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Student perception and effectiveness of eco-club initiatives in biodiversity conservation at Isabella Thoburn College, Lucknow, Uttar Pradesh, with special reference to National Cadet Corps (NCC)

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Abstract
Environmental education plays a crucial role in promoting biodiversity conservation among young individuals. The present study evaluates student perception and the effectiveness of eco-club initiatives in biodiversity conservation at Isabella Thoburn College, Lucknow, Uttar Pradesh, with special reference to National Cadet Corps (NCC) cadets. A questionnaire-based survey was conducted among 80 NCC cadets to assess their biodiversity awareness, participation in eco-club activities, and behavioural changes associated with environmental initiatives. Descriptive statistical methods including frequency distribution, percentage analysis, mean, and standard deviation were applied for data analysis. The results indicate that 62.5% of respondents reported good to very good awareness of biodiversity conservation, with a mean awareness score of 3.65. Participation in eco-club activities was reported by 67.5% of students, with plantation drives, awareness campaigns, and cleanliness drives being the most common activities. A majority of respondents also reported positive behavioural changes such as plant maintenance, reduced littering, and decreased use of single-use plastics. The findings highlight the significant role of eco-clubs and NCC in enhancing environmental awareness and encouraging student participation in biodiversity conservation within higher educational institutions.

Keywords: Biodiversity conservation, eco-club initiatives, environmental awareness, student perception, national cadet corps (NCC), environmental education

Introduction

Educational institutions therefore play an important role in promoting ecological awareness and encouraging responsible environmental behaviour among students (Ding, 2025) [1]. Environmental education increasingly emphasizes experiential learning approaches that enable students to engage directly with nature and conservation activities (Pizzutto *et.al.,*2021) [6]. In India, Eco-Clubs have emerged as an effective platform for promoting environmental awareness and student participation in biodiversity conservation. These clubs organize activities such as plantation drives, biodiversity awareness programs, waste management initiatives, and community outreach efforts, helping students develop ecological knowledge, environmental values, and leadership skills.

The National Cadet Corps (NCC) also contributes significantly to youth engagement in environmental and social initiatives (Roberts, N. S. 2009) [9]. NCC cadets frequently participate in conservation campaigns, environmental awareness programs, and sustainability activities. The integration of NCC participation with eco-club initiatives can strengthen environmental education by combining leadership, discipline, and community engagement with practical conservation actions.

Isabella Thoburn College, Lucknow, actively promotes environmental sustainability through its eco-club activities and NCC unit (Huoponen *et.al.,*2024) [3] which organize various awareness and conservation programs for students. Evaluating students' perceptions and participation in such initiatives is important for understanding their effectiveness.

Therefore, the present study aims to assess student perception and the effectiveness of eco-club initiatives in promoting biodiversity conservation (Puri *et.al.,*2017) [7] among NCC cadets at Isabella Thoburn College, Lucknow. The study examines students' awareness levels, participation patterns, and behavioural changes associated with eco-club activities (Selvakumar, M. P. 2025) [10]

Study Area

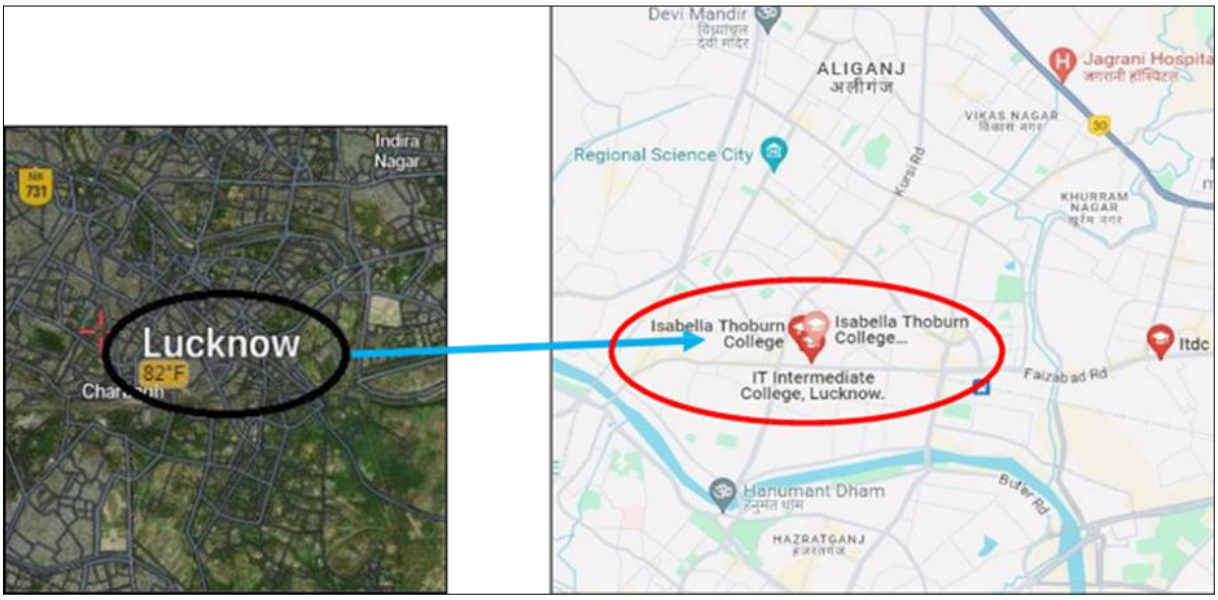
The current research took place at Isabella Thoburn College in Lucknow, Uttar Pradesh, India. It is named after Isabella Thoburn, who founded it and was the first American woman to sail as a Methodist Episcopal Church missionary in India in 1869. When the college opened in 1870, there were only six female students enrolled. The college is currently connected to the University of Lucknow. Isabella Thoburn College is one of the oldest and most respected women's colleges in the region.

- ITC actively promotes environmental sustainability through its eco-club, NCC unit, and various student-led initiatives. Activities include plantation drives, biodiversity awareness campaigns, cleanliness programs, environmental celebrations, and community outreach initiatives.

Materials and Methods

Methodology

The present study adopts a survey-based research design to assess student perception and the effectiveness of eco-club initiatives in biodiversity conservation at Isabella Thoburn College, Lucknow, with special reference to the National Cadet Corps (NCC). A questionnaire-based approach was employed to collect primary data from NCC students, focusing on their awareness, perception, and participation in student-led biodiversity initiatives.



(**Source:** satellites.pro) **Map 1:** Showing satellite map of Isabella Thoburn College.

Data Collection Methods

1. Questionnaire Survey (Primary Method)
2. Secondary Data Collection - collected from:

- NCC 6-Month Report

Data Analysis

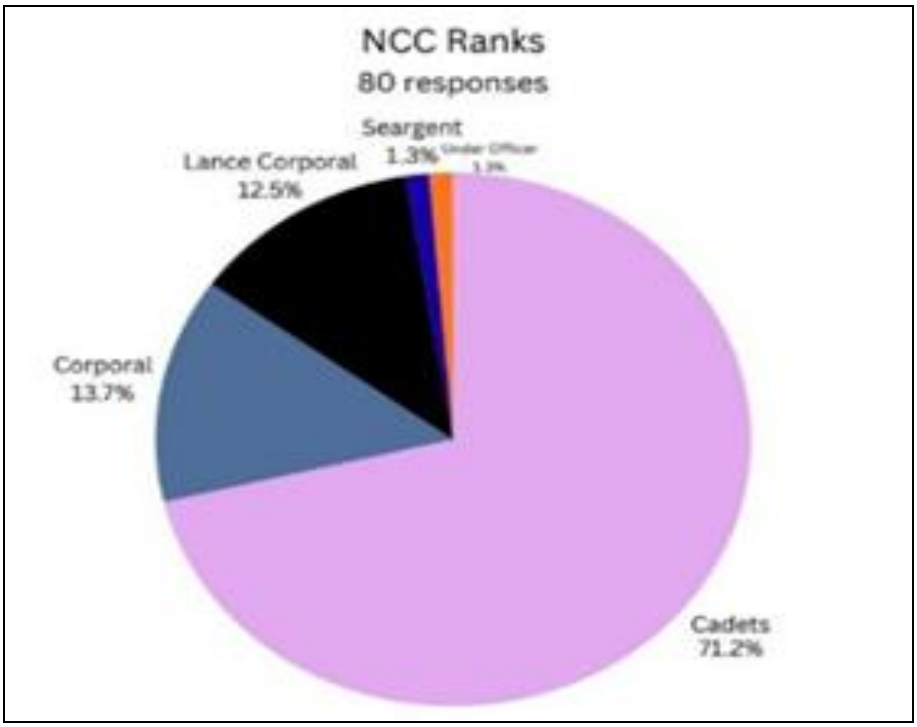
Data were analysed using descriptive statistical methods, including frequency and percentage analysis. Graphical visualization was used to interpret trends and relationships.

Observations

The present study integrates primary data (collected through questionnaires, observations, and participation records) and secondary data (NCC 6-Month Report) to evaluate the effectiveness of eco-club initiatives at Isabella Thoburn College, with special reference to NCC involvement.

Table 1: Representing Respondent Category Distribution

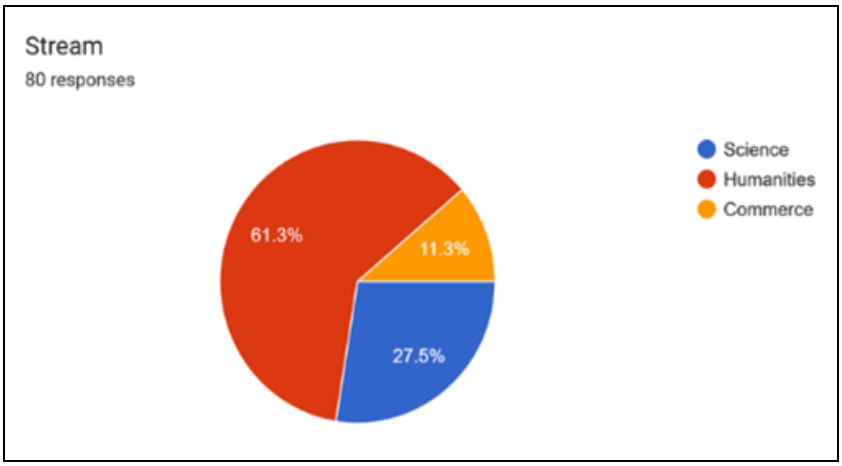
NCC RANK	NUMBER OF CADETS	%
CADET	57	71.3
CORPORAL	11	13.7
LANCE CORPORAL	10	12.5
SEARGENT	1	1.3
UNDER OFFICER	1	1.3
TOTAL	**80**	**100**



Graph 1: Showing total numbers of responses according to the Distribution of the Ranks

Table 2: Representing Academic Stream Distribution

STREAM	NUMBER OF CADETS	%
Humanities	49	61.3
Science	22	27.5
Commerce	9	11.3
Total	80	100



Graph 2: Showing distribution of respondents based on their academic stream out of which 61.3% respondents – Humanities stream followed by the Science stream 27.5% & the Commerce stream 11.3%,

Table 3: Showing Student Awareness Level on Biodiversity Conservation

Awareness Level	Percentage (%)
High Awareness	45%
Moderate Awareness	30%
Low Awareness	25%

The results indicate that 75% of students possess moderate to high awareness, reflecting the positive impact of eco-club activities, awareness campaigns, and NCC-led initiatives.

Table 4: Participation in Eco-Club and NCC Activities

Participation Category	Percentage (%)
Active Participation	68%
Occasional	20%
Non-Participation	12%

A majority of students (68%) actively participated in eco-club and NCC activities, with NCC cadets demonstrating higher engagement levels due to structured training and institutional discipline.

Table 5: Effectiveness of Eco-Club Initiatives

Perception Level	Percentage (%)
Highly Effective	50%
Moderately Effective	30%
Less Effective	20%

Around 80% of students perceive eco-club initiatives as effective, indicating their role in improving environmental awareness, practical knowledge, and conservation behavior.

Role of NCC in Enhancing Eco-Club Effectiveness: NCC cadets were observed to play a key role in organizing, managing, and leading eco-club activities, contributing to higher participation rates and better execution of programs.

Observations Based on Secondary Data (NCC 6-Month Activity Report – 2025 - 2026)

Table 6: showing Environment and Biodiversity Related Activities Conducted by NCC Cadets (2025–26)

SN.	Activity	Date	Nature of Environmental Component	No. of Participants
1.	World River Day	Sept. 2025	River conservation awareness	78
2.	Swachhta Abhiyan (Cleanliness Drive)	Sept. 2025	Waste management & sanitation	43
3.	Run for Unity	Oct. 2025	Environmental & social awareness	43
4.	Hornbill Festival – Nukkad Natak	Jan. 2026	Wildlife & biodiversity awareness	52
5.	Awareness Campaigns & Poster Presentations	Multiple dates	Environmental education	50+

Result and Discussion

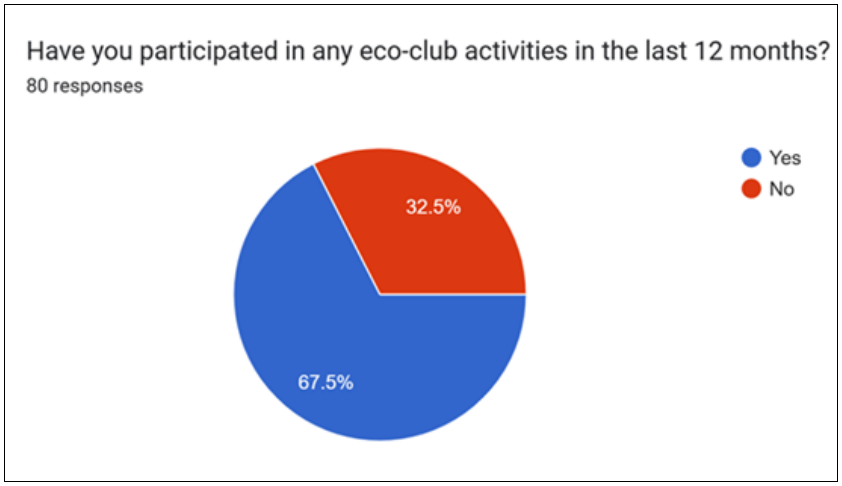
The study conducted at Isabella Thoburn College revealed important patterns in student awareness, participation, and perception regarding eco-club initiatives and biodiversity conservation.

A majority of students demonstrated a satisfactory level of awareness, with nearly three-fourths of respondents falling under moderate to high awareness categories. This indicates that environmental education and eco-club initiatives have contributed positively to knowledge dissemination among students. However, a noticeable proportion of students still exhibited low awareness, suggesting gaps in outreach.

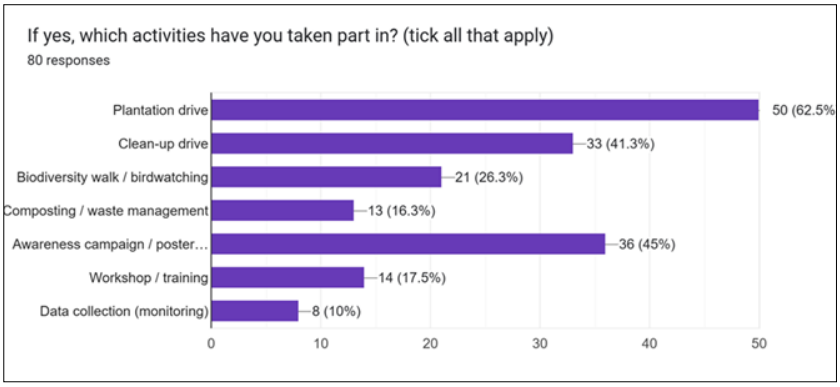
Participation levels in eco-club and NCC activities were relatively high, with more than half of the students actively engaged, while a smaller proportion participated occasionally (Graph.1.). A limited percentage of students remained non-participative, indicating scope for broader inclusion.

Among the various eco-club activities, Plantation Drives recorded the highest student involvement, followed by awareness campaigns and clean up drives (Graph.2.). Outreach activities showed comparatively lower participation. The role of NCC was found to be significant, with a large proportion of cadets actively involved in eco-club initiatives. Many NCC students assumed leadership roles, indicating their contribution to organizing and executing conservation activities.

In terms of perception, most students considered eco-club initiatives to be effective in promoting environmental awareness and conservation behaviour, while a smaller proportion perceived them as less effective.



Graph 3: Showing Participation of Cadets in Eco-Club and NCC Activities



Graph 2: Showing Participation of Cadets in different types of Eco-Club Activities

Discussion

The findings of the present study highlight the growing importance of eco-club initiatives in enhancing environmental awareness and participation among students. The relatively high level of awareness observed among students suggests that campus-based programs are effective in sensitizing young individuals towards biodiversity conservation.

The active participation of students, particularly through structured platforms such as NCC, indicates that institutional frameworks play a crucial role in promoting environmental engagement. NCC cadets demonstrated higher levels of involvement and leadership, which may be attributed to their training, discipline, and exposure to community-oriented activities. This aligns with the idea that structured youth organizations can significantly strengthen conservation initiatives.

The predominance of awareness programs as the most participated activity suggests that knowledge-based interventions are more accessible and appealing to students. However, comparatively lower participation in outreach activities indicates a need to encourage field-based and community engagement programs, which are essential for translating awareness into action.

The balanced reliance on participation levels also reflects varying degrees of student motivation and interest. The presence of non-participating students highlights the need for more inclusive approaches, such as integrating eco-club activities with academic curricula and incentivizing participation.

Student perception regarding the effectiveness of eco-club initiatives was largely positive, indicating that these programs are successful in fostering environmental responsibility. However, the presence of a segment perceiving limited effectiveness suggests the need for improving the quality, frequency, and impact assessment of activities.

Overall, the study demonstrates that eco-club initiatives, particularly when supported by NCC, serve as effective tools for promoting biodiversity conservation awareness in urban campus ecosystems. Strengthening these initiatives through better planning, wider participation, and practical engagement can further enhance their impact.

Conclusion

This study assessed student perception and the effectiveness of eco-club initiatives in promoting biodiversity conservation at Isabella Thoburn College, with special reference to the role of the National Cadet Corps (NCC).

The results indicate:

- High level of biodiversity awareness among students (~75%)
- Strong positive perception towards eco-club initiatives (~80%)
- Active student participation in conservation activities (~68%)
- Significant role of NCC in leadership and execution of activities (~88% involvement)

Graphical analysis highlights that while awareness and perception levels are high, participation - though substantial - still requires further strengthening for broader inclusivity. Eco-club initiatives have proven effective in enhancing environmental knowledge, fostering responsible behavior, and encouraging student engagement in conservation practices.

The involvement of NCC has played a crucial role in improving participation, leadership, and discipline among students, thereby increasing the overall effectiveness of eco-club programs.

However, the study also indicates the need for:

- Greater inclusion of non-participating students
- Strengthening outreach and field-based activities
- Integration of eco-club initiatives into academic frameworks

Overall, educational institutions serve as vital platforms for promoting biodiversity conservation. Strengthening eco-club initiatives, supported by structured programs like NCC, can significantly contribute to sustainable environmental management and long-term conservation awareness among students.

Acknowledgement

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