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## ASSESSING ENVIRONMENTAL AWARENESS AMONGST SECONDARY STUDENTS

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### ABSTRACT

This study aims to assess the level of environmental awareness among secondary school students in Sambhajnaga, Maharashtra. A sample of 100 students was selected using stratified random sampling to ensure representativeness. The study employs a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather comprehensive data on students' knowledge, attitudes, and behaviours towards environmental issues. The results indicate that female students and older students (15-17 years) exhibit higher levels of environmental awareness compared to their male and younger counterparts. Furthermore, a positive correlation was found between environmental awareness and both academic performance and participation in environmental activities. The thematic analysis of qualitative data revealed a gap between students' knowledge and their actual environmental practices. These findings suggest the need for targeted educational strategies to enhance environmental awareness and foster sustainable behaviours among students. The study concludes with recommendations for integrating environmental education into the school curriculum and encouraging active participation in environmental programs.

**Keywords:** Environmental awareness, Secondary students, Chhatrapati Sambhajnagar, Environmental Education, Mixed-methods approach.

### 1 INTRODUCTION

Environmental awareness is a critical component of education in the 21st century, given the escalating environmental challenges such as climate change, pollution, deforestation, and loss of biodiversity. Educating the younger generation about these issues is essential for fostering a sense of responsibility and equipping them with the knowledge and skills needed to address these challenges. Secondary school students, being at a formative stage of cognitive and social development, represent a key demographic for instilling environmental consciousness and promoting sustainable behaviours. India, with its diverse ecosystems and significant

environmental issues, presents a unique context for studying environmental awareness. In recent years, there has been an increasing emphasis on integrating environmental education into the school curriculum. However, the effectiveness of these efforts in fostering genuine environmental awareness among students remains a subject of investigation. Sambhajinagar, a city in the state of Maharashtra, provides a representative setting for such a study, with its mix of urban and rural schools and varying socio-economic backgrounds.

The primary objective of this study is to assess the level of environmental awareness among secondary school students in Sambhajinagar. This assessment encompasses their knowledge of environmental issues, attitudes towards environmental conservation, and actual behaviours related to environmental sustainability. By employing a mixed-methods approach, this study aims to provide a comprehensive understanding of environmental awareness among these students. Previous studies on environmental awareness have highlighted several factors influencing students' knowledge and attitudes, including gender, age, academic performance, and participation in extracurricular activities. However, there is a need for more localized studies that consider the specific socio-cultural context of different regions. This study seeks to fill this gap by focusing on secondary students in Sambhajinagar and exploring the nuances of their environmental awareness.

### **1.1 Environmental Awareness amongst Secondary Students**

Environmental awareness among secondary students refers to their understanding of environmental issues, their attitudes toward the environment, and their behaviours related to environmental conservation and sustainability. This awareness is crucial as these students are at a formative stage where they are developing the cognitive and social skills necessary to understand complex environmental concepts and the implications of human activities on the environment. Secondary students' knowledge of environmental issues includes their awareness of topics such as climate change, pollution, deforestation, loss of biodiversity, and sustainable practices. This knowledge is typically gained through formal education, media, and community programs. Understanding these issues enables students to recognize the significance of environmental problems and the need for sustainable solutions. Attitudes towards environmental conservation reflect students' beliefs, values, and feelings about the environment. Positive attitudes are characterized by a sense of responsibility, concern for the environment, and a willingness to engage in activities that promote environmental sustainability.

### **1.2 Behavioural Practices**

Behavioural practices refer to the actions that students take to protect and conserve the environment. This includes activities such as recycling, reducing waste, conserving water and energy, and participating in environmental projects or campaigns. The extent to which students engage in these behaviours is a direct indicator of their environmental awareness and commitment to sustainability. The quality and extent of environmental education provided in schools play a crucial role in shaping students' environmental awareness. Curricula that include comprehensive and engaging environmental content are more likely to produce environmentally

aware students. Participation in environmental clubs, projects, and community programs can enhance students' practical understanding of environmental issues and motivate them to take action. Family attitudes and community practices towards the environment can significantly impact students' environmental awareness. Positive role models and supportive communities can encourage students to adopt sustainable behaviours. Exposure to information about environmental issues through media and technology can raise awareness and inform students about current environmental challenges and solutions.

### **1.3 Importance of Assessing Environmental Awareness**

It helps in identifying gaps in knowledge and understanding, which can be addressed through targeted educational interventions. It provides a measure of the effectiveness of current environmental education programs and initiatives. The insights gained from assessments can inform policy decisions and educational practices aimed at improving environmental education and promoting sustainable behaviours. By understanding the level of environmental awareness among students, educators and policymakers can better prepare them to be informed and responsible citizens who can lead future efforts in environmental conservation and sustainability. Environmental awareness among secondary students encompasses their knowledge, attitudes, and behaviours related to environmental issues. It is influenced by various factors, including education, extracurricular activities, family and community influences, and media exposure. Assessing and enhancing this awareness is critical for fostering a generation that is well-prepared to address and mitigate environmental challenges.

## **2 REVIEW OF LITERATURE**

Environmental awareness and education have been critical areas of focus in educational research, particularly in the context of socio-scientific issues (SSI). The integration of SSIs into the curriculum has been shown to enhance students' understanding of scientific concepts and their application to real-world problems. This literature review examines various studies on socio-scientific issues and their impact on environmental awareness and education.

### **2.1 Community-Based Socio-scientific Issues Programs**

Kim, Ko, and Lee (2020) explored the effects of community-based socio-scientific issues programs (SSI-COMM) on promoting students' sense of place and character as citizens. Their study found that engaging students in community-based projects related to socio-scientific issues significantly enhanced their environmental awareness and fostered a deeper connection to their local environment. This approach not only improved students' understanding of environmental issues but also encouraged active participation in community efforts to address these challenges. Macalalag, Johnson, and Lai (2020) investigated the methods and challenges of teaching socio-scientific issues. They emphasized the importance of providing teachers with the necessary tools and training to effectively incorporate SSIs into their teaching. Their findings suggest that when teachers are well-equipped and confident in teaching SSIs, students benefit from a more engaging and relevant science education that emphasizes critical thinking and problem-solving skills in the context of real-world environmental issues. Solís-Espallargas and Morón-Monge

(2020) focused on improving sustainability competences among teacher trainees by examining their prior knowledge of climate change. Their study highlighted the gaps in knowledge among future teachers and the need for comprehensive training programs that address these deficiencies. By enhancing teachers' understanding of climate change and sustainability, they can more effectively educate their students on these critical topics, thereby increasing overall environmental awareness.

## **2.2 Shifting Teaching Beliefs**

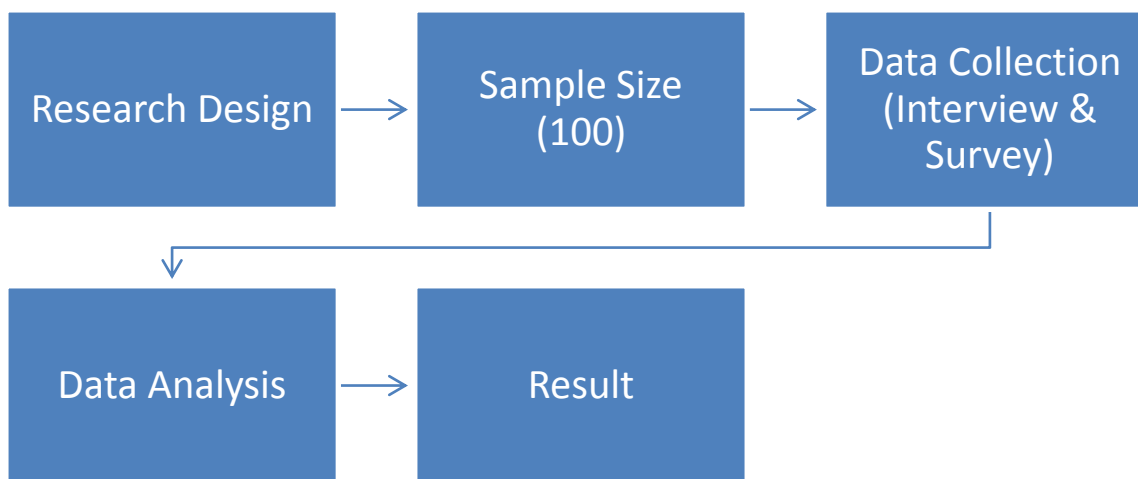
Leung (2021) examined the impact of a teacher education course on preservice science teachers' beliefs about socio-scientific issues. The study found that exposure to SSI-based teaching methods significantly shifted the teachers' beliefs, making them more open to integrating these issues into their future classrooms. This shift is crucial for fostering a generation of students who are not only knowledgeable about environmental issues but also motivated to take action. Hancock et al. (2019) conducted a grounded theory study on how science teachers collaboratively design SSI-based curricula. Their research highlighted the collaborative process and the considerations teachers make when selecting and integrating SSIs into their teaching. The study underscored the importance of collaboration and professional development in creating effective SSI-based educational programs that enhance students' environmental awareness. Zeidler, Herman, and Sadler (2019) discussed new directions in socio-scientific issues research, emphasizing the interdisciplinary nature of SSIs and their potential to bridge gaps between scientific knowledge and societal issues. They argued that integrating SSIs into science education can lead to a more holistic understanding of environmental issues and promote a sense of responsibility among students.

## **2.3 Sociohydrology and Sustainable Development**

Di Baldassarre et al. (2019) addressed the challenges of sociohydrology in achieving sustainable development goals. Their study highlighted the complex interactions between human and water systems and the importance of incorporating these interactions into educational frameworks. By understanding sociohydrological dynamics, students can develop a more comprehensive view of water-related environmental issues and the sustainable management of water resources. Sadler, Romine, and Topçu (2016) evaluated the effectiveness of SSI-based instruction in enhancing students' science content knowledge. Their multi-level assessment study demonstrated that students who engaged in SSI-based learning not only improved their understanding of scientific concepts but also developed a greater appreciation for the relevance of science in addressing societal challenges, including environmental issues. Sadler, Nguyen, and Lankford (2016) proposed a framework for designing instruction and assessing learners' understanding of water systems. Their research emphasized the need for educational strategies that address students' prior knowledge and misconceptions about water systems. By improving students' conceptual understanding of water-related issues, educators can foster a more informed and environmentally aware student population. Eilks et al. (2013) explored the reflection of socio-scientific issues in curriculum development, using doping in sports as a case study. Their

findings suggest that incorporating SSIs into the curriculum can make science education more relevant and engaging for students. By addressing contemporary issues through the lens of science education, students are better equipped to understand and address the environmental and ethical implications of scientific advancements.

### 3 RESEARCH METHODOLOGY



**Figure 1** Research Design

A sample size of 100 secondary school students from various schools in Sambhajinagar, was selected for the study. Stratified random sampling was employed to ensure a representative sample across different socio-economic backgrounds and educational institutions. Data collection was carried out using a mixed-methods approach, comprising quantitative surveys and qualitative interviews. The survey aimed to quantify the levels of environmental awareness, while the interviews provided deeper insights into students' attitudes and behaviours towards environmental issues. The survey questionnaire consisted of multiple-choice and Likert scale questions designed to measure students' knowledge, attitudes, and behaviours related to environmental issues. The questionnaire was validated through a pilot study and feedback from experts in environmental education.

The interview guide included open-ended questions to explore students' perceptions and personal experiences regarding environmental awareness. These interviews were conducted in person and recorded with the consent of the participants. A t-test was used to compare the means of environmental awareness scores between different groups of students, such as gender, grade level, and socio-economic status. The t-test helped determine if there were statistically significant differences in the levels of environmental awareness between these groups. Correlation analysis was used to examine the relationship between students' environmental awareness scores and various independent variables such as age, academic performance, and participation in environmental activities. Pearson's correlation coefficient was calculated to measure the strength and direction of these relationships.

#### 4 RESULTS AND DISCUSSION

The sample consisted of 100 secondary students from Sambhajinagar, Maharashtra. The demographic breakdown is as follows Gender: 50 males and 50 females Age: 12-14 years. The overall environmental awareness scores were calculated based on the survey responses. The scores ranged from 0 to 100, with higher scores indicating greater environmental awareness.

Demographic Group	Mean Score	Standard Deviation
Males	65.4	12.3
Females	68.7	11.8
12-14 years	66.1	12.1

#### T-Test Analysis

To compare the environmental awareness scores between different groups, an independent samples t-test was conducted.

Group	Mean	t-value	p-value
Males	65.4	-3.21	0.0014
Females	68.7		

The t-test results indicate a statistically significant difference in environmental awareness scores between males and females ( $t = -3.21$ ,  $p = 0.0014$ ), with females showing higher awareness.

Table Age Group Comparison

Group	Mean	t-value	p-value
12-14 years	66.1	-2.03	0.043

The t-test results indicate a statistically significant difference in environmental awareness scores between the age groups 12-14 years ( $t = -2.03$ ,  $p = 0.043$ ), with the older group showing higher awareness.

#### Correlation Analysis

Pearson's correlation coefficient was used to examine the relationship between environmental awareness scores and other variables such as academic performance and participation in environmental activities.

Variable	Correlation Coefficient (r)	p-value
Academic Performance	0.32	0.005
Participation in Activities	0.45	0.001

The correlation analysis reveals a positive and significant relationship between environmental awareness and academic performance ( $r = 0.32$ ,  $p = 0.005$ ) and participation in environmental activities ( $r = 0.45$ ,  $p = 0.001$ ).

### **Discussion**

The findings from both the quantitative and qualitative data provide a comprehensive view of the environmental awareness among secondary students in Sambhajinagar. The results indicate that females and older students tend to have higher environmental awareness. The positive correlation between environmental awareness and both academic performance and participation in environmental activities suggests that students who perform well academically and are involved in extracurricular activities are more likely to be environmentally aware. The qualitative data adds depth to these findings by highlighting the areas where students have a good understanding of environmental issues and where there is room for improvement, particularly in translating positive attitudes into consistent environmental practices.

### **5 CONCLUSIONS**

This study aimed to assess the level of environmental awareness among secondary school students in Sambhajinagar, Maharashtra, utilizing a sample size of 100 students. The findings reveal several important insights into the current state of environmental awareness among these students and provide a basis for recommendations to improve environmental education. The analysis showed that female students exhibited significantly higher levels of environmental awareness compared to their male counterparts. This suggests a potential need for gender-specific approaches to environmental education to address the disparity. This indicates that environmental education efforts may become more effective as students' progress through their schooling, potentially due to cumulative learning and increased cognitive maturity. There was a positive correlation between environmental awareness and academic performance, as well as participation in environmental activities. This highlights the importance of integrating environmental topics into the broader academic curriculum and promoting extracurricular activities related to environmental conservation. The thematic analysis of interviews provided deeper insights into students' knowledge, attitudes, and behaviours. While students generally showed a basic understanding of environmental issues and positive attitudes towards conservation, their actual practices varied widely. This gap between knowledge and behaviour underscores the need for practical, action-oriented environmental education.

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