Assessing Students' Awareness on Sustainability Practices in NAAC Accredited Higher Education Institutions

Ajai Prakash
Associate Professor, Department of Management, University of Lucknow, UP

Aradhana Gupta
Research Scholar, Department of Management, University of Lucknow, UP

ABSTRACT

Educational institutions play a crucial role in shaping future leaders and advancing the Sustainable Development Goals (SDGs) by fostering sustainability awareness among students. This study aims to assess students' awareness of their institutions' implemented sustainability practices (SPr) in NAAC-accredited colleges of Lucknow, Uttar Pradesh. A customized questionnaire was developed based on sustainability indicators identified from each institution's Annual Quality Assurance Reports (AQARs). Data were collected from 379 students across eight colleges, all of which actively implement sustainability initiatives accessible through institutional and NAAC websites. The analysis revealed that students possess limited awareness and interest regarding their institutions' sustainability efforts, and that such practices are not effectively communicated within campus communities. The study highlights the need for higher education institutions to enhance the visibility and engagement of sustainability initiatives, ensuring that students or future leaders are well-informed and actively involved in promoting sustainable development

Keywords: Green awareness, student engagement, higher education, education, sustainable practice

1. INTRODUCTION

Higher Education Institutions (HEIs) occupy a central role in addressing global challenges such as social inequality, climate change, and environmental degradation. Their contribution has become increasingly significant with the growing emphasis on the Sustainable Development Goals (SDGs), which highlight education as a catalyst for sustainable development (Bui *et* al., 2024). In particular, SDG 4— "inclusive and equitable quality education" underscores the responsibility of educational institutions to nurture informed, responsible, and sustainability-oriented citizens (Tafese & Kopp, 2025).

HEIs are uniquely positioned to cultivate the knowledge, skills, and values necessary for shaping ethical and environmentally responsible behaviour in society (Veckalne &

Tambovceva, 2022). Yet, despite their potential, HEIs are often viewed narrowly as academic teaching centers rather than dynamic environments that integrate sustainability into their culture, operations, and learning processes (Blanco-Portela *et* al., 2017). This limited perception contributes to a persistent lack of awareness among students and the public regarding the sustainability practices carried out within educational institutions (Parvez & Agrawal, 2019).

Over the years, many HEIs worldwide have demonstrated their commitment to sustainability by adopting global declarations and frameworks such as the Talloires Declaration (1990), Kyoto Declaration (1993), Copernicus Charter (1994), Ubuntu Charter (2002), and the Rio+20 Higher Education Sustainability Declaration (2012). Numerous discipline-specific toolkits have also been developed to guide institutions for instance, the UNESCO ESD framework for general HEIs, the Principles for Responsible Management Education (PRME) for business schools, and similar resources for agriculture, architecture, and law.

However, the success of these initiatives largely depends on stakeholder awareness, which plays a vital role in fostering cooperation, promoting informed decision-making, and translating institutional commitments into meaningful behavioural change (Al Husban, 2025). Sustainability awareness encompassing stakeholders' knowledge, attitudes, and behaviours toward sustainability practices (Eid *et* al., 2022) is therefore a foundational element in building environmentally responsible communities. Previous research indicates that students' understanding of sustainability varies widely across countries and academic contexts. For example, Portuguese students tend to prioritize the social dimension of sustainability (Aleixo *et* al., 2018), while Italian students show greater emphasis on environmental aspects (Massaglia *et* al., 2022). These variations highlight the contextual nature of sustainability awareness and the need to examine it within specific educational settings.

In the Indian context, this need becomes even more pronounced. Although sustainability-related indicators such as the green audit carry considerable weight in NAAC's assessment framework, little empirical evidence exists regarding how students perceive or engage with the sustainability initiatives implemented by their institutions. The implementation of sustainability practices becomes meaningful only when students are aware of them and can connect these initiatives to their daily academic environment and future responsibilities.

To address this gap, the present study focuses on examining students' awareness of sustainability practices in NAAC-accredited HEIs in India. By understanding students' perceptions and the extent of their engagement with institutional sustainability efforts,

this study aims to offer insights that can help universities align their strategies with stakeholder expectations and enhance the impact of their sustainability initiatives.

2. RESEARCH PROBLEM & OBJECTIVE

HEIs globally different measures are adopting to promote SDGs. However, their progress is low especially in the developing countries (Yang & Xiu, 2023). Numerous research to date has delved into sustainability awareness in developed countries including America, Germany, Australia, Spain (Juma *et*. al., 2024; Golowko *et*. al., 2019; Mansi & Pandey, 2016; Pacheco-Blanco & Bastante-Ceca, 2016) demonstrating valuable contributions in the domain. The Indian educational system remains to be inadequate in this regard. This may be ascribed to higher emphasis on theoretical and rote learning than on practical learning, which separates learning from creative problem-solving methods. Additionally, a lack of communication among stakeholders is another reason to low awareness about the institution's SPr (Nejati & Nejati 2013). The scope of educational institutions' sustainability initiatives is broad. One commonly used SPr that is largely undertaken for enhancing aesthetics in Indian HEIs (IHEIs) is maintaining greenery. Even if an organization wants to use green space for sustainable development, stakeholders aren't actively informed of this. Students are therefore not very aware of those practices, although they are exposed to them. Furthermore, a great deal of research has been done on students' attitudes and knowledge regarding general sustainability (Ridwan *et* al., 2021). There aren't many studies examining students' awareness of their own institutions' SPr, though. Thus, by examining students' awareness of their institution's SPr, this study aims to close this research gap.

3. RESEARCH QUESTION

RQ1: How aware are the students about the SPr of their institution?

RQ2: With which SPr students are most and least aware?

RQ3: Is there any effect of academic background of students on the level of awareness on SPr of their institution?

4. LITERATURE REVIEW:

Early studies have looked at sustainability awareness and its impact on multiple facets of consumer behavior, entrepreneurial intentions, and social influence. Table 1 provides a summary of prior studies on sustainability awareness.

Table 1 Summary of previous studies and research gaps in Indian context

Author & Year	Objective	Methodology	Findings	Limitation/Gap
(Bincy & Vasudevan, 2023)	To examine the attitude & awareness of library professionals on environmental sustainability practices	Survey method	The library professionals have a positive attitude towards sustainability practices however their sustainability knowledge and awareness are low. The findings suggest the need of enhanced sustainability awareness programs.	The study was limited to only environmental dimension of sustainability. The study primarily assessed the general awareness of sustainability among library professionals. However, it did not examine which specific sustainability practices are implemented by their institution or the extent to which individuals within the institution are aware of those specific practices. This gap limits understanding of how institutional initiatives translate into actual awareness among stakeholders.
(Panda *et* al., 2020)	To examine the influence of sustainability awareness on consumer altruism, purchase intention, loyalty and brand evangelism	Survey method, analyzed through PLS-SEM	Findings of the study shows a positive relation between sustainability awareness and consumer altruism, purchase intention, loyalty and brand evangelism. This relationship helps in shaping the demand for green products/brands.	The study measures sustainability awareness. However, it does consider the origin or source of sustainability awareness. Immediate environment of the individuals shapes their level of awareness.
(Agarwal, 2023)	To assess the implementation of sustainability initiatives such as Go-Brown & Go-Green in Delhi University	Assessment survey	Sustainability initiatives are implemented at varying level. However overall implementation is limited.	The study does not measure the awareness of the students on implemented initiatives which reduces the effectiveness of these initiatives.
(Sekhar & Raina, 2021)	To assess the sustainability literacy of students of Management education institutions	Survey method	The findings indicate that MEIs students possess a high level of awareness about sustainability issues and perceive this awareness as professionally relevant. The study also reveals that students' sustainability awareness varies across different institutions and geographical locations, suggesting the influence of place and institutional context. Although overall awareness is high among all participating students, they differ in the degree of importance they assign to various dimensions of sustainability	The study does not measure the awareness of the students on implemented sustainability initiatives within the institution.
(Ray *et* al., 2025)	To identify the level of sustainability awareness of Eco-club students	Survey method	Findings of the study shows the positive influence of eco club on student's sustainability awareness. This indicates the success of dedicated programs or activities for creating sustainability awareness in the students. It also highlights the need of similar activities in other organization or institution also.	The study does not measure the awareness of the students on implemented sustainability initiatives within the institution.
(Suganya *et* al., 2024)	To understand the level of sustainability awareness of the students and the impact of individual activity on SDG.	Survey method	The findings of the study indicate that the surveyed institutions have effectively implemented sustainability practices, and these efforts are reflected in students' behavior—particularly in their awareness of various indicators of sustainable development. The results further suggest that institutional sustainability practices positively influence students' knowledge and overall awareness of sustainability-related issues.	The study does not measure the awareness of the students on implemented sustainability initiatives within the institution.

The reviewed literature demonstrates that while numerous studies have explored general sustainability awareness and its influence on attitudes and behaviors, very few have examined students' awareness of the specific sustainability practices implemented within their own institutions. Most existing research focuses either on broad sustainability literacy or on the outcomes of awareness, leaving a critical gap in understanding how institutional initiatives are actually perceived and recognized by students.

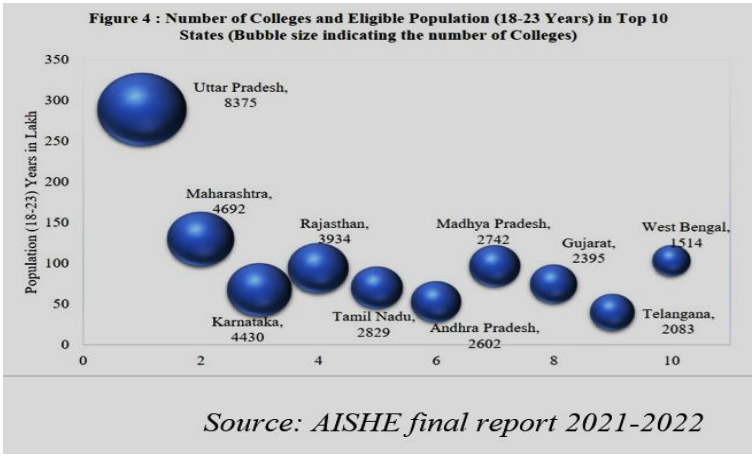
5. OVERVIEW OF IHEIs

Major changes have occurred in recent years to the Indian educational system, particularly with NEP 2020's launch and a stronger focus on diversity. There's been a stronger concentration on online learning digital environments like SWAYAM, DIKSHA, and e-PG Pathshala, along with a dedication to inclusivity and equity in education, skill development, and enhancing employability. Speaking of education industry, India boasts of one of the largest education systems in the world. There are 1,168 universities 45,473 colleges and 12,002 stand-alone institutions (AISHE, 2021-22). This showcases the vast and diverse landscape of IHEIs, catering to a broad spectrum of academic, professional, and vocational needs nationwide.

The IHEIs have experienced notable growth in recent years. Between the academic years 2017-18 and 2021-22, total enrollment increased from 36642378 to 43268181 students, reflecting an average annual growth rate of 4.24% whereas the total enrollment of Uttar Pradesh increased from 6455375 to 6973424 students showing an average annual growth rate of 1.95% (Education for All in India, 2023). The state has also the maximum number of colleges 8375.

However, integrating sustainability into this vast and diverse field presents unique challenges in front of the policymakers. The implementation of SPr while maintaining academic excellence requires the collaboration and support from the stakeholders and policymakers because the sustainability culture of any institute hinges on the leaders/policymaker of the institution (Park, 2024).

Figure 4 : Number of Colleges and Eligible Population (18-23 Years) in Top 10 States (Bubble size indicating the number of Colleges)



Source: AISHE final report 2021-2022

SUSTAINABLE HEIs

Universities are like small towns in themselves, containing classes, sports, hostel, laundry, libraries, laboratories, etc., making the campus a large consumer of resources (Amaral *et*. al., 2015). A sustainable HEI is one that makes young consumers aware of global issues through active & passive learning models while also minimizing its own institution's carbon footprint and waste generation (Angelaki *et*. al., 2024). According

to Aleixo *et*. al., (2018) SPr in HEIs can be implemented on institution's dimensions such as research, education, campus operations, community engagement /outreach, institutional framework, on campus experiences and assessment & reporting as suggested by Lozano & Barreiro-Gen in 2023. These dimensions are holistic in nature covering the entire activities of an educational institution providing them enough scope to be sustainable (Ruiz-Mallén, & Heras, 2020). Transformation of an HEIs into sustainable HEIs requires decrease in the detrimental effects on the ecosystem that ought to be apparent both inside the organization and outside the boundaries of the college (Freidenfelds *et*. al., 2018).

Governmental policies to support sustainability in Indian educational institutions:

- **Mandatory environmental education (EE):** Before 1991, Shri M.C. Mehta filed a Public Interest Litigation (PIL) before the Supreme Court of India (SCI) to mandate EE due to the growing environmental concerns. In response, SCI ordered NCERT to develop the required EE curriculum and mandated it in all Indian state schools in 2003. NCERT developed a new curriculum in December 2003 that included EE, and the CBSE adopted the new curriculum for grades I through XII in 2005. Consistence with SCI's 2003 directive, UGC also required EE for first degree students. Student's' behavior reflects the lessons they acquire during schooling and influences how they act and think about the surroundings. However, merely including EE into the curriculum is not enough to significantly alter students' attitudes, behaviours, and actions.
- **NAAC Accreditation:** National Assessment and Accreditation Council is an autonomous body which conducts accreditation and assessment of HEIs to determine institution's "Quality status". The institution is categorized into grades like A++, A+, A, B++, B+, B, C, and D, with a D indicating 'not accredited' status due to poor performance. To earn accreditation from NAAC, institutions must meet a variety of criteria, and one crucial element is the green audit. This report provides a clear picture of an institute's sustainability efforts. The push for NAAC accreditation encourages schools to implement and showcase sustainable practices. However, some colleges may not pursue this accreditation, often due to limitations in infrastructure, funding, and staffing. As a result, the decision to adopt sustainability measures in these institutions largely depends on the choices made by their leaders.
- **NEP 2020:** NEP 2020 serves as a national blueprint to steer the education system of India and ways to integrate sustainability in IHEIs (Kumar et al., 2021). The first NEP came in 1968 (NEP 1968) which gave due emphasis on:

mandatory schooling for children up to 14 years, emphasized the utilization of regional languages alongside Hindi and English, and incorporate technology and science into the classroom. The second NEP came in 1986 which was a revision of earlier NEP. The emphasis was on: universalization of elementary education, promoting girls and socially backward classes and encouraging open and distance learning. The recent NEP came in 2020 which aims to transform Indian educational landscape by implementing radical changes in the education system. It replaces old school structure of 10+2 to (5+3+3+4), it promotes interdisciplinary and multidisciplinary curriculum and encouragement of vocational and digital learning.

SUSTAINABILITY AWARENESS

As of now there is no standard definition of sustainability awareness (Shang *et*. al., 2024), and its conceptualization varies according to the context (Oriade *et*. al., 2021). However, it indicates how consumers are environmentally conscious (Shang *et*. al., 2024). It is essential in encouraging sustainable behavior (Veckalne & Tambovceva, 2022). Education bridges the gap between sustainable behaviour and actual purchase behaviour by shaping societal mindsets toward sustainability **(**Salovaara *et*. al., 2021). This is important as people can recognize and understand how their individual and group activities impact the environment (Aşıksoy *et*. al., 2021). Further, sustainability culture of an educational institution enhances students' awareness (Oriade *et*. al., 2021). Education and training are key drivers in developing sustainability awareness (Salovaara *et*. al., 2021), as they enhance understanding in addition to serving as catalysts for behavioral change. When students see the importance of sustainability in their daily lives, they are more inclined to demand and expect their institutions to adopt sustainable practices (Eltoum *et*. al., 2022). The foundation for environmental awareness is built mostly by educational institutions. Students who have a solid awareness of sustainability show a great concern for the environment and form sustainable behaviors in every aspect of their lives (Morales-Baños *et* al., 2023). HEIs have a vital duty of equipping students with the abilities and knowledge necessary for professional application, given the ever-changing nature of the job market (Mendoza-Villafaina, & López-Mosquera, 2024).

6. RESEARCH GAP

Prior investigations have examined sustainability awareness and its impact on multiple aspects of consumer behavior such as Pro environmental behaviour (Al Husban, 2025), entrepreneurial intentions (Bullini *et* al., 2025), sustainable consumption

(Shadymanova *et* al., 2014). Although these studies provide valuable perspective in the literature, they largely overlook how students perceive and engage with the SPr of their own institutions. This gap in research is important because students' engagement with their schools' sustainability efforts at the institutional level can shape their values, future actions and professional mindsets. Understanding students' perspectives could help HEIs to better synchronize their sustainability strategies with stakeholder expectations, ultimately making a greater impact. This study seeks to bridge this gap by empirically examining the extent of students' awareness of institutional sustainability practices, focusing on the Indian higher education context, where evidence remains scarce and fragmented.

Theoretical Foundation

The study is conceptually grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), which posits that an individual's awareness, attitude, and perceived behavioral control influence their intentions and actions. Applied to the context of higher education, TPB suggests that students' awareness of sustainability practices forms the cognitive basis for developing pro-sustainability attitudes and behaviors. By examining awareness levels, this study contributes to understanding the initial cognitive stage of behavioral change toward sustainability within institutional environments.

7. METHODOLOGY

To address the stated research questions, a quantitative descriptive research design was adopted.

Sampling Strategy: The sampling process follows a multi-stage stratified random sampling approach in which at the first stage the population is divided on the basis of region and then on institutional level. The study is based in Lucknow, Uttar Pradesh only, selected for its large concentration of NAAC-accredited institutions and diverse academic landscape. This city serves as a representative education hub with varied institutional types, making it an appropriate context for the study.

Institutional Selection: The sampling frame of the study includes NAAC-accredited universities and colleges of Lucknow. Rationale behind the selection criteria is that green audit report is among the necessary documents to be provided with AQAR for NAAC accreditation. Availability of Green audit reports ensures existence of identifiable SPr suitable for analysis.

Content Analysis: Annual Quality Assurance Report (AQAR) of selected institutions are systematically analysed to extract details of SPr implemented at each institution. These details align with the Sustainability Assessment Questionnaire (SAQ)

framework, ensuring that the study's indicators are institutionally relevant and comparable.

Student Selection: After identifying sustainability indicators through AQAR content analysis, a structured questionnaire was developed. The instrument contained two sections: demographic information and awareness items measured on a five-point Likert scale. The questionnaire was administered to students selected randomly from the identified institutions. Data were collected both through online surveys (Google Forms) and in-person distribution to ensure diverse participation. Ethical clearance was obtained, and all respondents provided informed consent.

Sample Size: Using Krejcie and Morgan's (1970) table, a sample size of 379 was determined for a population of approximately 25,000 students. This sample was proportionately distributed across eight institutions based on their enrollment size to ensure representativeness.

Table 1

Institution	Student population	Proportionate formula	Sample size (approx)	N
Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS)	860	860/23989*380	13.62	14
Netaji Subhash Chandra Bose Government Girls PG College	1030	1030/23989*380	16.31	16
Maharaja Bijli Pasi Government P.G. College	1653	1653/23989*380	26.18	26
School of Management Sciences	724	724/23989*380	11.46	12
Lucknow Public College of Management Studies	544	544/23989*380	8.61	9
Jaipuria Institute of Management	575	575/23989*380	9.10	9
King George Medical University	2687	2687/23989*380	42.56	43
University of Lucknow	15916	15916/23989*380	252.11	252

8. MEASUREMENT DEVELOPMENT

The designed instrument consists of two sections. The questionnaire's first section is open-ended and seeks to collect demographic details of the respondent such as name, gender, course & semester. In second section, five-point Likert scale ranging from 'not at all aware' to 'extremely aware' whereas, point 1 indicates "Not at all aware", 2 as "Slightly Aware", 3 as "Somewhat Aware", 4 as "Quite a bit Aware" and 5 as "extremely aware" is used.

The instrument was developed through content analysis technique. The process started with assessing AQAR of the selected sample from official website of the institution and NAAC. Green audit report is one of the essential criteria for NAAC accreditation and the report contains the list of SPr taken by the institution which can varied institute wise. According to the objective of the paper it was imperative to assess SPr of each of the selected sample units. Sustainability information from AQAR that aligns with the indicators of SAQs developed by ULSF was extracted. After getting the indicators it

was converted into structured questionnaire. The questionnaire consisted 11 questions excluding demographic detail which is provided in Annexure.

PRETESTING

Pilot testing was done to make sure the instrument was valid and reliable before the full survey was conducted. To substantiate the content validity, expert evaluation was conducted with the sustainability experts. 30 students were conveniently chosen. Data was collected through google forms with link shared to each participant. Participants were also briefly informed about the objective of the study to that they find the questions relevant. Each respondent was asked for suggestions on content, language, and length of the instrument in the questionnaire itself. Later, a follow up interview was conducted for qualitative feedback.

Reliability and Validity: To establish content validity, the draft questionnaire was reviewed by subject experts specializing in sustainability education. Their feedback was used to refine item wording and ensure conceptual accuracy. The revised version was then pilot-tested with 30 students from the target population to confirm clarity and comprehension. Respondents provided qualitative comments on item relevance, structure, and language. Minor adjustments were made based on their suggestions. The pilot data were analyzed using SPSS, yielding a Cronbach's alpha coefficient of 0.704, which indicates acceptable internal consistency for exploratory research. These steps confirm that the instrument was both reliable and valid, making it suitable for measuring students' awareness of institutional sustainability practices in the full-scale survey.

Data Analysis

The final dataset (N = 403) was coded and analyzed using SPSS. Data cleaning included removal of incomplete responses and verification of normality. Descriptive statistics were used to measure awareness levels across indicators. The Kolmogorov–Smirnov and Shapiro–Wilk tests confirmed non-normal distribution, leading to the application of the Kruskal–Wallis test to examine differences in awareness across academic backgrounds. Findings were triangulated with qualitative feedback from pilot testing to enhance interpretation accuracy.

9. RESULTS & DISCUSSION

This section presents results and findings of the study. The data were analyzed through excel and SPSS.

Demographic Detail

Figure 1,2 & 3 presents respondents' demographic details including their age, gender and educational background. Data was collected from 410 respondents out of which 07

questionnaire were rejected due to missing values and other error. 403 responses were taken to SPSS for final analysis. In the total data of 403, major respondents are male 228(56.6%) & rest 175(43.4%) are females.

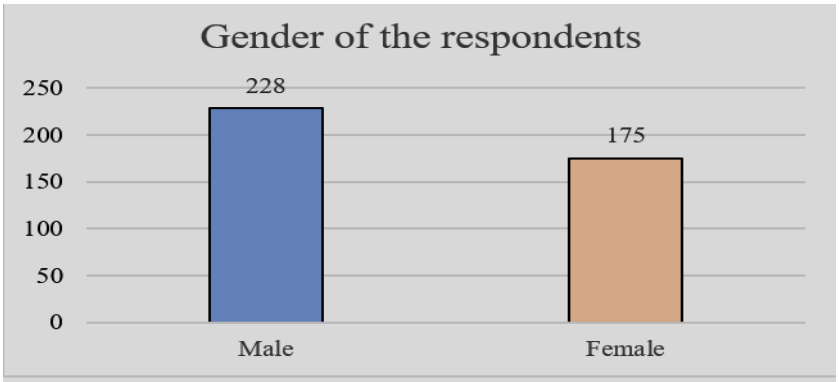


Figure 1: Gender of the respondents

It is observed in figure 2 that the maximum respondent belongs to the age category of 19-22 (41.7%).

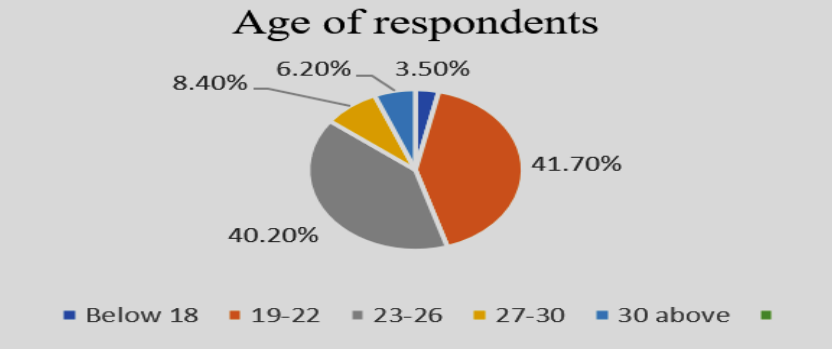


Figure 2: Age of the respondents

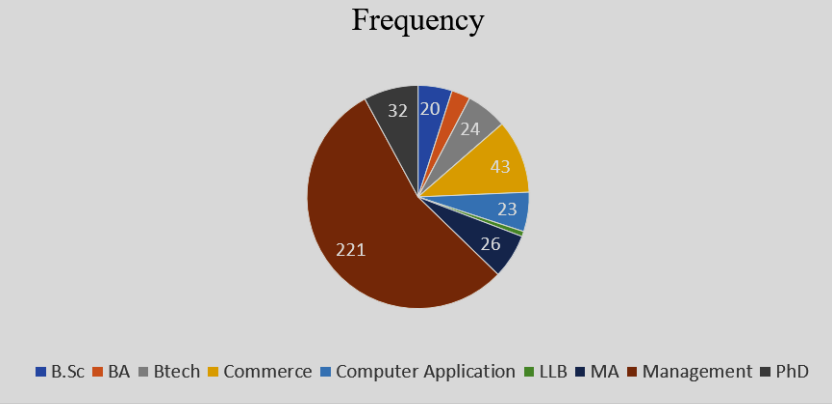


Figure 3: Academic background of the respondents

Based on collected data, educational background of maximum student (221) is management studies and rest 182 are from other fields like B.sc (20), BA (11), Btech (24), Commerce (43), Computer applications (23), LLB (03), MA (26), PhD (32) which represents data from diverse educational background.

RQ1: How aware are the students about the SPr of their institution?

To answer this question, composite score of sustainability awareness needs to be calculated by combining the responses of all the 11 items.

Composite score of Sustainability Awareness (Total awareness)

The aggregate score of sustainability awareness has been computed in SPSS software by taking the average of responses across all constructs that are subject awareness, Online course Awareness, No Vehicle Policy Awareness, Disabled-friendly Policy Awareness, ban on single-use plastic Awareness, Waste Segregation & Management Awareness, Rain Water Harvesting System Awareness, Solar Panel Awareness, Energy Efficient Appliances Awareness, Signboard Awareness.

	Minimum	Maximum	Mean	Std. Deviation
Students' awareness	1.82	3.73	3.41	.363

In this data, mean score indicates awareness level on various SPr of the students on a scale of 1 to 5. The highest composite score for sustainability awareness is 3.73 which is still below to 5. The lowest composite score for sustainability awareness of any student is 1.82 which means there is low awareness on SPr of the institution. The mean score of sustainability awareness was found to be 3.41indicating low to moderate awareness of the students on various SPr implemented at their institution. The standard deviation of .36 suggests that the differences are minimal in the responses of the students. The average composite score for awareness is 3.41 and its smaller standard deviation suggests that the maximum response is close to 3.41. Based on the results mentioned above, it can be concluded that the student's awareness on SPr of their institution is low.

RQ2: With which SPr students are most and least aware?

To seal with this research question, construct wise descriptive statistics were calculated. The result shows variation in scores. Some items have high mean scores and some have low. Low ratings imply a lack of knowledge with the SPr, while high scores show that pupils are more aware of it. "Waste Segregation & Management Awareness" received the highest score, indicating that students are relatively more informed about the institution's waste management practices. Nevertheless, it was discovered during a field survey that students see dustbins of various colours for waste segregation on campus, for which they have been instructed and given the guidelines regarding which trash should be placed in which dustbin. However, they are unaware of what happens to the

trash once it is deposited at the institution. It is recommended that HEIs educate students about the difficulties encountered in disposing of recyclable and non-recyclable waste.

Table 2 shows that students are least familiar with the institution's "No Vehicle Policy." Furthermore, despite having a "No Vehicle Policy," some HEIs had some motor vehicles on campus when the data was being gathered. After interviewing the students, it was discovered they have been given a parking spot where they could leave their vehicle but any respondent could not relate the reason behind this to sustainability, they just consider it as a rule.

Sustainability Awareness Indicators	**Minimum**	**Maximum**	**Mean**	**Standard deviation**
Sustainability Practices Awareness	1	5	2.79	1.363
Subject Awareness	1	5	3.26	1.312
Online course Awareness	1	5	2.67	1.341
No Vehicle Policy Awareness	1	5	2.53	1.272
Disabled-friendly Policy Awareness	1	5	3.16	1.362
Ban on single-use plastic Awareness	1	5	2.58	1.411
Waste Segregation & Management Awareness	1	5	4.23	.896
Rain Water Harvesting System Awareness	1	5	4.14	.918
Solar Panel Awareness	1	5	4.08	.919
Energy Efficient Appliances Awareness	1	5	3.99	.961
Signboard Awareness	1	2	4.14	.900

Table 2: Construct wise descriptive scores

RQ3: How does the academic background of students affect their awareness on SPr of their institution?

Different subjects are taught in different courses. They all are important however; their weightage is different. So, to know whether academic background has an impact on the awareness of students or not, group comparison test has been used. To decide the type of test to be used normality is checked first through Kolmogorov-Smirnov & Shapiro-Wilk test.

It is noticed the data is not normally distributed as both p-values are significant (p=.000). this mean null hypothesis of normality is rejected. Therefore, parametric tests are inapplicable here.

To understand the impact of independent variable (academic background; categorical data) on dependent variable (composite score of sustainability awareness; continuous data) Kruskal-Wallis Test has been used.

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Composite Score	.223	403	.000	.774	403	.000

Kruskal-Wallis Test:

Course	Frequency	Mean Rank
B.Sc	37	170.39
BA	42	185.33
Btech	31	206.94
Commerce	44	190.49
Computer Application	31	186.50
LLB	39	242.78
MA	33	197.88
Management	109	218.02
PhD	37	188.57

Table 3

Test Statistics

	Composite score of Sustainability Awareness
Chi-Square	12.295
Df	8
Asymp.Sig.	.139

a. Kruskal Wallis Test b. Grouping Variable: Course

Table 2 shows the classification of respondents across different courses. From the data it can be observed 403 respondents belongs to 9 different courses such as B.Sc., BA, Btech, Commerce, Computer Application, LLB, MA, Management & PhD. Mean rank is the average score of total sustainability awareness of one group. E.g. mean score of B.Sc. is 170.39 which means the average sustainability awareness scored by the respondents with B.Sc (37) academic background is 170.39. The highest mean score of LLB course implies highest awareness among the other course category. Lowest mean score is recorded for B.Sc course. Mean score simply tells how much awareness a course has and how much it differs from each other. However, it does not clarify anything on whether the difference between them is significant or not. For this, Kruskal-Wallis test is used. The Kruskal–Wallis test indicated no significant differences in sustainability awareness among students across nine academic disciplines (χ^2 = 12.295, df = 8, p = 0.139), suggesting that students' awareness of sustainability initiatives is relatively consistent regardless of their field of study. On average, students demonstrated a moderate level of awareness (Mean = 3.41) of the sustainability practices implemented at their institutions. While practices such as waste segregation and renewable energy usage were widely recognized, policies like the "No Vehicle

Campus" initiative and the "Ban on Single-Use Plastic" were less familiar, highlighting potential gaps in institutional communication and engagement strategies.

These results confirm that visibility and communication of institutional initiatives play a decisive role in shaping students' awareness on the SPr of their institution. The study thereby addresses the identified research gap by empirically illustrating the disconnect between institutional implementation and student perception. Similar to Parvez and Agrawal (2019) and Nejati and Nejati (2013), the findings reveal that limited internal communication and stakeholder engagement hinder awareness-building efforts. The results also align with the TPB (Ajzen, 1991), suggesting that low awareness can constrain the development of favorable attitudes and pro-sustainability behaviors among students.

Consequently, HEIs should strengthen mechanisms for communicating sustainability initiatives through orientation programs, visual signage, and inclusion of sustainability modules in coursework to enhance awareness and behavioral outcomes.

10. CONCLUSION

IHEIs are increasingly integrating sustainability initiatives into their operations, yet the communication of these initiatives to key stakeholders particularly students remain inconsistent. This study provides empirical evidence that students' awareness of institutional sustainability practices is generally low to moderate, with notable variation across activities. Using the TPB, the study finds that awareness strongly influences students' environmental attitudes and intentions. It shows that meaningful communication and inclusive participation are essential for building sustainability across campuses. Students develop awareness and a sense of shared responsibility for sustainable action when sustainability initiatives are evident and meaningful to them. In practice, this research helps educators and policymakers who are trying to integrate sustainability more comprehensively into higher education.

11. LIMITATION & FUTURE SCOPE

This study acknowledges several limitations. The focus on NAAC-accredited institutions in Lucknow limits the generalizability of the results to other contexts, as the findings primarily capture students' experiences within this region. The analysis also drew only on sustainability practices documented in AQAR reports, excluding areas such as curriculum, research, and outreach that merit future examination. Furthermore, academic background was the only independent variable considered; subsequent studies could incorporate additional factors such as exposure to sustainability education, interest, or environmental involvement. Broader, multi-regional research and

the use of mixed or longitudinal methods could yield more comprehensive and dynamic insights into students' evolving sustainability awareness.

REFERENCES

- Agarwal, S. M. (2023). Go-Brown, Go-Green and smart initiatives implemented by the University of Delhi for environmental sustainability towards futuristic smart universities: Observational study. *Heliyon, 9*(3), e13909. https://doi.org/10.1016/j.heliyon.2023.e13909
- Al Husban, W. (2025). *The impact of integrating Sustainable Development Goals on students' awareness and pro-environmental behavior: A case study of Jordan*. *Sustainability, 17*(6), 2588. https://doi.org/10.3390/su17062588
- Aleixo, A. M., Azeiteiro, U., & Leal, S. (2018). The implementation of sustainability practices in Portuguese higher education institutions. *International Journal of Sustainability in Higher Education, 19*(1), 146–178. https://doi.org/10.1108/IJSHE-02-2017-0016
- Aleixo, A. M., Leal, S., & Azeiteiro, U. M. (2018). Conceptualization of sustainable higher education institutions, roles, barriers, and challenges for sustainability: An exploratory study in Portugal. *Journal of Cleaner Production, 172*, 1664–1673. https://doi.org/10.1016/j.jclepro.2016.11.010
- Amaral, L. P., Martins, N., & Gouveia, J. B. (2015). Quest for a sustainable university: A review. *International Journal of Sustainability in Higher Education, 16*(2), 155–172. https://doi.org/10.1108/IJSHE-02-2013-0017
- Angelaki, M. E., Bersimis, F., Karvounidis, T., & Douligeris, C. (2024). Towards more sustainable higher education institutions: Implementing the Sustainable Development Goals and embedding sustainability into the information and computer technology curricula. *Education and Information Technologies, 29*(4), 5079–5113. https://doi.org/10.1007/s10639-023-12025-8
- Aşıksoy, G., Isa, N. A., & Gökçekuş, H. (2020). The role of mass media and level of education in spreading environmental sustainability awareness in developing countries. *Desalination and Water Treatment, 177*, 237–241. https://doi.org/10.5004/dwt.2020.24833
- Bincy, O. K., & Vasudevan, T. M. (2023). Environmental sustainability: Awareness and practices among library professionals in University of Calicut. *The Journal of Academic Librarianship, 49*(4), 102748. https://doi.org/10.1016/j.acalib.2023.102748

- Blanco-Portela, N., Benayas, J., Pertierra, L. R., & Lozano, R. (2017). Towards the integration of sustainability in higher education institutions: A review of drivers of and barriers to organisational change. *Journal of Cleaner Production, 166*, 563–578. https://doi.org/10.1016/j.jclepro.2017.07.252
- Bui, H. T. M., Bui, T., & Pham, B. T. (2024). The role of higher education in achieving Sustainable Development Goals: An evaluation of motivation and capacity of Vietnamese institutions. *The International Journal of Management Education, 22*(3), 101088. https://doi.org/10.1016/j.ijme.2024.101088
- Bullini Orlandi, L., Bottura, M., Veglianti, E., & Zardini, A. (2025). Less is more: Digital and physical sustainability shortage impact on entrepreneurial intention. *International Entrepreneurship and Management Journal, 21*(1), 1–19. https://doi.org/10.1007/s11365-024-01058-1
- Education for All in India. (2023, July 15). *All India Survey of Higher Education (AISHE) 2021–22: Summary of major findings.* https://educationforallinindia.com/all-india-survey-of-higher-education-aishe-2021-22-summary-of-major-findings/
- Eid, A., Salah, M., Barakat, M., & Obrecht, M. (2022). Airport sustainability awareness: A theoretical framework. *Sustainability, 14*(19), 11921. https://doi.org/10.3390/su141911921
- Eltoum, A. M., Yatiban, A., Omar, R., & Islam, R. (2022). Sustainability awareness in society and its impact on responsible business adoption in the Dubai business sector. *Problems and Perspectives in Management, 20*(3), 540–551. https://doi.org/10.21511/ppm.20(3).2022.43
- Freidenfelds, D., Kalnins, S. N., & Gusca, J. (2018). What does environmentally sustainable higher education institution mean? *Energy Procedia, 147*, 42–47. https://doi.org/10.1016/j.egypro.2018.07.031
- Golowko, N., Marquardt, K., Budz, S., & Foerster-Metz, U. S. (2019). German students' perception of bioeconomy: An exploratory study. *Amfiteatru Economic, 21*(50), 138–151. https://doi.org/10.24818/EA/2019/50/138
- Juma Michilena, I. J., Ruiz Molina, M. E., & Gil-Saura, I. (2024). Main motivations and barriers to pro-environmental behaviour: A study from the employee's perspective. *Sustainability Accounting, Management and Policy Journal.* https://doi.org/10.1108/SAMPJ-08-2023-0538

- Kumar, K., Prakash, A., & Singh, K. (2021). How National Education Policy 2020 can be a lodestar to transform future generation in India. *Journal of Public Affairs, 21*(3), e2500. https://doi.org/10.1002/pa.2500
- Leal Filho, W., Manolas, E., & Pace, P. (2015). The future we want: Key issues on sustainable development in higher education after Rio and the UN Decade of Education for Sustainable Development. *International Journal of Sustainability in Higher Education, 16*(1), 112–129. https://doi.org/10.1108/IJSHE-03-2014-0036
- Lozano, R., & Barreiro-Gen, M. (2023). Civil society organisations as agents for societal change: Football clubs' engagement with sustainability. *Corporate Social Responsibility and Environmental Management, 30*(2), 820–828. https://doi.org/10.1002/csr.2390
- Mansi, M., & Pandey, R. (2016). Impact of demographic characteristics of procurement professionals on sustainable procurement practices: Evidence from Australia. *Journal of Purchasing and Supply Management, 22*(1), 31–40. https://doi.org/10.1016/j.pursup.2015.06.001
- Massaglia, S., Peano, C., Merlino, V. M., Gregis, A., Ghisalberti, C., & Sottile, F. (2022). Food sustainability perception at universities: Education and demographic features effects. *The International Journal of Management Education, 20*(2), 100653. https://doi.org/10.1016/j.ijme.2022.100653
- Mendoza-Villafaina, J., & López-Mosquera, N. (2024). Educational experience, university satisfaction, and institutional reputation: Implications for university sustainability. *The International Journal of Management Education, 22*(3), 101013. https://doi.org/10.1016/j.ijme.2024.101013
- Ministry of Education. (2020). *All India Survey on Higher Education 2019–20.*
- Morales-Baños, V., Borrego-Balsalobre, F. J., Díaz-Suárez, A., & López-Gullón, J. M. (2023). Levels of sustainability awareness in Spanish university students of nautical activities. *Sustainability, 15*(3), 2733. https://doi.org/10.3390/su15032733
- Nejati, M., & Nejati, M. (2013). Assessment of sustainable university factors from the perspective of students. *Journal of Cleaner Production, 48*, 101–107. https://doi.org/10.1016/j.jclepro.2012.09.006
- Oriade, A., Osinaike, A., Aduhene, K., & Wang, Y. (2021). Sustainability awareness, management practices, and organisational culture in hotels. *International Journal of Hospitality Management, 92*, 102699. https://doi.org/10.1016/j.ijhm.2020.102699

- Pacheco-Blanco, B., & Bastante-Ceca, M. J. (2016). Green public procurement as an initiative for sustainable consumption: An exploratory study of Spanish public universities. *Journal of Cleaner Production, 133*, 648–656. https://doi.org/10.1016/j.jclepro.2016.05.056
- Panda, T. K., Kumar, A., Jakhar, S., Luthra, S., Garza-Reyes, J. A., Kazancoglu, I., & Nayak, S. S. (2020). Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism. *Journal of Cleaner Production, 243*, 118575. https://doi.org/10.1016/j.jclepro.2019.118575
- Park, Y. (2024). *Sustainable education practices: Voices from higher education institutions.* https://doi.org/10.21203/rs.3.rs-3923563/v1
- Parvez, N., & Agrawal, A. (2019). Assessment of sustainable development in technical higher education institutes of India. *Journal of Cleaner Production, 214*, 975–994. https://doi.org/10.1016/j.jclepro.2018.12.305
- Ray, A., Prabhu, A., Krishnan Champettil, M., Krishnan, H. B., Bhaskaran, S., & Bommisetti, R. K. (2025). Role of Eco-Club in fostering environmental sustainability awareness among school students. *Salud, Ciencia y Tecnología – Serie de Conferencias, 4*, 1403.
- Ridwan, I. M., Kaniawati, I., Suhandi, A., Samsudin, A., & Rizal, R. (2021, March). Level of sustainability awareness: Where are the students' positions? *Journal of Physics: Conference Series, 1806*(1), Article 012135. https://doi.org/10.1088/1742-6596/1806/1/012135
- Ruiz-Mallén, I., & Heras, M. (2020). What sustainability? Higher education institutions' pathways to reach the Agenda 2030 goals. *Sustainability, 12*(4), 1290. https://doi.org/10.3390/su12041290
- Salovaara, J. J., Pietikäinen, J., & Cantell, H. (2021). Perceptions of interconnected sustainability: Students' narratives bridging transition and education. *Journal of Cleaner Production, 281*, 125336. https://doi.org/10.1016/j.jclepro.2020.125336
- Sekhar, C., & Raina, R. (2021). Towards more sustainable future: Assessment of sustainability literacy among the future managers in India. *Environment, Development and Sustainability, 23*(11), 15830–15856. https://doi.org/10.1007/s10668-021-01316-0
- Shadymanova, J., Wahlen, S., & van der Horst, H. (2014). 'Nobody cares about the environment': Kyrgyz perspectives on enhancing environmental sustainable

consumption practices. *International Journal of Consumer Studies, 38*(6), 678–683. https://doi.org/10.1111/ijcs.12140

- Shang, W., Zhu, R., Liu, W., & Liu, Q. (2024). Understanding the influences on green purchase intention with moderation by sustainability awareness. *Sustainability, 16*(11), 4688. https://doi.org/10.3390/su16114688
- Sharma, S., & Sharma, P. (2015). Indian higher education system: Challenges and suggestions. *Electronic Journal for Inclusive Education, 3*(4), Article 6.
- Suganya, G., Nandhini, D. N., Pragatheeswari, S., & Josephin, B. T. (2024). Assessing sustainability awareness, behavior, and attitudes: A study among college students. In *Diversity, equity and inclusion* (pp. 479–488). Routledge. https://doi.org/10.4324/9781003487180-37
- Tafese, M. B., & Kopp, E. (2025). Education for sustainable development: Analyzing research trends in higher education for Sustainable Development Goals through bibliometric analysis. *Discover Sustainability, 6*(1), 51. https://doi.org/10.1007/s43621-024-00711-7
- Veckalne, R., & Tambovceva, T. (2022). The role of digital transformation in education in promoting sustainable development. *Virtual Economics, 5*(4), 65–86. https://doi.org/10.34021/ve.2022.05.04(4)
- Yadav, A., & Prakash, A. (2022). Factors influencing sustainable development integration in management education: An empirical assessment of management education institutions in India. *The International Journal of Management Education, 20*(1), 100604. https://doi.org/10.1016/j.ijme.2022.100604
- Yang, C., & Xiu, Q. (2023). A bibliometric review of education for sustainable development, 1992–2022. *Sustainability, 15*(14), 10823. https://doi.org/10.3390/su151410823