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Research Article

Knowledge, Attitude, and Practice (KAP) on Green Behaviour: A Case of Norbuling Rigter College

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Abstract

Environmental sustainability has emerged as a major issue in higher education institutions since they can contribute to environmental awareness and responsible behaviour to a considerable degree. The model of knowledge, attitude, and practice (KAP) regarding environmental sustainability among students and employees of Norbuling Rigter College (NRC) in Bhutan is investigated. The key aim of the research was to determine the degree of environmental awareness, attitude to sustainability, and how they are translated into actual environmental behaviours.

Quantitative approach to research was applied with the help of a questionnaire in the structured framework of KAP. Three hundred and fifty-two respondents were sampled in NRC. The data was analyzed by descriptive statistics, correlation analysis, and regression analysis.

The results show that the respondents are characterized by high environmental knowledge and positive attitudes to sustainability. Respondents are very conscious about some of the environmental problems like climate change, waste management, energy conservation, and environmental commitments of Bhutan, including the constitutional requirement to have 60 percent forest cover, and the Bhutanese philosophy of Gross National Happiness in environmental terms. The second reason is that respondents are quite supportive of the green policies and the creation of the sustainable campus environment.

The outcomes, however, show that the environmental practices are rather moderate, which implies that there is a discrepancy between knowledge and attitudes and the real behaviour. Although most of the respondents have been concerned with simple measures like energy and water conservation, not many are involved in other measures, including recycling, the use of plastic, and environmental awareness campaigns. Correlation and regression findings also support the fact that knowledge and attitudes positively, though, rather weakly, influence the environmental practices.

The analysis shows that better institutional efforts, sustainability services, and campus participation plans are required to turn the awareness of the elements of the environment into the regular development of green behaviour at NRC.

Key words: *Green Behaviour, Norbuling Rigter College, KAP (Knowledge, Attitude, and Practice)*

Introduction

The issue of environmental sustainability has become one of the most burning issues in the global agenda of the 21st century, and higher learning institutions have become realized as one of the most important agents towards ensuring sustainable development(United Nations,2015)UNESCO, (2017). Colleges and universities do not merely produce knowledge, but they are also instrumental in influence of values, attitudes, and behaviours of future leaders(Sterling, S. (2004*)*. Inclusion of green behaviour and environmental awareness in higher education is, then, in the nature of the construction of sustainable societies (Cortese, A. D. 2003).

Institutions of higher learning across the world have adopted sustainability projects like green campus programs, waste management programs, and the adoption of renewable energy. These are aimed at emphasizing the role of academic communities in bringing change and influencing society. Meanwhile, sustainability is being incorporated in teaching, research, and campus activities at most universities, and the culture of environmental responsibility is being developed among students and employees.

The Bhutanese philosophy of development called Gross National Happiness (GNH) has environmental conservation and sustainability as a strong part of its four pillars, as ecological balance is deeply rooted in the development philosophy (Ura et al., 2012). Bhutan has long been viewed as a hero of environmental management, and a major part of the land is forested (more than 70% of the country is forested), and there is a constitutional requirement that at least 60 percent of the country remain forested indefinitely (Bhutan, 2008). The environmental policies, like the National Environment Protection Act and its dedication as a carbon-neutral country, further enhance its credentials as an environmentally friendly country.

Although these are national commitments, the translation of green values to daily practices at institutional levels, especially in higher education, is still a challenge (Disterheft, 2015). In Bhutan, formalized green policies and planned sustainability programmes are lacking in many colleges, among others, such as Norbuling Rigter College (NRC). Nevertheless, one should not undervalue the role of developing green behaviour among students and the staff (Kollmuss& Agyeman,2022). Since the youths spend a considerable portion of their lives in institutions of learning, colleges are in a better position to shape their knowledge, attitudes, and practices concerning environmental sustainability.

In the case of NRC, this is especially so since the college is trying to fit in with the vision of sustainable development of Bhutan. Although they do not spell out any formal green policies, there is growing awareness of the need to encourage sustainable practices, including less waste, less energy consumption, and the development of environmentally-friendly behaviour among college members. It is thus opportune to have the Knowledge, Attitude, and Practice (KAP) of NRC students and staff evaluated regarding green behaviour. It offers useful information regarding the current awareness of the environment, the desire to become sustainable, and the fact that there are behavioural gaps that should be bridged before formal policies are implemented successfully.

Problem Statement

The concept of environmental sustainability is gaining relevance in the higher education sector, with colleges and universities supposed to produce environmentally responsible citizens. The Gross National Happiness (GNH) is a national development philosophy in Bhutan that focuses on the protection of the natural environment as one of the pillars of development. Although this is a national commitment, there has been poor and unequal incorporation of sustainability in institutions of higher learning.

Norbuling Rigter College (NRC) has no established green policies and programs that would facilitate the practice of environmental sustainability at the moment. Although the college community might be more or less mindful of issues pertaining to the environment, there is no evidence to indicate how the knowledge is being converted into good attitude and action. It is still not clear how well students and staff members are informed

about the significance of green behavior, embrace sustainable practices and to what extent they are putting the practices in their everyday lives.

Such an absence of systematic knowledge introduces a great void. NRC does not have a clear understanding of what their students and staff members know, what they think, and how they do things (KAP) and therefore, it has difficulties in encouraging the employees and students to change their behaviour or develop effective green policies. Consequently, the chances of playing a role in the greater environmental objectives of Bhutan and inculcating sustainable values in future graduates can be lost.

Thus there is a need to evaluate the KAP of the NRC community over green behaviour. This evaluation will be more than just an establishment of the base information; it will also become a necessary step towards the establishment of the culture of a green campus and the construction of sustainability-oriented policies and practices within the college.

Research Objectives

(i) To assess the knowledge of students and staff about green behaviour.

(ii) To examine attitudes towards adopting green practices.

(iii) To analyze the actual practices of green behaviour at NRC.

(iv) To provide recommendations for developing green policies at NRC.

Research Questions

(i) What is the level of knowledge about green behaviour among NRC students and staff?

(ii) What are their attitudes towards environmental sustainability?

(iii) What practices of green behaviour are currently adopted at NRC?

(iv) What gaps exist between knowledge, attitude, and practice?

Significance of the study

This research is significantly important to Norbuling Rigter College (NRC) since it offers information that can be used to shape the future policy of the college. As NRC does not have official green policies at present, the results of the given research will be used to elaborate on the strategies and frameworks that will allow incorporating sustainability into campus life. The study will produce evidence that can be used to influence decision-making and aid in drafting the policies that are both realistic, relevant, and consistent with the needs of the institution and the national vision of Bhutan related to the environmental protection by determining the levels of the knowledge, attitudes, and practices (KAP) of the students and staff in relation to the green behaviour.

The research will also be instrumental in ensuring that the NRC community is aware and that a sustainable culture on the campus is promoted. Knowledge of weaknesses in the knowledge, attitudes, and behaviour of students and staff members on environmental sustainability will help assist the college to develop specific awareness programs, educational programs, and eco-friendly procedures. By so doing, NRC will be able to instil a culture of accountability in which sustainable practices will be made a usual routine, eventually turning the college into an example of other institutions of higher learning in Bhutan.

The study will contribute to the academic literature on the research topic of KAP studies in Bhutan's higher education, besides its institutional benefits. At the same time, Bhutan has excellent provisions on environmental

conservation policies at the national level, but little is done concerning the implementation of these policies at the micro level in colleges and universities.

Literature Review

As revealed in the research, demographic and scholarly variables, including age, living place, faculty positions, and major, play a pivotal role in determining knowledge, attitudes, and behaviours about the sustainability of a campus. It implies that the specific interventions are required to enhance the knowledge base of the students, promote positive attitudes in the faculty, and tackle the differences related to gender and discipline(Said et al., 2026).

The research presents useful empirical data that environmental knowledge and environmental awareness are highly important in determining the green behaviour of teachers, as the study indicates that the environmental behavioural intention, environmental attitude, and green commitment all have a mediating effect. Its use of a small sample (89 respondents) and self-reported survey data, however, could restrict the implications and causality of the results, indicating that larger and longitudinal studies should be conducted(Santos & Ramirez, 2022).

Past research about the Circular economy has posed an emphasis on the roles of education in enhancing knowledge, attitudes, and pro-environmental behaviours by students, and the ability to create awareness is a key element in sustainable behaviours. Nevertheless, there is a dearth of comparative studies on developed and developing nations, which suggests a knowledge gap regarding understanding cross-cultural differences in knowledge, attitude, and behaviour (KAB) of students regarding circular economy practice (Olech et al., 2025).

The study further shows that the attitude of teachers towards environmental education relates positively and significantly to the willingness to use environmental education, allowing one to believe that the greater the attitude, the greater the preparedness. Nonetheless, the moderate-low attitude and moderate-low levels of readiness, on the whole, suggest the necessity of more comprehensive training, institutional support, and outlined environmental education programs on the primary level (Karami et al., 2018).

The paper uses the ABC model to investigate the role of college students' attitudes in predicting waste separation behaviour, which shows that the knowledge has a significant positive impact on this behaviour, with the contextual factors moderating the relationship. The results also indicate the disparity in demography and the need to have institutional and environmental reinforcement to enhance sustainable waste management practices within the university campuses (Qu et al., 2023).

The research, with the foundations of the KAP model and Lewin model of behaviour, shows that despite rather positive attitudes towards waste separation expressed by the Chinese university students, their level of knowledge and practical application is lacking. The results point out that the exposures to education and the role of socio-demographic play a significant role in the waste-sorting behaviour, which implies that the environmental education and institutional support in campuses must be strengthened(Liu et al., 2024)

The paper shows that School Civic Clubs help primary school children considerably improve their environmental knowledge and attitudes, which is more productive than traditional classroom-based environmental education. The results prove the usefulness of informal, activity-based methods of developing environmental awareness and imply that such programmes might be effectively implemented in other nations (Ajiboye & Silo, n.d.)

The research demonstrates that young civil servants have good knowledge and attitudes concerning recycling, but their real recycling behaviours at their workplace are moderate. The results reveal that knowledge and attitudes serve as important predictors of recycling behaviour, indicating that specific interventions have the ability to overcome the disadvantages of youth that shape their views and attitudes towards recycling and turn them into agents of change within government offices and their communities(Besar et al., n.d.)

It is noted that considering waste management, green behavior, and hygiene in learning institutions has a positive effect on student well-being, and helps to achieve Sustainable Development Goal 3. It also highlights how interdisciplinary policies and curriculum strategies are required to instil sustainable practices, and also it highlights the gaps that require more research on how best to green and clean interventions in schools (Ekasari, 2024).

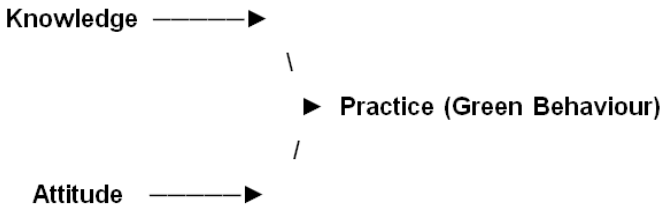
Using the research, it is shown that although teachers in secondary schools indicate that their attitudes and practices are mostly positive in relation to Green ICT, there is a general lack of knowledge in the domain. The results show that there exists a knowledge gap that should be filled to achieve sustainable adoption of ICT in the schools and enhance environmental consciousness among teachers and students(Adawiah Ahmad Rashid & Sukri Shafie, 2018).

The research reveals that the Malaysian students have excellent knowledge on environmental issues, yet this does not strongly correlate with sustainable behaviours, which means that attitude is a weak predictor of behaviours. Conclusions also lay stress on the significance of various media, education, and family in their effective communication of environmental messages and its encouragement of practical involvement in sustainability(Ismail & Ahmad, n.d.)

Conceptual Framework

This research is based on Knowledge Attitude Practices (KAP) model, which is extensively applied to environmental and behavioural studies to interpret the impact of the level of awareness and perceptions to the actual behaviour. According to the model, people initially learn something, which inform their attitudes which also determine their practices or behaviours.

Within the NRC green behaviour framework, the model is applied in examining how environmental awareness is translated into real practices by students and staff to make the company sustainable.



Knowledge - Practice

Students and staff members who are well-informed on environmental issues will have high chances of embracing sustainable behaviours. Such realization can be used as a powerful basis to take initiative in environmental activities.

Attitude - Practice

Developing a positive disposition towards sustainability -including an interest in the environment and willing to do something about it -may have a considerable influence on the actual behaviour. These attitudes should be encouraged so that the individuals can take significant actions towards sustainability.

Implicit Knowledge-Attitude Interlink.

Although this relationship has not been directly researched using regression analyses, it is apparent that knowledge is very instrumental in the development of attitudes. Through the improvement of knowledge, we are also able to change attitudes in a positive way and this will consequently lead to behaviour that will contribute towards sustainability.

According to conceptual framework and the research objectives, the null hypotheses that were established to test the relationships, differences, as well as predictive effects among knowledge, attitude and practice of green behaviour are as follows:

H_{01}: There is no significant relationship between knowledge and practice of green behaviour among NRC students and staff.

H_{02}: There is no significant relationship between attitude and practice of green behaviour among NRC students and staff.

H_{03}: There is no significant difference between knowledge and practice scores of green behaviour.

H_{04}: There is no significant difference between attitude and practice scores of green behaviour.

H_{05}: Knowledge and attitude do not significantly predict green behaviour practices.

H_{06}: Knowledge has no significant effect on green behaviour practices.

H_{07}: Attitude has no significant effect on green behaviour practices.

Research Methodology

The research approach was quantitative in nature where a structured questionnaire was used to gather information about students and staff at NRC. The questionnaire was aimed at testing three main constructs, which include knowledge, attitude, and practice concerning green behaviour. The answers were also noted on a Likert scale, which provides an opportunity to conduct mathematical analysis. There were 352 valid responses that were obtained and analysed with statistical software. The degree of knowledge, attitude, and practice were measured by the descriptive statistics and the inferential statistics including Pearson correlation, paired sample t-tests, and multiple regression were conducted to determine the relationship, differences, and predictive effects between variables.

Population and Sampling

The sample of this research includes students, faculty members, and administrative staff of NorbulingRigter College (NRC). The choice of these groups was because they are the most important stakeholders in the institution and will offer a variety of views that are pertinent to the study.

The sample size (352 respondents) was large enough to give sufficient representation and reliability of the findings. A stratified random sampling method was used to draw the sample as the population was segmented into three strata, namely students, faculty, and staff. The members of the groups were then randomly chosen respondents to ensure equal representation and to reduce bias in the sampling.

Data Collection Methods

The data were gathered through a structured questionnaire that measured three important dimensions, including primary data.

a. Knowledge (being aware and comprehending the subject matter)

b. Attitude (perceptions, beliefs, and opinions)

c. Practice (real behaviours and actions).

The questions were both closed-ended and Likert-scale, which made the questionnaire easy to quantify and statistically analyze.

Data Analysis

Preliminary Analysis

The analysis of reliability was done in order to determine the internal consistency of measurement scales of knowledge, attitude, and practice of green behaviour. The reliability measure used was Cronbach Alpha coefficient.

Knowledge scale: $\alpha = 0.82$

Attitude scale: $\alpha = 0.87$

Practice scale: $\alpha = 0.85$

The value of all Cronbach Alpha is above the recommended value of 0.70, and it means that the scales are reliable with all items being highly consistent. The reliability coefficients are high and indicate that the questionnaire has been used to measure what it is supposed to measure. Thus, it can be assumed that the data can be used in additional statistical analyses.

The Shapiro-Wilk test was done to test the normality of the data distribution of all variables (Knowledge, Attitude, and Practice Scores). The results were as follows:

Knowledge Score: $W = 0.991$, $p = 0.072$

Attitude Score: $W = 0.989$, $p = 0.053$

Practice Score: $W = 0.993$, $p = 0.081$

All the p-values are more than 0.05, meaning the normality is of the variables are confirmed.The above findings suggest that all three constructs have data that are normally distributed. As such, the statistical methods like Pearson correlation, paired sample t-tests, and multiple regression analysis are parametric techniques that can be used in this study.

Descriptive Statistics

- ✓ Frequencies and percentages to describe the characteristics of respondents.
- ✓ Means and standard deviations to measure central tendencies and variability.

Inferential Statistics

- ✓ Correlation analysis to investigate associations among knowledge, attitude and practice.
- ✓ Regression analysis to establish the effect of independent variables on the dependent variables.

Data analysis and findings

KAP Analysis

The following section presents the findings of the KAP analysis

Table 1 : Knowledge on Green Behaviour

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
1. I am familiar with the concept of green behavior and environmental sustainability.	352	1	5	3.98	0.758

2. I know that Bhutan's Gross National Happiness emphasizes environmental conservation.	352	1	5	4.49	0.649
3. I am aware of Bhutan's constitutional mandate to maintain 60% forest cover.	352	1	5	4.65	0.566
4. I understand how waste segregation benefits the environment.	352	1	5	4.50	0.632
5. I know about the harmful effects of single-use plastics.	352	1	5	4.42	0.631
6. I am aware of the importance of energy conservation in daily life.	352	1	5	4.41	0.602
7. I know the benefits of water conservation practices.	352	1	5	4.46	0.598
8. I am aware of renewable energy alternatives.	352	1	5	4.30	0.610
9. I know about Bhutan's carbon-3 pledge.	352	1	5	4.17	0.728
10. I am aware of climate change and its global impacts.	352	1	5	4.38	0.651
11. I know the role higher education institutions can play in promoting sustainability.	352	1	5	4.16	0.619
12. I am familiar with eco-friendly campus initiatives.	352	1	5	4.10	0.661
13. I know how recycling helps in reducing waste.	352	1	5	4.40	0.595
14. I am aware of NRC's current environmental practices.	352	1	5	3.89	0.705
15. I know that individual behavior contributes significantly to environmental protection.	352	1	5	4.32	0.646

The descriptive statistics show that students have a high level of awareness and have a positive attitude towards environmental sustainability. The most frequent mean scores as indicated by the five-point Likert scale, are 4.10-4.65, indicating that the respondents concur or strongly concur with the statements that are concerned with environmental knowledge and responsibility.

The statement with the maximum average score (M = 4.65, SD = 0.566) is the statement on awareness of the constitution of Bhutan to preserve 60-percent forest cover, which means that the students are highly aware of the environmental commitment by Bhutan. In a similar manner, the high mean values of items connected to

waste segregation (M = 4.50), Gross National Happiness and environmental conservation (M = 4.49), water conservation (M = 4.46) and the negative impact of single-use plastics (M = 4.42) indicate that the students have high environmental awareness and a positive attitude towards sustainable practices.

There are also moderately high mean scores of awareness concerning renewable energy alternatives (M = 4.30), impacts of climate change (M = 4.38), and individual behaviour role in environmental protection (M = 4.32). These data show that students are mostly aware of environmental issues that affect the world, and they recognize their role in taking care of the environment.

Nevertheless, familiarity with eco-friendly campus programs (M = 4.10) and awareness of the current environmental practices of NRC (M = 3.89) have comparatively low mean scores. These values, though pointing to consensus, imply that students might be less exposed to or less knowledgeable of certain institutional sustainability efforts than of more general environmental ideas.

Generally, the findings indicate that across the country, respondents are highly environmentally conscious and have a favorable affective orientation towards sustainability, but there can be more done to enhance the awareness of the students regarding the environmental activities and programs at the campus level.

Table 2 : Attitude Analysis on Green Behaviour

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
1. I believe environmental protection is crucial for Bhutan's future	352	2	5	4.57	0.586
2. I feel responsible for reducing my environmental footprint.	352	2	5	4.31	0.657
3. I think students and staff at NRC should participate actively in green practices.	352	1	5	4.37	0.687
4. I believe NRC should adopt formal green policies.	352	1	5	4.33	0.683
5. I feel that environmental education should be integrated into NRC's curriculum.	352	1	5	4.17	0.751
6. I am motivated to support waste segregation at NRC.	352	1	5	4.22	0.725
7. I believe reducing plastic usage is necessary for sustainability.	352	1	5	4.35	0.659
8. I am willing to participate in environmental campaigns at NRC.	352	1	5	4.10	0.787
9. I feel positive about adopting energy-saving behaviors.	352	1	5	4.26	0.654
10. I think small individual actions can make a big difference.	352	1	5	4.41	0.682
11. I support the idea of creating a green campus culture at NRC.	352	1	5	4.32	0.684

12. I believe environmental practices will improve the reputation of NRC.	352	2	5	4.25	0.727
13. I am willing to change my personal habits to be more eco-friendly.	352	2	5	4.19	0.671
14. I think NRC should allocate resources to promote sustainability initiatives.	352	1	5	4.27	0.643
15. I believe green behavior contributes to overall well-being and happiness.	352	3	5	4.34	0.615

The descriptive statistics focus on the fact that respondents are highly positive in terms of environmental sustainability and green practices. All item means are between 4.10 and 4.57 on a five-point Likert scale, indicating that the majority of the participants are in agreement or strongly agree with the statements concerning environmental responsibility, institutional policies and sustainable behaviour.

The maximum value (M = 4.57, SD = 0.586) of the statement that environmental protection is the key to the future of Bhutan is obtained, which means that the respondents consider the importance of environmental conservation highly and appreciate the need to protect the environment as a measure of the preservation of national sustainability. Likewise, the fact that the mean scores of the statements, like the belief that small personal actions can be of great help (M = 4.41), the necessity of students and staff to be actively involved in the green practices (M = 4.37), etc., are high indicates the sense of shared responsibility and the positive attitude towards the environment.

Respondents are also very supportive of institutional sustainability programs, which is evident in the high scores of response to the fact that they agree that NRC needs to embrace formal green policies (M = 4.33) and that it needs to establish a green campus culture (M = 4.32). Besides, the fact that the need to cut down on the use of plastics is part of sustainability (M = 4.35) and that green behaviour is part of well-being and happiness (M = 4.34) indicates that participants recognize the value of environmental practices to society and well-being and happiness.

There are moderately high mean scores on the statements concerning personal responsibility and behaviour change, including the perceptions of being responsible to decrease personal environmental footprint (M = 4.31) and having a desire to make personal habits more eco-friendly (M = 4.19). This implies that the respondents are generally ready to embrace environmentally friendly behaviours.

It is, however, that the mean scores on willingness to participate in environmental campaigns are relatively low at NRC (M = 4.10) and integration of environmental education into the curriculum (M = 4.17). Although those values also represent the agreement, it might be implied that some of the respondents are in need of more motivation, awareness, or a chance to participate in practical environmental activities.

Table 3 : Practice Analysis (daily behaviours, recycling, energy conservation, and waste management).

Particular	N	Minimum	Maximum	Mean	Std. Deviation
1. I switch off lights and electrical appliances when not in use.	352	1	5	4.54	0.715
2. I minimize paper usage by using digital alternatives.	352	1	5	4.01	0.842

3. I segregate my waste into biodegradable and non-biodegradable.	352	1	5	3.96	1.002
4. I avoid using singly-use plastics	352	1	5	3.59	0.945
5. I reuse items instead of throwing them away.	352	1	5	3.57	1.019
6. I recycle materials	352	1	5	3.19	1.125
7. I carry a reusable water bottle or bag or to reduce waste.	352	1	5	3.56	1.103
8. I participate in cleaning campaigns or environmental activities.	352	1	5	3.44	0.962
9. I encourage peers or colleagues to adopt green practices.	352	1	5	3.49	1.049
10. I use water responsibly and avoid wastage.	352	1	5	4.09	0.914
11. I plant trees or participate in plantation drives when opportunities arise.	352	1	5	3.24	1.038
12. I prefer walking or carpooling to reduce emissions.	352	1	5	3.47	1.029
13. I properly dispose of waste in designated bins at NRC.	352	1	5	4.22	0.891
14. I practice energy conservation in hostels/classrooms/offices	352	1	5	3.93	0.931
15. I actively support or volunteer in NRC's sustainability-related events.	352	1	5	3.60	0.976

The descriptive statistics on the practice-related items show that the respondents represent moderate levels of rather high environmentally responsible behaviour, though the mean scores are, however, lower, than the ones in the dimension of knowledge and attitude. The average scores are between 3.19 and 4.54 which means that not all respondents have the same level of environmentally friendly practices but the degree of continuous involvement in a particular activity is different.

The greatest mean (M = 4.54, SD = 0.715) is found in the practice of turning off lights and other electrical appliances when not used, and one of the most widely practiced behaviours among the respondents is seen to be energy conservation. In the same manner, comparatively good mean scores of proper waste disposal in specific bins at NRC (M = 4.22) and responsible water use (M = 4.09) show that the respondents are usually conscious of simple environmental habits in their daily activities.

The mean values of practices like reducing paper consumption with digital products (M = 4.01), waste segregation (M = 3.96), and energy conservation in the hostels, classes, or offices (M = 3.93) have moderate

values. These findings imply that most of the respondents practice these activities, but the practices might not be embraced by all those who practice them.

Nevertheless, the mean scores are comparatively lower in the practices regarding active environmental engagement and sustainable lifestyle habits. The example is that the engagement in recycling materials (M = 3.19) and the taking part in tree plantation events (M = 3.24) is relatively lower. In the same vein, the following behaviors are moderately practiced because they encourage the peers to become green (M = 3.49), attend environmental campaigns (M = 3.44), and walk or carpool to minimize emissions (M = 3.47).

Furthermore, all of the practices connected with the reduction of single-use plastics (M = 3.59), reuse (M = 3.57), and carrying reusable bags or bottles (M = 3.56) are also moderately adopted, and it may be necessary to further engender awareness, motivate people, or support these behaviors in order to make them more common.

Table 4: Gap Analysis

Correlations				
		Knowledge Score	Attitude Score	Practice Score
Knowledge Score	Pearson Correlation	1	.693**	.268**
	Sig. (2-tailed)		.000	.000
	N	352	352	352
Attitude Score	Pearson Correlation	.693**	1	.341**
	Sig. (2-tailed)	.000		.000
	N	352	352	352
Practice Score	Pearson Correlation	.268**	.341**	1
	Sig. (2-tailed)	.000	.000	
	N	352	352	352
**. Correlation is significant at the 0.01 level (2-tailed).				

Hypothesis Testing

H_{01}: There is no significant relationship between knowledge and practice of green behaviour among NRC students and staff.

Rejected($p = 0.000 < 0.01$)

H_{02}: There is no significant relationship between attitude and practice of green behaviour among NRC students and staff.

Rejected ($p = 0.000 < 0.01$)

The correlation test was done to determine whether high level of environmental knowledge can be translated into positive attitudes and sustainable practices by the respondents. The findings indicate statistically significant positive relationships between knowledge, attitude and practice scores at the level of significance of 0.01 ($p < 0.01$).

To begin with, Knowledge Score and Attitude Score have a strong positive correlation ($r = 0.693$, $p < 0.01$). It shows that the more the respondents are environmentally knowledgeable, the more they will demonstrate positive attitudes towards environmental protection and sustainability initiatives. Differently put, campaign consciousness on environmental matters has an important effect on the respondents' perceptions and their approval of green policies and sustainable behaviour.

Second, there is a positive, but weak correlation between Knowledge Score and Practice Score ($r = 0.268$, $p < 0.01$). Even though the correlation is significant, the coefficient of correlation is low, implying that an increased level of knowledge does not always ensure the continuity of environmental practices. This is a pointer to a perceived gap in knowledge-practice where the respondents have an awareness of issues related to the environment, but may not translate these issues into fully adopting sustainable behaviours in their everyday operations.

Third, there is a moderate and positive correlation between Attitude Score and Practice Score ($r = 0.341$, $p < 0.01$). This finding means that the respondents who have more favourable views on sustainability are a bit more inclined to practice environmentally friendly behaviour. Nevertheless, the fact that this relationship is moderate shows that positive attitudes do not ensure a consistent environmental behaviour on their own.

Paired Sample Comparison

Knowledge Vs Practice

The paired sample t-test results show a significant difference between knowledge and practice scores.

- Mean Knowledge Score = 4.3087
- Mean Practice Score = 3.7261
- Mean Difference = 0.58258
- $t = 16.238$, $p < 0.01$

The effect size is large (Cohen's $d = 0.865$), indicating a substantial difference between the two variables.

Hypothesis Testing

H_{03}: There is no significant difference between knowledge and practice scores of green behaviour.

Rejected ($p = 0.000 < 0.05$)

This finding shows that respondents share a lot of knowledge regarding the green behaviour, but they do not apply it in their practice to the best of their knowledge. The high effect size also confirms that there is a high level of knowledge-practice gap and awareness is not enough to elicit behaviour change.

Attitude Vs Practice

Similarly, a paired sample t-test was conducted to compare attitude and practice scores.

- Mean Attitude Score = 4.2966
- Mean Practice Score = 3.7261

- Mean Difference = 0.57045
- t = 15.868, p < 0.01

The effect size is also large (Cohen's d = 0.846).

Hypothesis Testing

H_{04}: There is no significant difference between attitude and practice scores of green behaviour.

Rejected (p = 0.000 < 0.05)

There appears to be a considerable discrepancy between the positive attitude towards green issues and actually taking positive step after indicating an enthusiastic attitude. Although people indicated at least an overall difference in their attitudes towards the environment, respondents did not necessarily act on those attitudes. The gap between the respondents' attitude and the actions they actually took reinforces that an attitude alone is not sufficient for behaviour change and that a mere attitude is not sufficient for behaviour change.

Regression Analysis (Predicting Green Practices)

Table 5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.344[a]	.118	.113	.60364
a. Predictors: (Constant), Attitude Score, Knowledge Score				

Table 6

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.054	2	8.527	23.401	.000[b]
	Residual	127.168	349	.364		
	Total	144.222	351			
a. Dependent Variable: Practice_Score						
b. Predictors: (Constant), Attitude_Score, Knowledge_Score						

Table 7

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.767	.324		5.453	.000
	Knowledge_Score	.088	.102	.060	.864	.388
	Attitude_Score	.368	.086	.299	4.293	.000
a. Dependent Variable: Practice_Score						

Hypothesis Testing

H_{05}: Knowledge and attitude do not significantly predict green behaviour practices.

Rejected(model is significant, p = 0.000)

H_{06}: Knowledge has no significant effect on green behaviour practices.

Failed to reject(p = 0.0388>0.05)

H_{07}: Attitude has no significant effect on green behaviour practices.

Rejected (model is significant, p = 0.000)

The regression model was employed to test the degree to which Knowledge Score and Attitude Score are predictive of Practice Score in regard to environmental sustainability.

According to the Model Summary, the correlation coefficient R = 0.344, and it suggests that there is a moderate positive relationship between the independent variables (knowledge and attitude) and the dependent variable (practice). This implies that there is positive relationship between knowledge and attitudes whereby environmental practices among the respondents.

The value of R Square of 0.118 suggests that the awareness and the attitude of the respondents towards environmental sustainability can explain about 11.8 percent of the variation in environmental practice. Differently stated, knowledge and attitudes help to explain a certain amount of sustainable behaviour, although a big percentage (88.2) of the variability of practice is also caused by other factors that were not discerned in the model, including institutional support, facilities availability, social influence, motivation or personal habits.

The Adjusted R Square value of 0.113 has a slightly adjusted power of the model to explain the number of predictors. This is an indication that the model still captures approximately 11.3% of the variance in environmental practices, to affirm that the predictive capabilities of the model are not very strong.

Also, the Standard Error of the Estimate (0.60364) shows the mean distance between the values of the observed and the predicted values of the dependent variable. A smaller value indicates quite a rational degree of prediction accuracy, but there is a certain range of environmental practices between the respondents.

In general, the regression findings indicate that knowledge and attitudes have a positive and weak impact on environmental practices. This result again substantiates the existence of a knowledge gap within practice, in that although the respondents might be highly aware and positive about environmental sustainability, these are not the only factors that should be translated into regular environmental behaviour. Other measures, including the practical engagements, environmental initiatives, and institutional support, might be needed to reinforce the sustainable behaviours at the institutional level.

Conclusion and Recommendations

This paper reviewed the knowledge, attitude, and practices (KAP) of environmental sustainability of respondents in Norbuling Rigter College (NRC). The results indicate that the respondents have high environmental knowledge and positivity towards sustainability. The majority of the respondents are very familiar with the environmental concepts, environmental policies of Bhutan, and the role of sustainable behaviour in the preservation of the natural resources.

The findings also indicate that the respondents are very supportive to the environmental protection and institutional sustainability initiatives. A significant number of participants hold that environmental activities matter towards the future of Bhutan, as well as encourage the establishment of a green culture in the campus of NRC.

The research, however, discovered that environmental practices are moderate, meaning that there is a gap in knowledge, opinion, and actual performance. Although basic activities that include turning off lights, water conservation, and waste disposal are common among respondents, more proactive sustainability practices, which include recycling, planting trees, and environmental campaigns, are comparatively less.

The correlation and regression analyses are also a confirmation that there is a knowledge-practice gap. Despite the substantial implication of knowledge on attitudes, the effect of knowledge and attitudes on environmental practices is less substantial. This implies that environmental awareness needs further institutional reinforcement and behavioural changes to ensure that environmental awareness is converted into stable, sustainable behaviours.

In general, the research demonstrates that the institutional efforts, viable sustainability initiatives, and active participation opportunities should be reinforced to ensure that the environmentally responsible behaviour is promoted among the NRC population.

Summary of key findings (KAP levels).

Implications for NRC (need for formal green policies, awareness campaigns, and capacity-building).

Recommendations:

According to the results of the research, the following recommendations are proposed to enhance the environmental sustainability practice in NRC:

1. Despite the fact that the respondents show a great level of environmental awareness, the college can also improve the awareness by providing seminars, workshops, and sustainability awareness campaigns to underline the practical course of environmental activities.

2. Environmental education can be encompassed throughout the various academic programs to persuade students to practice sustainability concepts in their academic life and day-to-day activities.

3. NRC can put it together in the form of a green campus program, which involves recycling, waste segregation, energy saving campaigns, and planting of trees.

4. To facilitate sustainable behaviour, the college is supposed to offer sufficient resources like recycling cans, waste segregation machines, water-saving devices, and low-energy-consuming machines.

5. Environmental clubs, green ambassadors, and voluntary programs can be used to stimulate student participation in green activities through participation in sustainability programs.

6. NRC can also contemplate the adoption of formal environmental policies and sustainability guidelines so that the environmental practices are uniform throughout the institute.

References

- Adawiah Ahmad Rashid, R., & Sukri Shafie, M. (2018). Green ICT and Environmental Sustainability: Awareness of Malaysian Teachers. *International Journal of Engineering & Technology*, *7*(4.38), 1012. https://doi.org/10.14419/ijet.v7i4.38.27628

- Alkire, S., Ura, K., Zangmo, T., & Wangdi, K. (2012). A short guide to gross national happiness index. *Thimphu: Centre for Bhutan Studies*

- Ajiboye, J. O., & Silo, N. (n.d.). *Enhancing Botswana Children's Environmental Knowledge, Attitudes and Practices through the School Civic Clubs*.

- Besar, T. A., Hassan, S. H., Bolong, J., & Abdullah, R. (n.d.). *Exploring the Levels of Knowledge, Attitudes and Environment- Friendly Practices Among Young Civil Servants in Malaysia*.
- Bhutan. (2008). *The constitution of the Kingdom of Bhutan*. Kuensel Corporation Limited.
- Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for higher education*, *31*(3), 15-22.
- Disterheft, A., Caeiro, S., Azeiteiro, U. M., & Leal Filho, W. (2015). Sustainable universities–a study of critical success factors for participatory approaches. *Journal of Cleaner Production*, *106*, 11-21.
- Ekasari, T. (2024). *Future-Ready Learning Through Clean Practices and Green Behavior: Linking Education, Waste Management, and Health Goals*. *2*(1).
- Ismail, N., & Ahmad, D. J. (n.d.). Investigating Students' Environmental Knowledge, Attitude, Practice and Communication. *Asian Social Science*. https://doi.org/10.5539/ASS.V11N16P284
- Karami, S., Bidhendi, M. E., & Naderi, M. (2018). *Assessment of Teachers' Attitude Toward Environmental Education and its Relevance to their Readiness to Educating Students (Case Study: Teachers of Primary School in Tehran City)*. *6*(4).
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental education research*, *8*(3), 239-260.
- Liu, S., Liu, X., Li, Y., Yang, D., Li, F., & Yang, J. (2024). College students' knowledge, attitudes, and practices of garbage sorting and their associations: A cross-sectional study of several universities in Beijing, China. *Frontiers in Public Health*, *12*. https://doi.org/10.3389/fpubh.2024.1328583
- Olech, I., Szczepaniak, I., Shrestha, R., & Bhattarai, P. C. (2025). A comparative study on knowledge, attitude, and behaviour of Polish and Nepali students towards the circular economy. *Economics and Environment*, *92*(1), 829–829. https://doi.org/10.34659/eis.2025.92.1.829
- Qu, D., Shevchenko, T., Esfandabadi, Z. S., & Ranjbari, M. (2023). College Students' Attitude towards Waste Separation and Recovery on Campus. *Sustainability*, *15*(2), 1–17.
- Said, M. H., Hamed, N. M., Haridy, D., Moustafa, S., Al-Ghtanyi, S., Metwally, D. S., & Abdel-Rahman, S. (2026). Determinants of knowledge, attitudes, and practices regarding campus sustainability: A field study at Cairo University. *Scientific African*, *31*, e03126. https://doi.org/10.1016/j.sciaf.2025.e03126
- Santos, L., & Ramirez, C. G. (2022). Effect of Environmental Knowledge and Awareness on Green Behavior: Testing Behavioral Intentions, Environmental Attitude, and Green Commitment as Mediators. *The Normal Lights*, *16*(2). https://po.pnuresearchportal.org/transitionwebsite/index.php/thenormallights/article/view/35
- *Sterling, S. (2004). Higher education, sustainability, and the role of systemic learning. In P. B. Corcoran & A. E. J. Wals (Eds.), Higher education and the challenge of sustainability (pp. 49–70). Dordrecht: Kluwer Academic Publishers. - Google Search*. (n.d.). Retrieved March 20, 2026, from
- *UNESCO. (2017). Education for Sustainable Development Goals: Learning objectives. UNESCO Publishing—Google Search*. (n.d.). Retrieved March 20, 2026
- *United Nations (2015) Transforming Our World. The 2030 Agenda for Sustainable Development. - References—Scientific Research Publishing*. (n.d.). Retrieved March 20, 2026, from https://www.scirp.org/reference/referencespapers?referenceid=3022399