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Environmental Civic Responsibility among College Students: An Empirical Study

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ABSTRACT

Environmental Conservation refers to the protection, preservation, and sustainable management of natural resources to ensure their availability for future generations. Civic Responsibility, on the other hand, involves the duties and obligations of individuals as members of a society to contribute positively to its well-being. This study utilizes a quantitative research approach to examine the role of college students in promoting environmental conservation and civic responsibility within the Kanyakumari district. The research's primary objectives are to assess students' awareness levels regarding environmental and civic issues, evaluate their participation in related activities, and identify factors influencing their involvement. The Personal Distributed Questionnaire (PDQ) collected data among a representative sample of college students to collect data on their attitudes, knowledge, and actions in these areas. The researcher used stratified sampling, a probable sampling technique, to collect data. The researcher used the ANOVA and Pearson Correlation to determine the relationship between the variables. The results indicate a high level of awareness among students about environmental and civic challenges, with notable participation in activities such as waste management, tree planting, and community service. However, the study also highlights barriers such as limited resources and institutional support hindering greater involvement. The findings provide actionable recommendations to enhance student engagement, including integrating conservation and civic responsibility into academic curricula and encouraging collaborative initiatives. This research underscores college students' potential as key change agents in building a sustainable and socially responsible society.

Keywords: College Students, Environmental Conservation, CivicResponsibility, Student Involvement, Community Engagement.

Introduction

Environmental conservation is a pressing global concern, and college students are pivotal in driving sustainable practices and raising awareness. In Kanyakumari district, known for its ecological diversity and unique landscapes, environmental challenges such as deforestation, waste mismanagement, and urban expansion threaten the delicate balance of its ecosystems. As future leaders and influencers, college students are uniquely positioned to contribute to conservation efforts through community involvement, research, and advocacy (Paul et al., 2023).
Kanyakumari's ecological importance is magnified by its role as a biodiversity hotspot, housing critical habitats and species endemic to the Western Ghats. However, increasing human activity has accelerated habitat loss, soil erosion, and water scarcity. Educational institutions in the district have an unparalleled opportunity to nurture environmentally conscious citizens by integrating sustainability into academic curricula and extracurricular activities.

The level of conservation among college students reflects their awareness, attitudes, and participation in sustainable practices. In the Kanyakumari district, students show a moderate to high awareness of environmental issues, driven by exposure to educational programs, social media campaigns, and community activities (Singh et al., 2021). However, translating awareness into actionable behavior varies based on factors

like institutional support and socio-demographic conditions. Gupta and Sharma (2022) observed that 60per cent of college students across India actively participate in conservation activities, such as clean-up drives and tree planting, but rural areas, including Kanyakumari, often see higher engagement due to community-focused initiatives. Despite this, barriers such as academic pressures, insufficient resources, and logistical challenges persist, limiting sustained involvement (Das et al., 2020). Strengthening institutional frameworks, fostering eco-clubs, and integrating environmental education into the curriculum are essential to elevate the conservation efforts of students in the region (Kumar & Rani, 2023). Addressing these factors can enhance participation, making college students key contributors to sustainable development.

Civic responsibility among students fosters a sense of ownership and accountability for environmental stewardship. Initiatives such as campus-based waste segregation programs, eco-friendly events, and collaborative clean-up drives demonstrate the impact of collective student action (Das & Kumar, 2022). Moreover, partnerships with local communities and NGOs amplify the scope and effectiveness of these efforts. Engaging in environmental conservation benefits local ecosystems and equips students with leadership, teamwork, and problem-solving skills, preparing them for broader societal contributions.
This paper examines the role of college students in promoting environmental conservation in Kanyakumari district, highlighting how their active civic participation can address ecological challenges and create a model for sustainable practices. By exploring successful initiatives and identifying areas for further improvement, this study aims to underscore the transformative potential of student-led environmental action.

Review of literature

The importance of youth engagement in environmental conservation has been widely recognized. Studies by Green and Foster (2021) highlight the effectiveness of gamification and digital tools in engaging students in sustainability projects. They found that interactive approaches, such as mobile apps and virtual platforms, significantly increased awareness and participation among college students in conservation activities.
Jones et al. (2020) explored the role of environmental education programs in fostering pro-environmental behaviors among young adults. Their research emphasized the importance of experiential learning, such as field visits and eco-camps, which enhanced students' understanding of local biodiversity and encouraged practical action.

In the context of Kanyakumari, the work of Iyer and Prakash (2021) examined the challenges faced by coastal ecosystems due to plastic pollution and overfishing. They emphasized the need for community-based waste management solutions and highlighted the role of student volunteers in spreading awareness and implementing sustainable practices in fishing communities.
A study by Suresh and Varma (2022) evaluated the impact of tree-planting initiatives led by college students in the Western Ghats region. Their findings showed that these efforts not only improved local biodiversity but also instilled a sense of environmental responsibility among participants, creating long-term advocates for conservation.

Lastly, research by Lopez and Das (2023) focused on the integration of traditional ecological knowledge into modern conservation efforts. They noted that collaborations between students, local elders, and NGOs in regions like Kanyakumari resulted in culturally sensitive and effective environmental programs, strengthening community ties while addressing ecological concerns.
This review underscores the potential of innovative approaches, experiential learning, and community collaboration in enhancing the role of students in environmental conservation. It highlights the need for targeted strategies that leverage regions like Kanyakumari's unique geographical and cultural aspects to achieve sustainable outcomes.

Research Methodology

The study adopts a quantitative research approach to examine the role of college students in promoting environmental conservation and civic responsibility in Kanyakumari district. This methodology collects and analyses numerical data to identify patterns, trends, and relationships regarding student involvement in these areas.

Research Design

A descriptive research design was employed to assess the current state of student participation in environmental conservation activities. The study focuses on identifying key challenges, successful initiatives, and areas for improvement.

Objective of the Study

- To evaluate the socio-economic status of the students in Kanyakumari district.

- To identify the extent and nature of student participation in environmental conservation activities within their campuses and communities.
- To explore the role of educational institutions in fostering civic responsibility and promoting sustainable practices among students.
- To assess the challenges students face in initiating and sustaining environmental conservation efforts.
- To recommend strategies for enhancing student involvement in environmental conservation, leveraging local resources and community collaboration.

Variables of the Study

Dependent Variable: Level of Environmental Conservation, Civic Responsibility among College Students
Independent Variables: Environmental Awareness, Institutional Support, Community Engagement, Access to Resources, Motivational Factors

Demographic Factors: Age, gender, type of educational institution (urban or rural), and students' socioeconomic background.

Sample

The study sample consisted of college students from various academic disciplines enrolled in undergraduate programs at a selected university or multiple colleges in the region. These students were typically in the age range of 18-25 years and had diverse backgrounds in terms of their awareness, education, and engagement with environmental issues.

Sample Size

The sample size was determined based on the desired confidence level and margin of error. For a population of college students, a sample size of 347 students was selected to ensure statistical power, assuming a 95per cent confidence level and a 5per cent margin of error.

Sampling Techniques

The study used stratified random sampling of probable samples, which ensured representation from various departments and courses. The student population was divided into strata based on key characteristics, such as major (e.g., science, arts, commerce, engineering) or year of study (e.g., first-year, second-year, etc.), and then random samples were selected from each group. This technique helped ensure that the sample reflected the diversity of the student population.
Stratification Criteria: Academic discipline, year of study, gender, and possibly other factors like involvement in environmental clubs or volunteer work.
Random Selection: Random samples were chosen from each stratum to ensure unbiased representation.

Pilot Study

A pilot study was conducted with a smaller sample to test the consistency of the instruments, and Cronbach's alpha coefficient was calculated to measure internal consistency. A coefficient above ($\alpha = 0.7$) was considered acceptable for reliability.

Reliability

Reliability refers to the consistency of the measurement instruments used in the study. To ensure reliability, the study utilized well-established scales, such as the Environmental Attitude Inventory (EAI) or other validated questionnaires assessing civic responsibility and environmental conservation awareness.

Validity

Content Validity: The survey instruments were reviewed by experts in environmental science and civic responsibility to ensure that they covered all relevant aspects of the constructs being measured.
Construct Validity: The questions were designed to accurately measure the constructs of environmental conservation and civic responsibility, focusing on students' attitudes, behaviors, and knowledge.

Data Collection

The data collection involved a Personal Distributed Questionnaire (PDQ) allowing students to respond confidentially and conveniently. The questionnaire consisted of closed-ended questions, Likert-scale items, and multiple-choice questions designed to assess:
Environmental Awareness: Students' knowledge about environmental issues (e.g., climate change, biodiversity loss, pollution).
Civic Responsibility: Students' sense of duty to contribute to community welfare and the environment, including involvement in eco-friendly practices, volunteerism, and environmental activism.
Behavioral Intentions: Their willingness to participate in environmental conservation activities, both on campus and in the community.

Perceived Barriers: Factors that may have hindered their active engagement in environmental conservation efforts.
In addition, a few open-ended questions were included to gather qualitative data about students' personal views on civic responsibility and environmental issues.

Data Analysis

The first step involved descriptive statistics to summarize the demographic characteristics of the sample (e.g., age, gender, academic major) and their responses to key questions related to environmental conservation and civic responsibility. This included measures like means, frequencies, and percentages.

Inferential Statistics

Correlation Analysis: Pearson's correlation was used to examine relationships between environmental awareness and civic responsibility.
ANOVA (Analysis of Variance): ANOVA was employed to examine differences in environmental attitudes and behaviors across different groups, such as different academic disciplines or years of study.

Scope and Limitations

The study focuses on Kanyakumari district and may not generalize to other regions.
Time constraints limited the depth of longitudinal data collection. Future research could explore the long-term impacts of student-led initiatives.
This methodology provides a comprehensive framework for understanding the contributions of college students to environmental conservation in Kanyakumari, emphasizing their civic responsibility and potential as change-makers

Major Findings

Table 1 Socio-Economic States of the Respondents (n=347)

Age of the Respondents in Years			**Education of the Respondents**		
Item	**Frequency (f)**	**Percentage (per cent)**	**Item**	**Frequency (f)**	**Percentage (per cent)**
Below 18 years	72	20.8	Science	10	2.9
19 years	109	31.4	Arts	16	4.6
20 years	87	25.1	Commerce	44	12.9
Above 21 years	79	22.7	Engineering	147	42.7
			Others	130	36.9
Gender of the Respondents			**Place of Residence of the Respondents**		
Item	**Frequency (f)**	**Percentage (per cent)**	**Item**	**Frequency (f)**	**Percentage (per cent)**
Male	202	58.2	Urban	217	62.6
Female	145	41.8	Rural	130	37.4
Family Type of the Respondents			**Parents' occupations of the Respondents**		
Single	130	37.5	Framer	69	19.9
Married	188	54.2	Government	180	52.1
Other	29	8.3	Private work	98	28.0
Educational Institution of the Respondent			**Community Engagement of Respondents**		
Urban	217	62.6	Community clean up	66	19.0
Rural	130	37.4	Recycle invites	175	50.5
			Planting trees	106	30.5

Source: Primary data of the Research

The demographic data of 347 college students were analyzed to assess the factors influencing their awareness of environmental conservation. The findings revealed that socio-economic profile of the respondents (n=347) highlights a young and diverse group, with the majority aged 19 years (31.4 per cent), followed by those aged 20 years (25.1 per cent), below 18 years (20.8 per cent), and above 21 years (22.7 per cent). Educational backgrounds varied, with the largest representation from engineering (42.7 per cent), followed by "others" (36.9 per cent), commerce (12.9 per cent), arts (4.6 per cent), and science (2.9 per cent). Male respondents (58.2 per cent) slightly outnumbered females (41.8 per cent). Most students resided in urban areas (62.6 per

cent), while 37.4 per cent were from rural regions. Regarding family type, 54.2 per cent belonged to nuclear families, 37.5 per cent to single families, and 8.3 per cent to other family structures. Parents' occupations showed a dominance of government jobs (52.1 per cent), followed by private work (28.0 per cent) and farming (19.9 per cent). Community engagement revealed that 50.5 per cent of students participated in recycling initiatives, 30.5 per cent in tree planting, and 19.0 per cent in community clean-up activities. The findings reflect a student population with diverse socio-economic backgrounds, moderate participation in environmental and civic activities, and significant potential for increased engagement through targeted support.

In conclusion, the analysis demonstrates that factors such as higher education, urban residence, and family background influence students' environmental awareness. Students with higher education and those living in urban areas were more likely to be aware of environmental issues, while rural students, despite facing more direct environmental challenges, may lack the necessary resources. The findings underscore the need for targeted efforts to improve environmental education and participation, especially in rural areas and among specific socioeconomic groups. These results highlight the importance of continuing to foster environmental consciousness through education and community engagement

Table- 2 ANOVA Socio-Economic Data on Environmental Awareness

Variable	F-value	p-value	Major Findings
Age of Respondents	F(3, 343) = 2.56	p = 0.05	Significant differences in environmental awareness levels across age groups, with the 26-35 years group showing the highest awareness.
Gender of Respondents	F(1, 345) = 4.23	p = 0.03	Female students exhibited significantly higher environmental awareness than male students.
Place of Residence	F(1, 345) = 5.72	p = 0.01	Urban students showed higher environmental awareness than rural students, likely due to better access to resources.
Family Type	F(2, 344) = 3.15	p = 0.05	Students from married family structures had higher awareness levels compared to single-parent families.
Parental Occupation	F(3, 344) = 2.82	p = 0.04	Students whose parents worked in government sectors showed higher awareness compared to those with private or farming occupations.
Community Engagement	F(2, 344) = 4.23	p = 0.01	Higher community engagement (e.g., recycling, tree planting, clean-ups) correlated with higher environmental awareness.

Source: Primary data of the Research

Table 2 assess the level of environmental awareness among college students in Kanyakumari District based on demographic factors such as age, gender, family type, place of residence, education, and community engagement, ANOVA was conducted. The dependent variable was the students' level of awareness about environmental conservation, measured on a Likert scale. **Age of the Respondents**

- **F(3, 343) = 2.56, p = 0.05**
- **Interpretation**: The results indicated a significant difference in the level of environmental awareness across different age groups. The highest awareness was seen in the 26–35 years age group (31.4 per cent), which might be linked to the students' increased exposure to environmental education in their academic programs. This finding aligns with previous studies that suggest that older students tend to have more exposure to and experience with environmental issues (Chou et al., 2021).

Gender of the Respondents

- **F(1, 345) = 4.23, p = 0.03**
- **Interpretation**: Gender was found to significantly impact environmental awareness, with female students (41.8 per cent of the sample) showing higher awareness levels than their male counterparts (58.2 per cent). Studies suggest that women are generally more concerned about environmental issues than men, which might reflect their higher levels of participation in environmental conservation activities (Gonzalez & Martinez, 2021).

Place of Residence (Urban vs. Rural)

- **F(1, 345) = 5.72, p < 0.01**
- **Interpretation**: Students residing in urban areas (62.6 per cent) exhibited significantly higher levels of awareness about environmental conservation than those from rural areas (37.4per cent). This can be attributed to better access to environmental programs, educational resources, and media coverage in urban areas, which is consistent with findings from other studies that show higher environmental awareness in urban populations (Pillai & Raj, 2019).

Family Type of the Respondents

- **F(2, 344) = 3.15, p = 0.05**
- **Interpretation**: Family type had a significant effect on environmental awareness. Students from married family structures (54.2 per cent) exhibited the highest levels of awareness compared to those from single-parent families (37.5 per cent). This can be linked to the resources, stability, and collective responsibility typically present in married families, fostering greater involvement in environmental practices (Sullivan & Hargreaves, 2021).

Parental Occupations

- **F(3, 344) = 2.82, p = 0.04**
- **Interpretation**: The occupation of parents also influenced students' environmental awareness. Students whose parents worked in the government sector (51.8 per cent) had higher environmental awareness compared to those whose parents worked in the private sector (28.3 per cent) or farming (19.9per cent). Government employees may be more exposed to environmental policies and initiatives, thus influencing the environmental awareness of their children (Jayasuriya & Rajapaksha, 2020).

Community Engagement Activities

- **F(2, 344) = 4.23, p = 0.01**
- **Interpretation**: Students engaged in community activities such as recycling (50.5 per cent), planting trees (30.5 per cent), and community clean-ups (19.0per cent) demonstrated significantly higher levels of environmental awareness. Participation in these activities has been shown to increase environmental consciousness and foster a sense of responsibility towards conservation (Tanner, 2020).

The ANOVA results suggest that demographic factors such as age, gender, family type, place of residence, and community engagement significantly influence students' environmental awareness. Urban students, females, and those from married families or with government-employed parents exhibited higher levels of environmental awareness. These findings highlight the importance of targeted interventions that address these factors, particularly in rural areas and for male students, to promote better environmental education and participation.

Table 3 Correlation between Environmental Conservation, Civic Responsibility, and Independence Variables

Variable	Pearson's r	p-value
Environmental Awareness	+0.72	< 0.01
Institutional Support	+0.65	< 0.01
Community Engagement	+0.60	< 0.01
Access to Resources	+0.55	< 0.01
Motivational Factors	+0.68	< 0.01

Source: Primary data of the Research

The study explored the relationships between various factors influencing college students' environmental conservation behaviors and civic responsibility. The following dependent and independent variables were analyzed for their correlation

Environmental Awareness and Environmental Conservation/Civic Responsibility

The correlation between environmental awareness environmental conservation and civic responsibility was strong and positive ($r = +0.72$, $p < 0.01$). This indicates that students more aware of environmental issues are more likely to engage in environmentally responsible behaviors and demonstrate higher levels of civic responsibility. These findings are consistent with existing literature that suggests increased awareness directly influences pro-environmental behaviors (Chou et al., 2021; Kaiser & Fuhrer, 2021).

Institutional Support and Environmental Conservation/Civic Responsibility

A strong positive correlation was observed between institutional support and students' environmental conservation efforts ($r = +0.65$, $p < 0.01$). This highlights the crucial role that educational institutions play in

fostering an environment that encourages environmental responsibility. Institutions that provide resources, opportunities for engagement (e.g., environmental clubs, and programs), and strong guidance contribute to heightened student participation in sustainability initiatives (Gonzalez & Martinez, 2021).

Community Engagement and Environmental Conservation/Civic Responsibility

The correlation between community engagement and environmental conservation behaviors was also positive and significant ($r = +0.60$, $p < 0.01$). Students actively participating in community-driven environmental projects (e.g., recycling, tree planting) exhibit greater environmental responsibility. These findings align with previous research that underscores the importance of community-based environmental activities in shaping student engagement (Tanner, 2020).

Access to Resources and Environmental Conservation/Civic Responsibility

The correlation between access to resources (e.g., materials, and platforms for environmental education) and environmental conservation behavior was found to be moderate and positive ($r = +0.55$, $p < 0.01$). This suggests that access to environmental education and resources positively influences students' ability to contribute to environmental conservation. Students with better access to tools and information are more likely to be engaged in sustainable behaviors (Pillai & Raj, 2019).

Motivational Factors and Environmental Conservation/Civic Responsibility

Motivational factors (e.g., personal values, peer influence, societal expectations) showed a strong positive correlation with environmental conservation ($r = +0.68$, $p < 0.01$). Students who are intrinsically motivated to participate in environmental actions or are influenced by their peers are more likely to engage in civic responsibility activities related to environmental conservation. These findings are consistent with theories of motivation that suggest both intrinsic and extrinsic motivations drive pro-environmental behaviors (Gonzalez & Martinez, 2021).

The analysis demonstrates that environmental awareness, institutional support, community engagement, access to resources, and motivational factors are all significant predictors of environmental conservation and civic responsibility among college students. The positive correlations between these factors highlight the importance of an integrated approach in promoting sustainable behaviors. Educational institutions, policymakers, and community leaders should focus on enhancing these factors to encourage greater participation in environmental conservation efforts. Future interventions may include strengthening institutional support, improving access to resources, and increasing awareness through targeted community engagement programs.

Recommendations and Suggestions

- Integrate environmental education into the core curriculum across all disciplines.
- Develop interdisciplinary courses covering both the scientific and social aspects of environmental conservation.
- Provide more resources for sustainability initiatives, including funding for student-led environmental projects.
- Create dedicated sustainability offices to support environmental clubs and coordinate programs.
- Partner with local governments and NGOs to offer students opportunities for community-based environmental projects.
- Organize community-focused events for students to engage in hands-on activities like recycling, tree planting, and clean-up drives.
- Provide easier access to environmental education materials and online platforms.
- Build partnerships with NGOs, government bodies, and corporations to supply educational resources and field experiences.
- Develop motivational programs that emphasize both personal commitment and provide extrinsic incentives like scholarships or recognition.
- Launch awareness campaigns that highlight the individual and collective benefits of environmental conservation.
- Provide additional support to rural students by creating mobile education units or online resources focused on environmental conservation.
- Address the specific challenges faced by rural students in accessing environmental education and resources.
- Promote gender-inclusive environmental programs, encouraging both male and female students to participate equally in conservation efforts.
- Highlight the active participation of women in environmental initiatives and encourage broader involvement across genders.
- Establish sustainability as a core value by implementing green building practices, waste reduction, and energy conservation on campus.
- Launch a "green campus" initiative to encourage sustainable practices among students, staff, and faculty.

- Use social media platforms to spread environmental awareness and encourage students to share their conservation efforts.
- Create social media campaigns and student-led initiatives that inspire engagement with environmental issues.

Conclusion

In conclusion, the study highlights the significant role that college students' awareness of environmental conservation plays in shaping their participation in sustainability efforts. The findings suggest that education, institutional support, community engagement, and access to resources are crucial factors influencing students' environmental consciousness and their willingness to take action. The analysis of both ANOVA and correlation results provides valuable insights into the factors influencing college students' awareness and participation in environmental conservation. The ANOVA findings suggest that demographic variables such as age, gender, family type, and place of residence have a significant impact on students' environmental awareness. These results underscore the need for tailored educational strategies that address the specific needs of different student groups. For instance, students from urban areas and those with higher education levels exhibited higher awareness, highlighting the importance of increasing access to environmental education in rural areas and among less-privileged groups.

The correlation analysis further reinforces the importance of Independent variables such as institutional support, community engagement, access to resources, and motivational factors in shaping students' environmental behavior. Positive correlations between these factors and the level of environmental conservation indicate that when students are provided with the right resources, opportunities, and motivation, they are more likely to engage in sustainable practices. Moreover, by incorporating motivational factors and enhancing institutional support for student-led initiatives, we can ensure that environmental conservation becomes a central aspect of campus life. Ultimately, the collective efforts of students, educational institutions, and communities are vital in addressing the pressing environmental challenges of our time.

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