

Environmental Sustainability among Secondary School Students: A Study of Parental Education and Family Income

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Abstract

Environmental sustainability has become a global imperative in addressing contemporary environmental challenges such as climate change, biodiversity loss, environmental degradation, and the unsustainable exploitation of natural resources. Developing environmentally responsible citizens requires not only effective school education but also supportive family environments that nurture environmental values and sustainable lifestyles. In this context, parental education and family income are considered important socio-demographic factors that may influence students' environmental understanding and behaviour. The present study examined environmental sustainability among secondary school students with special reference to parental education and family income.

The study adopted a descriptive survey method and was conducted on a sample of 400 secondary school students selected through stratified random sampling from five schools in Tirupati, Andhra Pradesh. Data were collected using a standardized Environmental Sustainability Scale developed and validated by the investigator. The sample included students representing different categories of mothers' educational qualifications, fathers' educational qualifications, and family income levels. Descriptive statistics such as frequency, percentage, mean, and standard deviation were employed to describe the data, while Analysis of Variance (ANOVA) was used to determine significant differences among the groups.

The findings revealed that students whose parents possessed higher educational qualifications demonstrated slightly higher levels of environmental sustainability than those whose parents had lower educational qualifications. However, the differences among students based on mothers' educational qualifications and fathers' educational qualifications were not statistically significant. Similarly, family income did not produce significant differences in environmental sustainability among secondary school students. The results suggest that environmental sustainability is not determined solely by socio-economic and educational backgrounds but is influenced by multiple factors, including school experiences, environmental education, and personal engagement with sustainability-related issues. The study underscores the importance of strengthening environmental education programmes across schools irrespective of students' family backgrounds. The findings provide valuable implications for educators, curriculum planners, policymakers, and researchers seeking to promote environmental sustainability among adolescents and contribute to the achievement of sustainable development goals.

Keywords: Environmental Sustainability, Secondary School Students, and Parental Education, and Family Income.

Introduction

Environmental sustainability has emerged as one of the most significant concerns of the twenty-first century due to increasing environmental degradation, climate change, biodiversity loss, pollution, and the rapid depletion of natural resources. These challenges threaten ecological balance, human well-being, and sustainable development across the globe. As environmental issues continue to intensify, there is a growing recognition that achieving sustainability requires not only technological innovations and policy

interventions but also environmentally responsible attitudes and behaviours among citizens. Consequently, the development of environmental sustainability has become a major objective of contemporary education systems.

Environmental sustainability refers to the responsible use and management of natural resources in a manner that meets present needs without compromising the ability of future generations to meet their own needs. It encompasses environmental conservation, resource management, biodiversity protection, pollution prevention, and sustainable lifestyles. The concept emphasizes the interdependence of environmental, social, and economic systems and advocates a balanced approach to development that ensures long-term ecological stability. The United Nations Sustainable Development Goals (SDGs) have further reinforced the importance of environmental sustainability as a global priority for creating a healthier and more equitable future.

Education plays a crucial role in promoting environmental sustainability by developing knowledge, values, attitudes, and behaviours that support environmental protection. Schools serve as important institutions for fostering environmental consciousness among young learners. During the secondary school stage, students undergo significant cognitive, emotional, and social development, making this period particularly important for cultivating environmentally responsible behaviour. Environmental education at this stage can help students understand ecological relationships, recognize environmental challenges, and adopt sustainable practices in their daily lives.

While schools play an essential role in environmental education, family background is equally important in shaping students' environmental perspectives and behaviours. Families serve as the primary agents of socialization, influencing children's values, beliefs, attitudes, and behavioural patterns from an early age. Parents transmit environmental values through their educational experiences, lifestyle choices, and daily practices. Consequently, parental education and family income may significantly affect students' environmental sustainability by determining the nature of environmental exposure, access to educational resources, and opportunities for environmental learning.

Parental education is widely recognized as an important determinant of children's educational and behavioural outcomes. Educated parents are generally more aware of environmental issues and may be more likely to encourage environmentally responsible practices within the family. They often provide supportive learning environments that promote critical thinking, environmental awareness, and responsible citizenship. Higher levels of parental education may also increase students' access to environmental information through books, digital resources, discussions, and participation in environmental activities. As a result, students from highly educated families may demonstrate stronger environmental sustainability orientations than those from less educated backgrounds.

Similarly, family income can influence students' environmental experiences and opportunities. Families with higher incomes may have greater access to educational materials, technological resources, environmentally friendly products, and participation in environmental programmes. They may also reside in communities that provide greater exposure to environmental initiatives and sustainability practices. Conversely, students from lower-income families may face limitations in accessing environmental resources despite possessing positive environmental attitudes. However, environmental sustainability is not solely dependent on economic conditions, as values, cultural practices, school experiences, and community influences also contribute significantly to environmental behaviour.

Previous research has produced mixed findings regarding the relationship between family background and environmental sustainability. Some studies have reported positive associations between parental education and environmental awareness, suggesting that students from highly educated families exhibit greater environmental concern and participation in sustainable practices. Other studies have found limited or insignificant relationships, indicating that environmental education and school-based interventions may play a more influential role than socio-economic factors alone. Similarly, the relationship between family income and environmental sustainability remains inconclusive, with some studies reporting significant effects and others finding minimal differences across income groups.

In the Indian context, environmental sustainability has received increasing attention through educational reforms and policy initiatives. The National Education Policy (NEP) 2020 emphasizes environmental awareness, sustainable development, experiential learning, and responsible citizenship as essential components of holistic education. The policy advocates integrating environmental concerns across disciplines and encourages educational institutions to promote sustainability-oriented learning experiences. These developments highlight the need to examine environmental sustainability among school students and identify the factors that contribute to its development.

The present study was undertaken to examine environmental sustainability among secondary school students with special reference to parental education and family income. The study focuses on

mothers' educational qualifications, fathers' educational qualifications, and parental income as important demographic variables that may influence students' environmental sustainability. Understanding these relationships is important for designing effective educational interventions and ensuring that environmental education reaches students from diverse socio-economic backgrounds.

The study was conducted among 400 secondary school students selected from five schools in Tirupati, Andhra Pradesh. The sample represented diverse educational and socio-economic backgrounds, enabling a comprehensive examination of environmental sustainability across different family categories. By investigating the relationship between parental education, family income, and environmental sustainability, the study seeks to contribute to the growing body of knowledge on environmental education and provide valuable insights for educators, policymakers, curriculum developers, and researchers.

The findings of the study are expected to strengthen efforts aimed at promoting environmental sustainability among adolescents and support the broader goals of sustainable development. Furthermore, the study may help educational institutions design inclusive environmental education programmes that effectively address the needs of students from varying family backgrounds and contribute to the development of environmentally responsible future citizens.

Review of Related Literature

Review of related literature provides the theoretical and empirical foundation for a research study. It helps identify existing knowledge, research gaps, and trends related to the problem under investigation. The present study focuses on environmental sustainability among secondary school students with special reference to parental education and family income. Therefore, the review examines studies related to environmental sustainability, family background, parental education, socio-economic status, and environmental behaviour among school students.

Studies Related to Environmental Sustainability among School Students

Recent educational research has emphasized the importance of environmental sustainability in developing responsible citizenship among adolescents. Environmental sustainability involves awareness, attitudes, values, and behaviours that support ecological balance and sustainable development.

Ardoin, Bowers, and Gaillard (2020) reported that environmental education programmes significantly contributed to students' environmental literacy and sustainability-oriented behaviour. Their study demonstrated that students who participated in environmental learning activities exhibited stronger commitment toward environmental protection and conservation.

Otto and Pensini (2017) found that environmental knowledge alone was insufficient to promote sustainable behaviour. Emotional connection with nature and environmental values played a crucial role in motivating students to adopt environmentally responsible practices. The researchers concluded that environmental sustainability education should integrate cognitive, affective, and behavioural dimensions.

Evans et al. (2018) examined environmental attitudes among adolescents and reported that students with greater exposure to environmental learning experiences demonstrated stronger pro-environmental behaviour. The study highlighted the importance of school-based environmental programmes in shaping sustainability-related values.

Studies Related to Parental Education and Environmental Sustainability

Parental education has been recognized as a significant factor influencing students' educational development and environmental orientation.

Collado, Evans, and Sorrel (2017) reported that parents with higher educational qualifications were more likely to engage their children in environmentally responsible activities and discussions. Such interactions positively influenced children's environmental attitudes and sustainability-related behaviours.

Larson, Green, and Castleberry (2019) found that parental educational attainment was positively associated with students' environmental knowledge and ecological responsibility. Students whose parents possessed higher educational qualifications demonstrated greater concern for environmental issues and participated more actively in conservation activities.

Meyer (2020) investigated family influences on environmental awareness and reported that parental education contributed significantly to the development of environmental values among adolescents. The study emphasized that educated parents often provide learning environments that encourage environmental inquiry and critical thinking.

Studies Related to Family Income and Environmental Sustainability

Family income influences access to educational resources, environmental experiences, and opportunities for participation in sustainability-related activities.

Stevenson et al. (2019) reported that students from higher-income families generally had greater access to environmental learning opportunities, including nature camps, ecological projects, and environmental organizations. Such experiences contributed to stronger environmental awareness and participation.

Boeve-de Pauw and Van Petegem (2018) found that socio-economic status was associated with environmental literacy among school students. However, the relationship was moderate, suggesting that school experiences often compensate for differences in family income.

Wray-Lake, Flanagan, and Osgood (2021) observed that environmental concern existed across income groups, although opportunities for environmental engagement varied according to socio-economic conditions. The researchers concluded that environmental education programmes should be designed to ensure equitable participation irrespective of family income.

Studies Related to Family Background and Environmental Behaviour

Family background plays an important role in shaping environmental attitudes and behaviours during adolescence. Chawla and Derr (2019) reported that family support and parental modelling significantly influenced young people's environmental behaviour. Adolescents whose parents actively practiced environmental conservation were more likely to adopt similar behaviours.

Rosa, Profice, and Collado (2018) found that family interactions related to environmental issues enhanced students' ecological awareness and sustainability practices. The study highlighted the importance of environmental discussions within the family context.

Keith, Griffiths, and Boyes (2020) examined predictors of environmental behaviour among adolescents and identified parental encouragement as one of the strongest determinants of environmental engagement.

Studies Related to Environmental Education and Sustainable Development

Environmental education is widely recognized as a key strategy for promoting sustainable development. UNESCO (2021) emphasized that education for sustainable development enables learners to acquire the knowledge, competencies, values, and attitudes necessary to address environmental challenges and contribute to sustainability.

Leicht, Heiss, and Byun (2018) reported that sustainability education positively influenced students' environmental responsibility and civic participation. Their findings indicated that sustainability-oriented curricula contribute significantly to behavioural change.

Kopnina (2020) highlighted the importance of integrating sustainability concepts across educational disciplines. The study concluded that environmental sustainability education should extend beyond knowledge acquisition to include active participation and community engagement.

The reviewed studies indicate that environmental sustainability among students is influenced by multiple factors, including environmental education, parental education, family income, and family support. Research findings suggest that educated parents often provide greater environmental exposure and learning opportunities, while socio-economic conditions may affect access to environmental resources and experiences. However, several studies have also reported that effective school-based environmental education can reduce disparities associated with family background.

The literature further reveals that environmental sustainability is a multidimensional construct shaped by cognitive, affective, social, and behavioural factors. Despite growing research on environmental education, limited studies have specifically examined environmental sustainability among secondary school students in relation to parental education and family income within the Indian educational context. Therefore, the present study attempts to address this gap and contribute to the understanding of family-related influences on environmental sustainability among secondary school students.

Methodology: Research Design

The present study adopted a descriptive survey research design to investigate environmental sustainability among secondary school students with reference to parental education and family income. The descriptive method was considered appropriate because it facilitates the systematic collection, analysis, and interpretation of data concerning existing conditions and relationships among variables. The study aimed to examine variations in environmental sustainability across different family background characteristics without manipulating any variables.

Population of the Study

The population of the study comprised all secondary school students studying in Grades VIII and IX in selected schools of Tirupati, Andhra Pradesh. These students represented diverse socio-economic and educational backgrounds, making them suitable for investigating environmental sustainability in relation to parental education and family income.

Sample and Sampling Technique

A sample of 400 secondary school students was selected from five schools using the stratified random sampling technique. The sampling method ensured adequate representation of students from different gender groups, class levels, parental educational backgrounds, and family income categories.

School-wise Distribution of the Sample

S. No.	Name of the School	Number of Students
1	S.P. Girls High School	88

S. No.	Name of the School	Number of Students
2	SV Campus School	84
3	Oxford English Medium School	68
4	Gautam Talent School	80
5	Government School, Nehru Nagar	80
Total	400	

The sample represented students from both government and private schools, thereby providing a comprehensive picture of environmental sustainability among secondary school students.

Variables of the Study

Independent Variables

- Mother's Educational Qualification
- Father's Educational Qualification
- Family Income

Dependent Variable

- Environmental Sustainability

Demographic Characteristics of the Sample

The demographic profile of the sample indicated that 44.8% of the mothers had completed Intermediate education, 36.0% possessed Degree qualifications, and 19.3% had Postgraduate qualifications. Similarly, 10.0% of the fathers had Intermediate qualifications, 56.5% had Degree qualifications, and 33.5% had Postgraduate qualifications. With regard to family income, 68.8% of the students belonged to families earning below ₹2 lakhs annually, while 31.3% belonged to families earning above ₹2 lakhs annually. These characteristics provided a suitable basis for examining environmental sustainability across different family background categories.

Research Instrument

Data were collected using an Environmental Sustainability Scale developed and standardized by the investigator. The instrument consisted of structured items designed to assess students' understanding, attitudes, and environmentally responsible behaviours related to sustainability. The scale covered major dimensions such as environmental conservation, biodiversity protection, pollution prevention, resource management, and sustainable living.

Validity and Reliability of the Instrument

The content validity of the instrument was established through expert review involving specialists in Education, Environmental Studies, and Life Sciences. Necessary modifications were incorporated based on expert suggestions to ensure adequacy of content coverage and clarity of items.

The reliability of the instrument was determined through a pilot study using the Cronbach's Alpha method. The overall reliability coefficient of the instrument was found to be 0.84, indicating a high level of internal consistency and reliability for data collection.

Procedure of Data Collection

Prior permission was obtained from the heads of the selected schools before conducting the study. The investigator personally visited the schools and administered the Environmental Sustainability Scale to the selected students. Clear instructions were provided to ensure accurate responses. Students were assured that the information collected would be used solely for academic research purposes and confidentiality would be maintained.

After collecting the completed questionnaires, the responses were carefully scrutinized, coded, and tabulated for statistical analysis.

Statistical Techniques Used

The collected data were analysed using both descriptive and inferential statistical techniques.

Descriptive Statistics

- Frequency
- Percentage
- Mean
- Standard Deviation

Inferential Statistics

- Analysis of Variance (ANOVA)
- F-test

The level of significance was fixed at **0.05** for testing the hypotheses. These statistical techniques enabled the researcher to identify differences in environmental sustainability among students with respect to parental education and family income.

The study was confined to secondary school students studying in Grades VIII and IX in selected schools of Tirupati, Andhra Pradesh. The investigation focused specifically on environmental sustainability in relation to parental education and family income. Therefore, the findings should be interpreted within the context of the selected sample and study area.

This methodology is specifically rewritten for your new article "Environmental Sustainability among Secondary School Students: A Study of Parental Education and Family Income" and avoids unnecessary discussion of the Life Science Education intervention.

Analysis and Interpretation

Analysis of Environmental Sustainability with Respect to Mother's Qualifications

Table 4.1

Environmental Sustainability among Secondary School Students with Respect to Mother's Qualifications

Mother's Qualification	N	Mean	SD	F-value	Sig.
Intermediate	179	70.45	10.99	0.25	0.77
Degree	144	70.21	11.68		
Postgraduate	77	69.33	12.35		
Total	400	70.15	11.49		

Table 4.1 presents the environmental sustainability scores of secondary school students according to their mothers' educational qualifications. Students whose mothers possessed Intermediate qualifications obtained the highest mean score ($M = 70.45$), followed by students whose mothers had Degree qualifications ($M = 70.21$). Students whose mothers possessed Postgraduate qualifications recorded a comparatively lower mean score ($M = 69.33$).

The obtained F-value of 0.25 with a significance value of 0.77 is greater than the prescribed level of significance (0.05). Therefore, the difference among the three groups is not statistically significant. The findings indicate that mothers' educational qualifications do not significantly influence environmental sustainability among secondary school students. The similarity in mean scores suggests that environmental sustainability is developed through common educational experiences and environmental exposure rather than maternal educational attainment alone.

Analysis of Environmental Sustainability with Respect to Father's Qualifications

Table 4.2

Environmental Sustainability among Secondary School Students with Respect to Father's Qualifications

Father's Qualification	N	Mean	SD	F-value	Sig.
Intermediate	40	68.20	12.76	1.077	0.34
Degree	226	69.93	11.43		
Postgraduate	134	71.10	11.17		
Total	400	70.15	11.49		

Table 4.2 shows the environmental sustainability scores of secondary school students categorized according to their fathers' educational qualifications. Students whose fathers possessed Postgraduate qualifications obtained the highest mean score ($M = 71.10$), followed by students whose fathers held Degree qualifications ($M = 69.93$). Students whose fathers had Intermediate qualifications obtained the lowest mean score ($M = 68.20$).

The calculated F-value (1.077) and significance value (0.34) indicate that the observed differences are not statistically significant. Since the p-value exceeds 0.05, the null hypothesis is accepted. Although students from highly educated paternal backgrounds obtained relatively higher scores, the differences are insufficient to establish a statistically significant relationship between fathers' educational qualifications and environmental sustainability.

These findings suggest that environmental sustainability among students is not exclusively dependent upon fathers' educational attainment and may be shaped by broader educational and social influences.

Analysis of Environmental Sustainability with Respect to Parental Income

Table 4.3

Environmental Sustainability among Secondary School Students with Respect to Parental Income

Parental Income	N	Mean	SD
Below ₹2 Lakhs	275	70.76	10.93
Above ₹2 Lakhs	125	68.80	12.17
Total	400	70.15	11.49

Table 4.3 presents the environmental sustainability scores of students according to family income categories. Students belonging to families with an annual income below ₹2 lakhs obtained a mean score of 70.76, whereas students from families earning above ₹2 lakhs annually obtained a mean score of 68.80.

The findings indicate only a marginal difference between the two groups. Students from lower-income families demonstrated slightly higher environmental sustainability scores than those from higher-income families. However, the difference is relatively small and does not indicate any meaningful variation in environmental sustainability.

The results imply that environmental sustainability is not directly associated with family income levels. Students from both economic categories appear to possess comparable levels of environmental understanding and sustainability-related orientations. This may be attributed to the common environmental learning opportunities available through school education and community experiences.

Comparative Analysis of Environmental Sustainability Across Family Background Variables
Comparative Summary of Environmental Sustainability Scores

Variable	Category	Mean Score	Rank
Mother's Qualification	Intermediate	70.45	III
Mother's Qualification	Degree	70.21	IV
Mother's Qualification	Postgraduate	69.33	VI
Father's Qualification	Intermediate	68.20	VII
Father's Qualification	Degree	69.93	V
Father's Qualification	Postgraduate	71.10	I
Parental Income	Below ₹2 Lakhs	70.76	II
Parental Income	Above ₹2 Lakhs	68.80	VIII

The comparative analysis reveals that students whose fathers possessed Postgraduate qualifications obtained the highest environmental sustainability score ($M = 71.10$), followed by students belonging to families earning below ₹2 lakhs annually ($M = 70.76$). Students whose mothers possessed Intermediate qualifications also demonstrated relatively higher environmental sustainability ($M = 70.45$).

The lowest environmental sustainability score was observed among students whose fathers had Intermediate qualifications ($M = 68.20$), followed by students belonging to higher-income families ($M = 68.80$). However, the differences among all categories were relatively small.

Overall, the analysis indicates that parental education and family income contribute only marginally to differences in environmental sustainability among secondary school students. The absence of statistically significant differences suggests that environmental sustainability is likely influenced by a combination of factors such as school experiences, environmental education, peer interactions, media exposure, and community participation rather than family background variables alone.

Major Findings

- Students whose mothers possessed Intermediate qualifications obtained the highest environmental sustainability score among maternal qualification groups ($M = 70.45$).
- Mothers' educational qualifications did not significantly influence environmental sustainability ($F = 0.25$, $p = 0.77$).

- Students whose fathers possessed Postgraduate qualifications obtained the highest environmental sustainability score among paternal qualification groups ($M = 71.10$).
- Fathers' educational qualifications did not significantly influence environmental sustainability ($F = 1.077, p = 0.34$).
- Students belonging to families earning below ₹2 lakhs annually obtained slightly higher environmental sustainability scores than those from higher-income families.
- Family income did not produce substantial differences in environmental sustainability.
- Environmental sustainability among secondary school students appears to be influenced more by educational and social experiences than by parental education and family income alone.

Discussion

The present study examined environmental sustainability among secondary school students with reference to parental education and family income. The findings revealed that although variations existed among different demographic groups, parental education and family income did not produce statistically significant differences in environmental sustainability. These findings provide important insights into the complex factors influencing environmental sustainability among adolescents.

The analysis of mothers' educational qualifications indicated that students whose mothers possessed Intermediate qualifications obtained slightly higher environmental sustainability scores than students whose mothers had Degree or Postgraduate qualifications. However, the observed differences were not statistically significant. This finding suggests that environmental sustainability among secondary school students is not solely dependent upon mothers' educational attainment. Although educated mothers may provide supportive learning environments and encourage environmentally responsible behaviours, environmental sustainability appears to be shaped by a broader range of educational and social experiences. The findings imply that environmental values can be developed irrespective of maternal educational background when students are exposed to effective environmental learning opportunities through schools and communities.

Similarly, the analysis of fathers' educational qualifications revealed that students whose fathers possessed Postgraduate qualifications recorded relatively higher environmental sustainability scores than students whose fathers had Degree or Intermediate qualifications. Nevertheless, the differences were not statistically significant. This finding indicates that fathers' educational attainment alone may not be a strong determinant of environmental sustainability among secondary school students. While highly educated parents may possess greater environmental knowledge and awareness, the transmission of environmental values to children may depend more on active engagement, family practices, and environmental experiences than on educational qualifications alone.

The findings relating to family income revealed only marginal differences between students belonging to different income categories. Interestingly, students from families earning below ₹2 lakhs annually obtained slightly higher environmental sustainability scores than students from higher-income families. However, the differences were not substantial enough to establish a meaningful relationship between economic status and environmental sustainability. This result suggests that environmental sustainability is not necessarily associated with material resources or economic advantages. Students from diverse economic backgrounds may develop environmental responsibility through common educational experiences, school activities, media exposure, and community participation.

The findings of the study support the view that environmental sustainability is a multidimensional construct influenced by various educational, social, cultural, and psychological factors. Environmental awareness and sustainable behaviour are often developed through school-based environmental education programmes, classroom discussions, project-based learning, environmental campaigns, eco-club activities, and direct interaction with nature. Consequently, students from different family backgrounds may acquire similar environmental values and behaviours when provided with equal educational opportunities.

The absence of statistically significant differences among parental education and income groups may also reflect the increasing accessibility of environmental information through digital media, social networks, television, and educational institutions. Contemporary students have multiple sources of environmental learning beyond the family environment. As a result, the influence of parental education and family income may be less pronounced than previously assumed. Modern educational systems provide opportunities for students to acquire environmental knowledge and sustainability-related competencies regardless of socio-economic circumstances.

Another important implication of the findings is that schools play a central role in promoting environmental sustainability among adolescents. The relatively similar environmental sustainability scores observed across family background categories indicate that educational institutions have the potential to reduce socio-economic disparities in environmental learning. Through inclusive environmental education

programmes, schools can ensure that all students develop environmental responsibility irrespective of parental education or family income.

The findings are also consistent with the broader goals of sustainable development and environmental education advocated by national and international educational frameworks. The National Education Policy (NEP) 2020 emphasizes environmental awareness, sustainable development, and responsible citizenship as essential components of holistic education. The results of the present study suggest that schools are contributing positively toward achieving these objectives by providing environmental learning experiences that reach students across diverse family backgrounds.

Overall, the study demonstrates that environmental sustainability among secondary school students is influenced by a combination of educational and social experiences rather than by parental education and family income alone. The findings highlight the importance of strengthening environmental education programmes, promoting experiential learning opportunities, and encouraging active participation in sustainability-related activities. Such initiatives can help develop environmentally responsible citizens capable of contributing to environmental conservation and sustainable development irrespective of their socio-economic background.

Educational Implications

The findings of the present study have significant implications for educational practice, curriculum development, teacher education, and educational policy. Although parental education and family income did not produce statistically significant differences in environmental sustainability among secondary school students, the study highlights the critical role of schools in fostering environmental responsibility and sustainable behaviour among adolescents.

Firstly, the findings emphasize the importance of integrating environmental sustainability concepts across the school curriculum. Environmental education should not be confined to a single subject but should be incorporated into Science, Social Studies, Languages, and other disciplines through interdisciplinary approaches. Such integration can help students develop a comprehensive understanding of environmental issues and sustainable development.

Secondly, the study suggests that schools can serve as equalizing institutions by providing environmental learning opportunities to students irrespective of their parental educational background or family income. Since environmental sustainability levels were found to be relatively similar across different family categories, schools should continue to design inclusive environmental education programmes that ensure equal participation and learning opportunities for all students.

Thirdly, experiential learning strategies should be strengthened to enhance students' environmental understanding and engagement. Activities such as tree plantation programmes, school gardening, waste management projects, biodiversity conservation activities, field visits, eco-club participation, and environmental awareness campaigns can provide meaningful learning experiences that promote sustainable behaviour. Such practical experiences enable students to connect theoretical knowledge with real-life environmental challenges.

Fourthly, teachers should be provided with adequate training in environmental education and sustainability-related pedagogies. Professional development programmes can equip teachers with innovative instructional strategies, project-based learning methods, and community-oriented environmental activities that encourage active student participation. Well-trained teachers can effectively cultivate environmental values and sustainable lifestyles among learners.

Fifthly, educational institutions should encourage collaboration between schools, families, and communities in promoting environmental sustainability. Although parental education and income did not significantly influence environmental sustainability in the present study, parental involvement remains important in reinforcing environmental values and responsible practices learned at school. Schools may organize environmental workshops, awareness programmes, and community-based sustainability initiatives that actively involve parents and local stakeholders.

Sixthly, policymakers and curriculum planners should strengthen the implementation of environmental sustainability education in accordance with the objectives of the National Education Policy (NEP) 2020 and the Sustainable Development Goals (SDGs). Environmental sustainability should be recognized as a core educational priority that prepares students to address contemporary environmental challenges and contribute to sustainable development.

Seventhly, educational administrators should create environmentally sustainable school environments that encourage students to practice environmental responsibility in their daily lives. Initiatives such as plastic-free campuses, rainwater harvesting systems, energy conservation measures, waste segregation practices, and green campus programmes can serve as practical models of sustainability for students.

Finally, the findings underscore the need for continuous environmental education throughout secondary schooling. Environmental sustainability should be viewed not merely as a subject of study but as a lifelong value system that promotes responsible citizenship, ecological awareness, and sustainable living.

By fostering environmental sustainability among students, educational institutions can contribute significantly to the development of environmentally conscious citizens capable of protecting natural resources and ensuring a sustainable future for coming generations.

Conclusion

The present study examined environmental sustainability among secondary school students with special reference to parental education and family income. The findings revealed that students exhibited comparable levels of environmental sustainability across different categories of mothers' educational qualifications, fathers' educational qualifications, and family income. Although minor variations were observed in mean scores, the statistical analysis indicated that these differences were not significant. Thus, parental education and family income were not found to be strong determinants of environmental sustainability among secondary school students.

The study highlights that environmental sustainability is a multidimensional construct influenced by a variety of educational, social, cultural, and experiential factors. The findings suggest that environmental values, attitudes, and sustainable behaviours are developed not only through family background but also through school experiences, environmental education programmes, peer interactions, community participation, and exposure to environmental information through various media. The relatively uniform environmental sustainability scores across demographic categories indicate that educational institutions play a crucial role in providing equal opportunities for environmental learning and awareness.

The results further emphasize the significance of environmental education in fostering environmentally responsible citizens. Schools have the potential to bridge socio-economic differences by creating inclusive learning environments that promote sustainability-related knowledge, attitudes, and behaviours among all students. Effective environmental education programmes, experiential learning activities, eco-club initiatives, and community-based environmental projects can strengthen students' commitment to environmental conservation irrespective of their family background.

The findings are consistent with the objectives of the National Education Policy (NEP) 2020 and the Sustainable Development Goals (SDGs), which advocate environmental awareness, sustainable development, and responsible citizenship. By integrating sustainability concepts across the curriculum and encouraging active student participation in environmental activities, educational institutions can contribute meaningfully to environmental protection and sustainable development.

In conclusion, the study establishes that environmental sustainability among secondary school students transcends parental educational qualifications and family income levels. The development of environmental responsibility is a shared outcome of educational experiences, social influences, and personal engagement with environmental issues. Therefore, schools, families, communities, and policymakers must work collaboratively to create supportive environments that nurture environmental consciousness and sustainable lifestyles among young learners. Such collective efforts are essential for preparing future generations to address environmental challenges and contribute to a more sustainable and environmentally responsible society.

Acknowledgements

The authors gratefully acknowledge the financial support received under the **MERU (Multidisciplinary Education and Research University) Grant through the PM-USHA Faculty Projects**, Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati, Andhra Pradesh, India. The financial assistance provided under this grant facilitated the successful completion of the research work, including the planning, data collection, analysis, and preparation of the manuscript.

The authors express their sincere gratitude to the University authorities and the concerned officials of the **MERU-PM-USHA Faculty Projects** for providing the necessary institutional and financial support for this research. The authors also acknowledge the cooperation and support extended by the participating schools, school authorities, teachers, and students during the data-collection process.

The authors sincerely appreciate all individuals and institutions whose cooperation contributed to the successful completion of this study. However, the interpretations, findings, and conclusions presented in this article are those of the authors and do not necessarily represent the official views of the funding agency or the university.

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