 1st-year undergraduate
   - 2nd-year undergraduate
   - 3rd-year undergraduate
   - 4th-year undergraduate
   - Postgraduate student
5. **My current studies are helping me to learn how to make changes to my lifestyle to help the environment.**
   - Strongly Agree
   - Agree

- ○　　Neutral
- ○　　Disagreee
- ○　　Strongly Disagree

6. **Sustainable development is something that all universities/colleges should actively incorporate and promote.**
   - ○　　Yes
   - ○　　No
   - ○　　Maybe

7. **Sustainable development is something that all courses should actively incorporate and promote.**
   - ○　　Yes
   - ○　　No
   - ○　　Maybe

8. **Sustainable development is something that I would like to learn more about.**
   - ○　　Yes
   - ○　　No
   - ○　　Maybe

9. **Which of the four main sustainability pillars is covered through your university study? (You can choose more than one answer)**
   - ○　　Environmental
   - ○　　Economic
   - ○　　Cultural
   - ○　　Social
   - ○　　None of the above

Appendix A.2 Attitudes and Behaviors on Campus

10. **To what extent do you believe it is important to**

	Extremely/Very Important	Moderately Important	Slightly/Not at All Important
Print when necessary	o	o	o
Turn off computer	o	o	o
Turn down AC	o	o	o
Dispose food waste	o	o	o
Use reusable cup	o	o	o
Switch off lights	o	o	o

11. **To what extent do you care about energy and waste on campus?**

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel responsible for saving/reducing energy	o	o	o	o	o
I feel guilty when I waste energy	o	o	o	o	o
I feel in control over the energy I am using	o	o	o	o	o

Appendix A.3 Sustainability and Sustainable Development Goals (SDGs) at Universities in the KSA

12. **Do you believe that the following Sustainable Development Goals are important?**

	Yes	No
No Poverty	o	o
Zero Hunger	o	o
Good Health and Well-being	o	o
Quality Education	o	o
Gender Equality	o	o
Clean Water and Sanitation	o	o
Affordable and Clean Energy	o	o

	Yes	No
Decent Work and Economic Growth	o	o
Industry, Innovation, and Infrastructure	o	o
Reduced Inequalities	o	o
Sustainable Cities and Communities	o	o
Responsible Consumption and Production	o	o
Climate Action	o	o
Life Below Water	o	o
Life on Land	o	o
Peace, Justice, and Strong Institutions	o	o
Partnerships for the Goals	o	o

13. I believe that sustainability and the SDGs should be a key consideration for all universities in the KSA.

- ○ Strongly Agree
- ○ Agree
- ○ Neutral
- ○ Disagree
- ○ Strongly Disagree

14. I believe good sustainability and SDG credentials at a University are important to make them an attractive place to study.

- ○ Strongly Agree
- ○ Agree
- ○ Neutral
- ○ Disagree
- ○ Strongly Disagree

15. I believe that my University is

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Saving electricity	o	o	o	o	o
Using water efficiently	o	o	o	o	o
Managing waste efficiently	o	o	o	o	o
Providing options for sustainable travel	o	o	o	o	o
Protecting biodiversity on campus	o	o	o	o	o
Adhering to environmental building standards	o	o	o	o	o

16. Teaching, research, and extracurricular activities: I believe that my University is

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Supporting students to live sustainably	o	o	o	o	o
Including sustainability in teaching	o	o	o	o	o
Including sustainability in research	o	o	o	o	o
Including sustainability extracurricular activities	o	o	o	o	o

17. Students' awareness and concern about environmental sustainability and the SDGs.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you think sustainability could promote social mobility, equality, and collaboration at work?	o	o	o	o	o
Do you have knowledge about environmental sustainability?	o	o	o	o	o
Are you concerned about environmental sustainability?	o	o	o	o	o
Are you interested in environmental sustainability initiatives?	o	o	o	o	o

18. In your University, which of the following sustainable opportunities are available to students?

	Yes	No
Student environmental center	o	o
Ecology hostel/house or sustainable dormitory	o	o
Orientation program(s) on sustainability	o	o
Student group(s) with an environmental or sustainability focus	o	o
Job fairs and career counseling focused on work in sustainable enterprises	o	o

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