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RESEARCH PAPER

An Assessment of Postgraduate Students' Perceptions and Engagement with Sustainable Development Practices in Lahore: Knowledge, Attitudes, and Actions

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ABSTRACT

The purpose of the current descriptive study was to investigate the knowledge, attitudes, and behaviors related to sustainable development among postgraduate students. The study focused on all postgraduate students enrolled in universities in Lahore as the population of interest. To gather data, a self-reported questionnaire was distributed to a sample of 500 students selected from two randomly chosen universities. The students were selected based on their gender and level of education. Statistical analyses, including T-tests, means, and standard deviations, were used to evaluate significant differences among variables. The results were presented in a table format and appropriately analyzed. The findings of the study indicated that postgraduate students had a substantial level of knowledge regarding sustainable development Notably, Ph.D. students scored significantly higher in knowledge than MPhil students. Additionally, the study revealed that postgraduate students held positive attitudes towards sustainable development, and their attitudes were statistically significant. Furthermore, the study found that postgraduate students demonstrated significant behaviors aligned with sustainable development goals. In all three variables (knowledge, attitudes, and behaviors), PhD students consistently scored higher than MPhil students. The study's findings suggest the importance of integrating sustainable development education into higher education programs, which holds significance for policymakers and curriculum developers. Recommendations can be found in the report's relevant section.

KEYWORDS Attitudes, Behaviors, Perceptions, Post Graduate, Sustainable Development

Introduction

Sustainable development refers to the type of development that satisfies the current generation's needs while ensuring that future generations can fulfill their own needs without difficulty" (World Commission on Environment and Development, 1987). Sustainable development can be classified into three dimensions: ecology, economy, and equity. In 1972, sustainable development received its initial prominent international recognition in Stockholm during the UN Conference on the Human Environment. The central theme of this concept emphasizes that the current generation bears a responsibility not only for their own improvement but also for the well-being of future generations. This responsibility arises from the understanding that their actions today will have repercussions for their descendants, including their grandchildren, in the years to come. Numerous authors have brought attention to this subject, focusing on environmental concerns, the preservation of biodiversity, and the challenges of climate change.

It extends beyond these aspects; sustainable development also encompasses social and economic dimensions for both the present and future generations. The report additionally highlights that advanced nations worldwide must address the challenge of eradicating poverty from the earth. Consequently, sustainable development embodies three core principles: ensuring safety and prosperity in the present, securing the same for the

future, and sustaining these principles over time. Fifteen years later, the World Commission on Environment and Development's report significantly increased the recognition of sustainable development. Previous research and existing literature contribute significantly to our comprehensive understanding of sustainable development. Wilson's (2014) titled "The Utility of Sustainability Workshops and Engagement in Influencing Knowledge, Attitudes, and Behaviors Regarding Sustainability," a survey instrument was employed. The instrument is divided into three categories of questionnaires, knowledge, attitudes, and behaviors. Each category includes fifteen statements, except for the knowledge category which includes seventeen (IISD, 2009). Respondents rated their sustainability perception on a 1-10 scale: 1 for limited understanding, 6 for moderate comprehension, and 10 for expert knowledge. Notably, 84.6% of the participants revealed that they perceived their understanding of sustainability as a 6 on the 1 to 10 scale, with 38.1% rating their understanding at 8 on the same scale.

In a study conducted by Mushtaq and Azeem (2012) the research aimed to investigate the perspectives of prospective teachers concerning environmental development and its implications for both present and future outcomes. The sample for the study consisted of 247 prospective teachers selected from three public universities. Data analysis involved the application of descriptive and inferential statistics.

The findings of the study indicated that factors such as gender, locality, and education level did not have a significant impact on perspectives of individuals regarding "environmental sustainable development" and acknowledge its relevance in the present and future scenarios.

Abdul Aziz et al. (2012) conducted a study where they constructed a structural model to assess students' knowledge and attitudes regarding sustainability. The study focused on a sample of first-year engineering students, consisting of 188 participants, who were administered a 36-item questionnaire. Data analysis was carried out in two phases: "confirmatory factor analysis" and "structural equation modeling" (SEM).

The researchers developed a structural model using SEM to explore the relationship between knowledge and attitudes concerning sustainability among these first-year engineering students. The findings revealed the reliability of the structural model and highlighted a significant relationship between students' knowledge of sustainable development and the enhancement of their attitudes towards it.

Moreover, the model was employed to gauge the levels of knowledge and attitudes both before and after the intervention process. Importantly, the model provided insights into why students should be aware of sustainable development and how they People have the ability to change their perspectives and behaviors towards sustainability-related concerns.

The research conducted by Tomas et al. in 2011, the primary objective was to cultivate additional awareness among the younger generation regarding their attitudes toward sustainability. The research centered on examining three core values: "respect for nature," "harmony," and "equality." A total of 918 students actively participated in the study by responding to a comprehensive questionnaire.

One noteworthy finding of the study was that among secondary students, there existed a significant association between gender and the type of living environment, whether urban or rural. Furthermore, it was observed that there was a positive correlation between the extent of commonality among the participants and their readiness to take actions aimed at protecting the environment. This underscores the importance of fostering a shared sense of responsibility and commitment toward environmental preservation among the youth.

Awan et al. (2013) delved into the idea of "sustainable development in Pakistan". Their study highlighted the importance of common and core resources in attaining sustainable development. The research analyzed past, current, and future practices in Pakistan. The Government of Pakistan implemented the "National Preservation Plan" as a means of formalizing the policy. Reflecting the nation's commitment to sustainability. The researchers also pointed out that over the past six decades, various governments in Pakistan have taken diverse measures to strive for and maintain sustainable development, recognizing its pivotal role in a developing country.

The integral relationship between environmental development and sustainable development was a central theme of the study. It highlighted that the responsibility of protection our resources and preserving nature is paramount for the progress of Pakistan. With the global population projected to exceed 9 billion by 2050 (Geohive.com, 2013).There will be an escalating demand for resources and increased consumption, posing challenges. Sustainable development's primary objective is to harmonize these competing needs, ensuring we protect our environment, which serves as the backdrop for our collective progress, both technologically and economically.

Research Hypotheses

The research hypotheses formulated for the specified objectives are as follows:

Ho1: Postgraduate students do not exhibit significant knowledge of sustainable development.

Ho2: There is no significant disparity in knowledge related to sustainable development between PhD students and MPhil students.

Ho3: Postgraduate students do not demonstrate significant attitudes toward sustainable development.

Ho4: There is no significant contrast in attitudes toward sustainable development between PhD students and MPhil students.

Ho5: Postgraduate students do not engage in significant behaviors related to sustainable development.

Ho6: There is no significant differentiation in behaviors related to sustainable development between PhD students and MPhil students.

Material and Methods

For this research, a descriptive approach was used to gather information from postgraduate students about their knowledge, attitudes, and behaviors towards sustainable development. The study was meticulously conducted at two universities, namely Lahore College for Women University and the University of the Punjab. Six departments were randomly selected from each university, with the researcher obtaining the department lists from the registrar's offices. The study had a total of 500 participants, with 80% being MPhil students (n=399) and 20% PhD students (n=101). The results of the study are conclusive and provide a confident evaluation of the participants' views on sustainable development. The questionnaire employed in the study was structured into three parts. The first part consisted of 16 statements related to knowledge, the second part contained 16 statements related to attitude, and the third part encompassed 16 statements related to behavior concerning sustainable development. Respondents provided their feedback using a 5-point Likert scale to ensure the reliability and validity of the questionnaire used in the main study, a pilot test was conducted. This involved distributing the questionnaire to 100 research

students from two universities in Lahore, including 10 PhD students and 90 MPhil students. The pilot test showed a high-reliability coefficient of 0.91, and experts in the field were consulted to confirm its validity. The collected data was analyzed quantitatively using basic statistical techniques such as mean and standard deviation to reveal quantitative findings. To explore any significant differences among different educational levels, a T-test was employed. The results were presented in a table format and analyzed appropriately.

Results and Discussion

Table 1
Postgraduate Students' Knowledge of Sustainable Development

Sr#	Statements	Mean	SD
1	Ensuring the protection of the environment is a fundamental requirement for achieving sustainable development.	4.34	.65
2	The conservation of freshwater resources is crucial for the advancement of sustainable development.	4.23	.74
3	It is acknowledged that human activities are contributing significantly to alterations in our atmosphere and climate systems,	3.75	.68
4	Sustainable development necessitates a profound commitment to upholding human rights, as indicated	3.82	.90
5	Enhancing opportunities for individuals to lead long and healthy lives is a key contributor to sustainable development.	3.86	.83
6	Sustainable development obliges individuals to minimize various forms of waste.	3.51	1.03
7	Access to high-quality education for all is a critical component of sustainable development	3.45	1.15
8	Economic development plays an essential role in the pursuit of sustainable development.	3.43	1.15
9	Reflection on ways to enhance the quality of life is a necessary part of sustainable development.	3.38	1.07
10	Acknowledging and respecting cultural diversity is an integral aspect of sustainable development.	3.28	1.14
11	Continuous learning throughout one's lifetime is a vital requirement for sustainable development.	4.23	0.98
12	Good citizenship is a fundamental element in the pursuit of sustainable development.	3.56	1.31
13	Eradicating poverty is a prerequisite for sustainable development.	3.63	1.12
14	I have completed a course in which the concept of sustainable development was extensively discussed,	3.03	1.22
15	The production and use of cell phones are not highly resource-intensive.	4.02	1.01
16	Gender equality is not the sole determinant of sustainable development	4.12	1.07

In light of Ho1, which posited that postgraduate students have no significant knowledge of sustainable development, an analysis of means and standard deviations of knowledge scores pertaining to sustainable development (n=500) was conducted.

After analyzing this information, it can be concluded that the majority of postgraduate students recognize the importance of protecting the environment, conserving fresh water, and acknowledging human contributions to climate change for Sustainable Development. They also value factors such as respect for human rights, improving quality of life, and learning throughout life as essential components of SD. However, there is a varying degree of understanding regarding the relationship between economic development, poverty elimination, and cultural diversity in the context of Sustainable Development. Additionally, it is worth noting that there is room for improvement in integrating sustainable development topics into academic courses, as indicated by the lower mean score for statement 14.

Table 2
Knowledge regarding sustainable development ofPhD and MPhil students

Groups	N	Mean	SD	*Df*	*t-value*	*P*	*D*
PhD	101	403.07	16.19				
				387	4.420	.000*	.495 *
MPhil	399	395.50	14.25				

*p < .05

Cohen's d was computed using the means and standard deviations of the two groups via a t-test.

When groups into two education levels, namely PhD and MPhil, statistical tests were performed to examine discrepancies in perceptions and knowledge. These tests revealed statistically significant differences in the findings.

Attitude for sustainable development

Table3
Means and standard deviations of post graduate student's attitude toward Sustainable Development (Sample Size: 500).

	Statements	Mean	S D
1	Every individual should have access to education that imparts the knowledge, values, and skills required for sustainable coexistence within a community.	4.06	0.98
2	The current generation bears the responsibility of ensuring that future generations can enjoy communities with at least the same level of well-being as todays.	3.87	0.99
3	It is imperative to seek effective means of alleviating poverty.	3.75	0.96
4	Governments should actively promote the adoption of fuel-efficient vehicles.	3.55	1.03
5	Responsibilities within households should be equitably distributed among all members, irrespective of their gender.	3.49	1.11
6	In my opinion, tasks within my household should be fairly shared among family members, regardless of gender.	3.35	1.12
8	Governments should prioritize Sustainable Development (SD) as a national agenda.	3.16	1.12
9	Manufacturers should discourage the usage of disposable products.	3.13	1.10
10	Understanding and addressing the challenges posed by climate change is of utmost importance.	3.04	1.10
11	It is feasible to both protect the environment and generate employment, even during economic downturns.	3.00	1.18
12	Utilizing more resources than necessary at present does indeed jeopardize the well-being of future generations, provided that resources are available.	2.99	1.10
13	Individuals or entities that pollute our land, air, or water should bear the responsibility for the harm inflicted on communities and the environment	2.98	1.14
14	Responsible usage of water should be observed, regardless of its availability.	2.66	1.13
15	Assessing the monetary value of ecosystem services provided to us is a valuable practice	2.54	1.18
16	Stringent laws and regulations are essential to safeguard the environment.	2.53	1.19

This table summarizes the comparison of knowledge levels regarding sustainable development between PhD and MPhil students. The statistical analysis demonstrated a significant difference in knowledge, as indicated by the t-value (4.420) and the p-value (.000*), which is less than the significance level of 0.05. Furthermore, the effect size (D) is reported as .495*, indicating a moderate effect. The Cohen's d statistic was utilized to calculate the effect size, utilizing the means and standard deviations from the t-test results.

The data reveals that the statement "Every person should receive education that imparts the knowledge, values, and skills essential for sustainable living within a community" garnered the highest mean score at 4.06. Conversely, the statement "We don't require stringent laws and regulations to protected the environment" received the lowest mean score of 2.53, accompanied by the highest standard deviation of 1.19. These findings collectively indicate a favorable disposition among the students toward sustainable development.

Table 4
Attitude for sustainable development of PhD students and MPhil students

Groups	N	Mean	SD	*df*	*t-value*	*P*	*D*
PhD	99	221.29	4.40	391	3.47	.001	.388 *
MPhil	388	219.68	3.89				

*p < .05

Cohen's d was computed based on the means and standard deviations of both groups.

The table indicates a notable disparity in attitudes between PhD students (M= 221.29, SD= 4.40) and MPhil students (M=219.68, SD=3.89), with a significant t-value of 3.47 (df = 391).

Behavior regarding sustainable development

Table 5
Means and standard deviations of post graduate students' behavior regarding sustainable development (n=500).

Sr #	Statements	Mean	S D
1	I consistently treat people respectfully, regardless of their racial backgrounds.	3.79	0.96
2	I consistently employ a multifaceted approach when analyzing problems.	3.77	.96
3	I am diligent about recycling at home, making every effort to minimize waste.	3.73	.99
4	I prioritize walking or biking to my destinations over using motor vehicles.	3.72	1.01
5	I consistently maintain a respectful and considerate demeanor when engaging in social networking or gaming online.	3.38	.98
6	I've invested significant thought into adopting a more sustainable lifestyle.	3.37	1.06
7	I actively consider my impact on the natural environment and strive to minimize harm.	3.29	1.13
8	I am committed to assisting individuals living in poverty through various initiatives.	3.24	.99
9	I have made conscious changes to my personal lifestyle to reduce waste and promote sustainability.	3.23	.94
10	I am selective in my consumption choices, avoiding products from companies with a history of disregarding worker rights or environmental concerns.	3.17	1.01
11	I proactively pick up litter whenever I encounter it in parks or natural areas.	3.04	1.10
12	I actively participate in democratic activities related to student life within my school community.	3.00	1.18
13	I volunteer to work with local charities or environmental groups.	2.99	1.10
14	I refrain from making lifestyle choices that compromise my health.	2.98	1.14
15	I am conscientious about conserving water and never engage in wasteful practices.	2.66	1.13
16	While I have the option, I occasionally neglect to compost, but I aim to improve in this regard.	2.54	1.18

The third segment of the questionnaire focused on behavioral statements, where research students were required to assess the degree to which they engage in specific behaviors. The overall results showed that researchers consistently demonstrate a notably positive orientation toward sustainable development. Notably, none of the participants exhibited negative behavior in this regard.

Table 6
Behavior regarding sustainable development of PhD students and MPhil students

Groups	N	Mean	SD	*df*	*t-value*	*P*	*D*
PhD	93	204.79	17.35	362	3.15	.002*	.506 *
MPhil students.	299	196.01	17.38				

*p< .05

Cohen's d was determined through the computation of the means and standard deviations of the two distinct groups.

The data analysis results indicated that postgraduate students demonstrated a significant level of knowledge, attitude, and behavior related to sustainable development. Specifically, when it comes to knowledge of sustainable development, there was a noteworthy distinction between PhD students (M=403.07, SD=16.19) and MPhil students (M=395.50, SD=14.25), with a

t-statistic of 4.421 (df=387).

Regarding their attitudes towards sustainable development, postgraduate students exhibited a positive disposition. A significant difference was observed in attitude scores between PhD students (M=221.29, SD=4.40) and MPhil students (M=219.68, SD=3.89), with a t-statistic of 3.47 (df=391).

In terms of behavior related to sustainable development, postgraduate students also displayed significant engagement. There was a notable distinction in total scores between PhD students (M=204.79, SD=17.35) and MPhil students (M=196.01, SD=17.38).The results revealed a substantial distinction in total scores ($t [362] = 3.15$, $p < .05$) between PhD and MPhil students, with PhD students attaining higher scores.

Conclusion

The findings of this study emphasize the importance of Sustainable Development education, especially among postgraduate students in Pakistan. The rejection of the null hypothesis indicates that these students possess knowledge, maintain a positive attitude, and exhibit behavior consistent with Sustainable Development principles. Furthermore, there is a notable gap in knowledge, attitude, and behavior between PhD and MPhil students, suggesting the need for tailored educational approaches.

Educational Reform: Pakistan's education system should prioritize Sustainable Development education at the postgraduate level, emphasizing the development of a curriculum that fosters knowledge, a positive attitude, and sustainable behavior. This should include specific measures to bridge the knowledge gap between PhD and MPhil students.

Primary and Secondary Education: To cultivate a broader understanding of Sustainable Development and its principles, it is essential to integrate these concepts into the curriculum of primary and secondary schools. Training teachers to incorporate these ideas and monitoring students' sustainability practices are key strategies.

Workshops and Seminars: Hosting workshops and seminars for both teachers and students can help enhance their comprehension of Sustainable Development and inspire the integration of sustainable practices and values in the wider community.

Recommendations

1) Educational institutions should revise their postgraduate curricula to include courses related to Sustainable Development. This integration should be tailored to each level of postgraduate education, considering the knowledge gap identified.
2) Develop teacher training programs that prepare educators to incorporate Sustainable Development principles into their teaching methods. This will ensure that students at all levels receive a strong foundation in sustainable practices.
3) Collaborate with local communities and organizations to raise awareness about Sustainable Development. Organize events, campaigns, and initiatives that promote sustainability and environmental consciousness.
4) Given the shift towards sustainable energy sources, Pakistan should incentivize the adoption of renewable energy technologies. Government policies and initiatives should make these technologies more accessible and affordable for businesses and households.
5) Continuously assess the impact of these educational and awareness efforts to gauge progress and refine strategies. Sustainable Development indicators should be tracked and analyzed to ensure ongoing improvement.

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