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EXPLORING THE NEED OF INTEGRATING ENVIRONMENTAL SCIENCE AND SUSTAINABLE CITIES IN SCHOOL CURRICULA

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Abstract

UNESCO's goal for 2025 underscores the urgency of integrating environmental education into national curricula worldwide, aligning with the Sustainable Development Goals (SDGs) for 2030. Sustainable Development Goal 11 specifically targets the transformation of cities into inclusive, safe, resilient, and sustainable communities. Students, as active participants, advocate for eco-friendly policies and contribute to practical solutions for waste management, renewable energy, and urban planning. The study assesses students' awareness and engagement with environmental issues, revealing both positive trends and areas for improvement. While a significant portion of students demonstrate familiarity with environmental science, there is a notable gap between theoretical knowledge and practical application, particularly regarding SDG 11. Collaborative efforts involving schools, parents, and media are identified as crucial for instilling environmental awareness in students. The research highlights various initiatives and missions in India aimed at addressing urban environmental challenges, such as Swachh Bharat Abhiyan and Solid Waste Management Rules. Student-led efforts within these programs have resulted in tangible improvements in waste management and environmental conservation. Concrete steps are proposed for advocating environmental science education among students, including raising awareness, community engagement, participation in policy discussions, innovation, leadership, and collaboration with stakeholders. These initiatives aim to equip students with the knowledge, skills, and values necessary for addressing complex environmental issues and fostering a culture of sustainability. Hence, integrating environmental science and sustainable cities into school curricula is essential for cultivating informed and active citizenship committed to environmental conservation and sustainable living. By empowering students to become agents of change, education becomes a powerful tool for shaping a more resilient and environmentally conscious society.

Keywords: *Environmental Education, Sustainable Development Goals, Urban Environmental challenges, Students' awareness, Waste management, Smart City*

INTRODUCTION TO THE STUDY

The youths have designated sustainability their top concern in their quest for a future that is environmentally conscious. They believe on their own behavior as well as how the greater community might influence sustainable growth, which can reduce carbon footprint. As caretakers of the planet, it is up to us to take the greatest care possible to preserve the vibrant and healthy natural world that surrounds humans. A collective

effort from schools cooperating to promote environmental education start with the students and spread across the community.
Recognizing the urgent need to comprehend the global ecological crisis, the education system must instill change in how individuals live, create, consume, and engage with nature. UNESCO's goal by 2025 underscores the imperative inclusion of environmental education in all national curricula worldwide.

Cities face critical environmental destruction due to increasing urbanization. Sustainable Development Goal 11 – "Sustainable Cities and Communities", part of the 2030 Agenda, focuses on making cities inclusive, safe, resilient, and sustainable. Students play a crucial role, advocating for eco-friendly policies, planning events, and conducting studies on waste management, renewable energy, and urban planning. They contribute to raising awareness and setting examples for creating more livable city environments.

Teaching students the fundamentals of an environmentally sustainable lifestyle, including resource conservation, composting, reduced consumption, sustainable energy use, minimalism, and choosing local organic products, is essential. Integrating these practices into the curriculum equips students with practical skills for personal and generational lifestyle improvement. Moreover, it aligns with the increasing demand in organizations for employees committed to greener living.

Need for the Study

The study underscores the urgency of integrating environmental science and sustainable cities into school curricula to align with global sustainability goals, particularly the Sustainable Development Goals (SDGs). It emphasizes the pivotal role of students in advocating for eco-friendly policies and practical solutions to environmental challenges. However, there's a noticeable gap between theoretical knowledge and its practical application, highlighting the need for hands-on learning experiences. Collaboration among schools, parents, and media is deemed essential for fostering environmental awareness and engagement among students. Integrating environmental education prepares students for future careers in sustainability-related fields and empowers them to contribute to a more sustainable future. Overall, the study emphasizes the importance of a comprehensive approach to environmental education, emphasizing practical application, advocacy, and collaboration to equip students with the knowledge and skills necessary for addressing complex environmental issues and fostering sustainable living.

OBJECTIVES OF THE STUDY

The key objectives of the present study are:

1. To highlight the need of incorporating environmental science and sustainability in school curriculum that mainly concerns the Sustainable Development Goals 2030.
2. To apprehend the environmental problems of modern cities its related Sustainable Development Goal.
3. To analysis the general awareness of students about Environmental Science and Sustainable Cities and to suggest the necessary steps for advocating Environmental Science Education within students
4. To access the progress of Missions regarding management of urban problems in India and the respective role of students.

REVIEW OF LITERATURE

As recent research and efforts show a global emphasis on giving students the information and skills essential to handle environmental concerns, the integration of environmental science and sustainability into school curricula has grown in importance.

UNESCO's Greening Education Partnership (2024) emphasizes how important it is to incorporate environmental issues into school curricula. The effort makes it easier to incorporate sustainability into classrooms throughout the world by introducing resources like the Green School Quality Standards and the Greening Curriculum Guidance. The goal of these initiatives is to raise students' knowledge and encourage environmentally conscious conduct.

The Centre for Science and Environment in India has aligned with the National Education Policy (NEP) 2020 to improve undergraduate environmental education. The Educators Guide to Environmental Studies (2024) by CSE highlights the significance of localized techniques for sustainable development and stresses curriculum design that equips students to handle real-world environmental concerns.

In schools, sustainability education is gaining momentum. For instance, Lessons on developing inclusive education, encouraging critical thinking, and designing sustainable places have been included in the Shree Sarasswathi Vidhyaah Mandheer (SSVM) School of Excellence (2024). Their method emphasizes comprehensive instruction that equips learners to successfully handle urban environmental issues.

Omoogun , Ajayi C, Onnoghen , Usang Nkanu & Ateb , Gertrude Alorye (2014) in their paper *"Adequacy of Knowledge of Environmental Concepts among Junior Secondary School Teachers for the Multidisciplinary Approach of Implementing Environmental Education Curriculum"* found out that the Key attributes of Environmental Education involve fostering awareness, sustained concern, and active engagement in environmental conservation. Deemed essential for every individual in society, the subject employs strategies like analysis, sensitization, and information to instill knowledge that transforms attitudes and values toward the environment. Advocating for the Environmental Education Curriculum (EEC) emphasizes preparing students with a positive environmental outlook. Overall, Environmental Education is considered a viable solution to address environmental problems.

Kumar Sharma, Menon (2018**)** in their article "*Compulsory Environmental Education in India"* under the umbrella of Global Environmental Education Partnership found out that teachers' motivation and capacity are crucial for successful Environmental Education. In a large country like India, implementing changes poses challenges. Incorporating Environmental Education content into textbooks is pivotal, aligning with existing science and social subjects, ensuring effective pedagogy, and fostering responsible environmental behavior.

Lamanauskas and Makarskaitė-Petkevičienė (2023) in their article "*Environmental Education in Primary School: Meaning, Themes and Vision"* found that the Environmental education is crucial, comprising two components: environmental knowledge/understanding and awareness (skills/habits, responsibility, respect for nature). Students utilize formal methods like subject integration and informal approaches such as talks and projects, conveying knowledge through experiences, active participation, practical activities, and developing understanding.

Rieckamm and Gardiner (2017**)** in the article "*Education for Sustainable Development Goals. Learning Objectives"* has found that Education for Sustainable Development (ESD) is pivotal for SDGs, fostering cross-cutting sustainability competencies to address diverse challenges and interrelate SDGs. ESD equips learners with specific cognitive, socio-emotional, and behavioral outcomes tailored to each SDG. To enable global action, educational institutions must intensively address sustainable development, nurturing competencies and specific learning outcomes for all SDGs. It's crucial to integrate SDG-related content and employ action-oriented transformative pedagogy. Stakeholders are urged to rethink education to contribute to SDGs by 2030.

The presentation delves into India's Environmental Education syllabus, identifying areas needing urgent attention to raise awareness among the youth about environmental crises. It underscores educating younger generations on sustainable living and responsible resource use, emphasizing curbing consumption, waste reduction, pollution control, and addressing urban challenges. The importance of integrating these concepts into the curriculum, prioritizing practical application alongside theoretical learning, is highlighted for a comprehensive environmental education approach.

Key Concepts

Environmental Studies (EVS) within Indian school curricula is a diverse field spanning multiple disciplines. Its core focus lies in comprehending the environment and the intricate connections between humanity and its surroundings. Covering an extensive range of subjects encompassing both natural and social environments, EVS aims to cultivate environmental consciousness, knowledge, and a sense of accountability among students. In India, it is typically introduced as a mandatory subject in the initial stages of formal education, commonly from primary level education (grades 1-5) onwards. The responsibility of crafting EVS curriculum and textbooks in India rests with the National Council of Educational Research and Training (NCERT). As early as 1930, the Indian education system included environmental aspects, and the Kothari Commission (1964-66) recommended integrating environmental education (EE) into basic education, aligning it with life needs. The report emphasized developing a sound understanding of the environment's facts and principles in primary science teaching. EE spans primary to higher secondary levels, fostering awareness and active participation in problem-solving. Introduced as EVS from class 1, it cultivates positive environmental attitudes from childhood. Utilizing opportunities, NCERT, in collaboration with the Centre for Environmental Education, released "Joy of Learning," a handbook enriching environmental education.

The NCERT curriculum for Environmental Studies in schools covers a broad spectrum of themes, including:

- Earth’s physical features, ecosystems, flora, fauna, climate, and natural resources.
- Human activities, communities, cultures, settlements, and the impact of human actions on the environment.
- Personal and community health, sanitation, and hygiene practices.
- Environmental challenges such as pollution, deforestation, water scarcity, waste management, and conservation.
- Biodiversity, protecting endangered species, and sustainable use of resources.
- Climate change, ozone depletion, and international efforts to address environmental problems.
- Civic and Environmental Responsibilities
- Field Trips and Practical Activities like visits to natural habitats, local communities, and parks.

Need for Inclusion of Environmental Science as a Subject in School Curriculum

For the following identified reasons, including Environmental Science in the school curriculum is essential to foster awareness, responsibility, and sustainable practices among students from an early age:

- **Awareness and Understanding:** Teaching environmental science fosters awareness of climate change, pollution, and resource depletion, nurturing informed and responsible citizenship in students.
- **Long-Term Perspective:** By integrating sustainability principles into education, students develop a long-term perspective on global challenges. They understand the interconnectedness of social, economic, and environmental systems, preparing them to contribute positively to a sustainable future.

- **Preparation for Future Careers:** Growing global focus on sustainability demands professionals skilled in environmental science. Integrating it into curricula prepares students for careers in renewable energy, conservation, and environmental policy.
- **Empowerment and Engagement:** Education empowers students as change agents, fostering environmentally friendly behaviors, sustainability advocacy, and positive community changes.
- **Preservation of Natural Resources:** Teaching about sustainability instills values of responsible resource management. Students learn the importance of conserving natural resources, reducing waste, and adopting eco-friendly practices.
- **Interdisciplinary Learning:** Environmental science incorporates aspects of various disciplines, including biology, chemistry, geography, and social sciences. Integrating it into the curriculum promotes interdisciplinary learning, providing a holistic view of environmental issues.

In essence, incorporating environmental science and sustainability into the school curriculum is essential for preparing future generations to address the complex environmental challenges of our world and to cultivate a mindset focused on creating a more sustainable and resilient planet.

Scope of Environmental Studies in School

By studying environmental education, school students have the opportunity to gain a holistic understanding of the environment, preparing them to be informed, engaged, and proactive stewards of the planet. This knowledge can also lead to diverse and fulfilling career opportunities in various environmental fields. Here are some key areas within the scope of environmental studies in school:

1. Exploring the intricate connections between living organisms and their environment, covering concepts like food chains, biodiversity, and ecological balance.
2. Studying causes, impacts, and solutions for environmental challenges.
3. Methods to safeguard diverse species and habitats.
4. Embracing sustainable practices for energy, water, forests, and minerals.
5. Analyzing and managing sources of pollution for air, water, and soil.
6. Balancing economic growth with long-term environmental sustainability and societal well-being.
7. Investigating alternative energy sources for a sustainable future.
8. Understanding legal frameworks guiding environmental protection.
9. Examining moral and ethical considerations regarding environmental responsibilities.
10. Assessing urban planning for minimal environmental impact and improved quality of life.
11. Advocating for environmental awareness and action in communities.
12. Engaging in scientific research for innovative solutions.
13. Exploring diverse careers in environmental fields.
14. Understanding global environmental challenges and international agreements

Environmental education provides a comprehensive foundation for students to grasp the complexities of ecological systems, empowering them to contribute meaningfully to a sustainable future through informed decisions and impactful actions.

Environmental Problems of Modern Cities

Urbanization is rapidly increasing, with over half the world now living in cities—a figure expected to hit 68% by 2050. Environmental challenges in urban areas, particularly pronounced in developing nations and economies in transition, stem from a myriad of issues: inadequate water supply, poor wastewater and solid waste management, energy deficits, loss of green spaces, urban sprawl, and various forms of pollution.

Balancing short-term economic priorities with environmental preservation creates conflicting interests in these settings. Cities significantly impact the environment. Their expansion alters landscapes, affecting ecosystems and biodiversity, while also contributing about 75% of global greenhouse gas emissions.

Urban environmental problems, particularly in developing cities, are escalating, with air quality, noise levels, and congestion standing out as pressing concerns. While developed urban centers have improved industrial and infrastructure-related issues, challenges related to waste from consumption and traffic have grown. Air pollution, largely from transportation and production, is a severe issue, contributing to health problems and approximately 9% of global deaths. Cities consume vast amounts of energy, water, food, and raw materials, generating significant waste and depleting natural resources. This leads to high energy consumption, excessive solid waste, landscape degradation, and impacts on air and water quality in urban ecosystems. Urban water bodies in India, such as the Yamuna River in Delhi, face contamination from industrial discharge, untreated sewage, and garbage dumping. This pollution severely impacts aquatic life and poses risks to human health.

Human activity extensively alters urban landscapes, replacing greenery with concrete, redirecting rivers, and impacting hydrological dynamics, which affects flood occurrences. Urban heat islands are a result of heat absorption and re-radiation from built environments and human activities, elevating temperatures notably in cities compared to rural areas. Delhi, the capital city, faces significant urban heat island effects, especially during summer. Studies have shown temperature variations between urban and rural areas, with urban zones registering higher temperatures. For instance, certain areas in Delhi can have temperature differences of around 2 to 5 degrees Celsius compared to nearby rural regions.

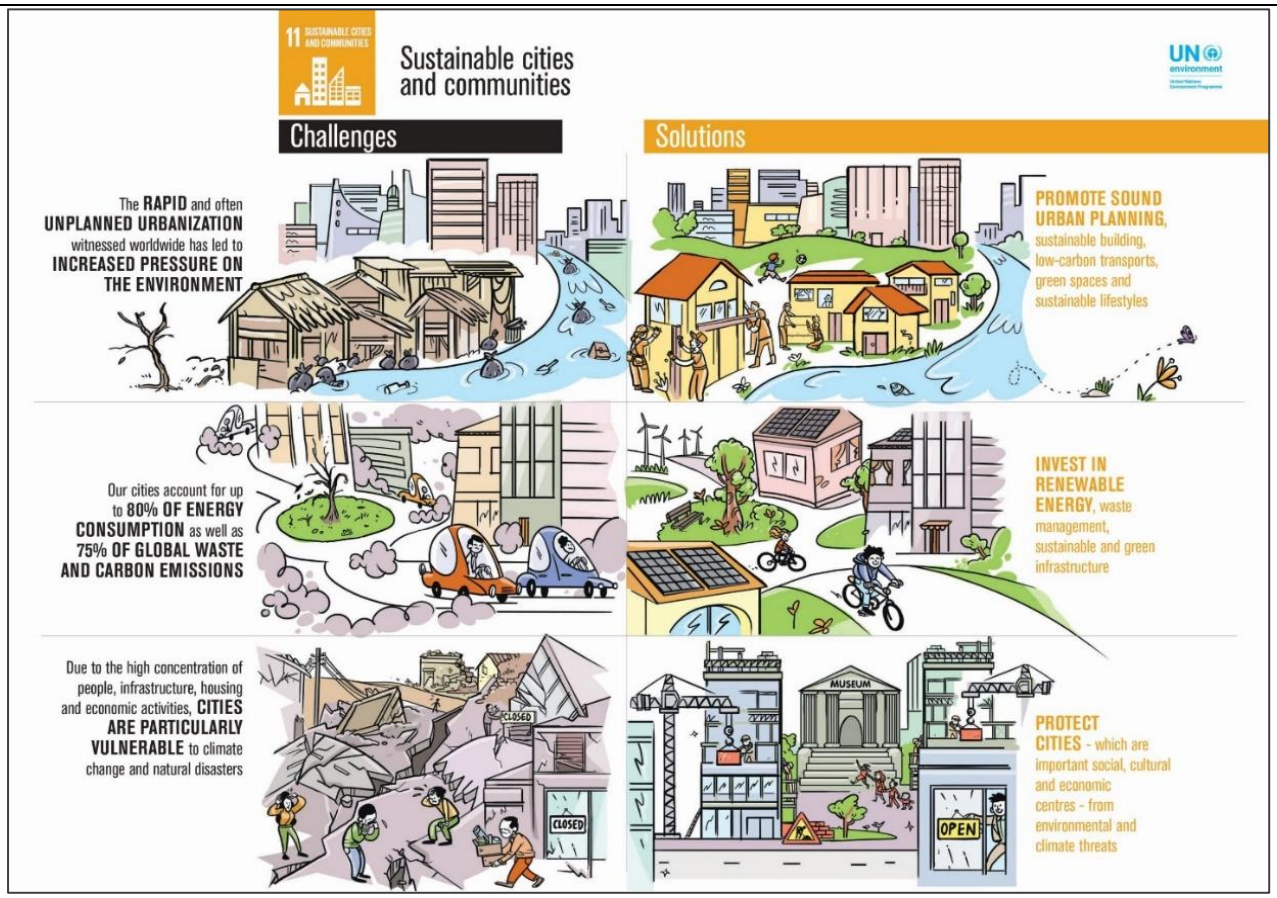
Human influence on the water cycle is evident in urban hydrology, altering surfaces, decreasing infiltration, increasing runoff and erosion, and impacting water quality due to waste and contaminants entering surface and groundwater. Agricultural practices, pollution, air quality changes, and land-use shifts further affect soil quality and precipitation patterns in urban areas.
Human actions in urban settings have far-reaching consequences, affecting water resources, soil quality, air, and the overall environment. Balancing urban development with sustainable practices becomes critical to mitigate these impacts and preserve ecological balance.

Sustainable Development Goal #11 – Sustainable Cities and Communities

In the 2030 Sustainable Development Agenda, countries committed to systematically track and evaluate progress towards the Goals and their targets using a set of global indicators. SDG 11 aims to establish inclusive, safe, resilient, and sustainable cities and human settlements.

It inherently integrates environmental considerations, advocating for essential urban infrastructure to prioritize low-emission, resource-efficient, and resilient designs. Improved urban planning and decision-making that focuses on disconnecting, reducing carbon emissions, and detoxifying cities are crucial approaches to fulfilling the aims of SDG 11.

Plate 1: Sustainable Cities and Communities: Challenges and Solutions



Source: *United Nations Environment Programme Official Website (Extracted on January 18, 2024)*

Research Methodology

The study relied primarily on secondary data collection methods and supplemented this with on-site in-depth interviews and circulation of online forms involving a sample size of 52 present and past-students. Once the data was collected, it underwent organization to conduct a qualitative analysis focusing on the identified issues. To illustrate the findings, cartographic representations were used as a visual aid to depict the analysis effectively.

A Brief Analysis of General Awareness of Students about Environmental Science and Sustainable Cities

Respondents' Profile

Table 1: Percentage-wise Distribution of Respondents

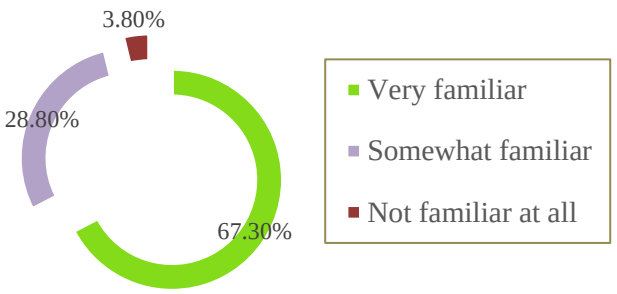
Total Number of Respondents (n=52)	
Male	**Female**
78.80%	21.60%
Age-wise Distribution	
Below 18	**18-25 years**
67.30%	32.70%
Residents of the Respondents	

Within KMC		Outside KMC	
78%		22%	
School Boards of the Respondents			
WBBSE/WBCHSE	**ICSE/ISC**	**CBSE**	**OTHERS**
17.30%	48.10%	28.80%	5.80%

Source: Primary Survey, February 2024

Results and Discussion

Figure 1:
Familiarity of Students with Environmental Science as a School Subject

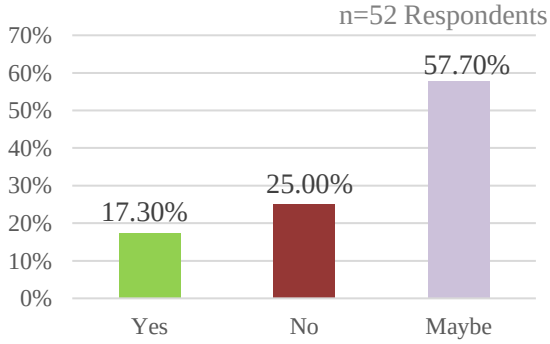


SOURCE: PRIMARY SURVEY, FEBRUARY 2024

Following a survey of 52 participants, it was discovered that approximately 67% were acquainted with environmental science as a school subject. About 28.8% indicated they were somewhat familiar, while a negligible 3.8% stated they were not familiar at all. Interestingly, respondents aged 18 to 25 were found to be less familiar than their younger counterparts below the age of 18, suggesting a progressive trend in promoting environmental science as a school subject in recent times.

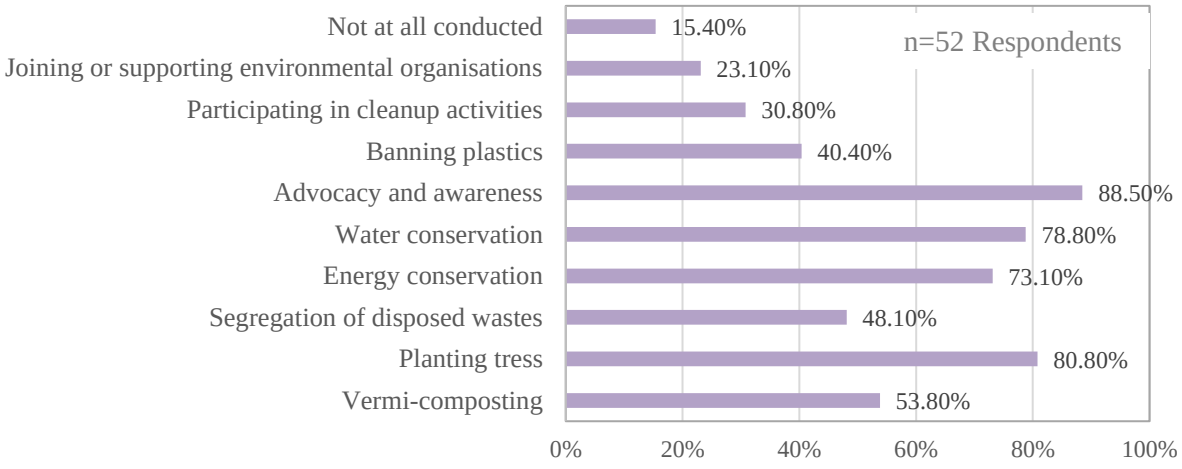
The participants carefully evaluated their board's existing environmental science syllabus, with around 25% expressing dissatisfaction, deeming it incomplete and deficient in crucial environmental topics. Among all respondents, approximately 57.7% believed there was an inadequate equilibrium between theoretical understanding and hands-on experience in environmental science education and about 17.3% felt satisfied with the current curriculum of Environmental Science and its education. This data underscores the preference for a more practical approach, emphasizing that environmental science should extend beyond a solely exam-oriented subject in schools.

Figure 2:
Appropriateness of Environmental Science Syllabus in School Boards



SOURCE: PRIMARY SURVEY,

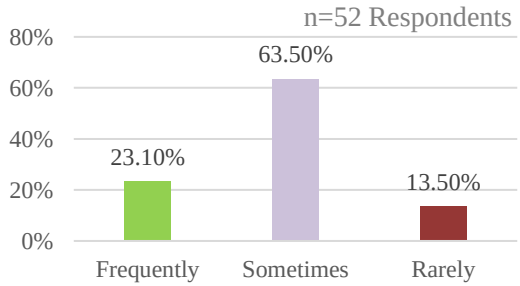
Figure 3: Types of Environmental Conservation Practices conducted in Schools



***Source**: Primary Survey, February 2024*

A list of environmental conservational practiced conducted by various school were laid in front of the respondents, yielding highly positive results. The study revealed that 88.5% of schools endorse Environmental Science, promoting awareness. Notably, 78.8% and 73.1% of schools advocate water and energy conservation, while 80.8% actively practice and promote tree planting. Various other conservation methods, such as vermicomposting, waste segregation, and joining environmental organizations, are widely embraced. However, 15.4% of respondents acknowledged that some schools do not engage in such conservation practices.

Figure 4: Frequency of Recycling Products practiced by Students at Home and School

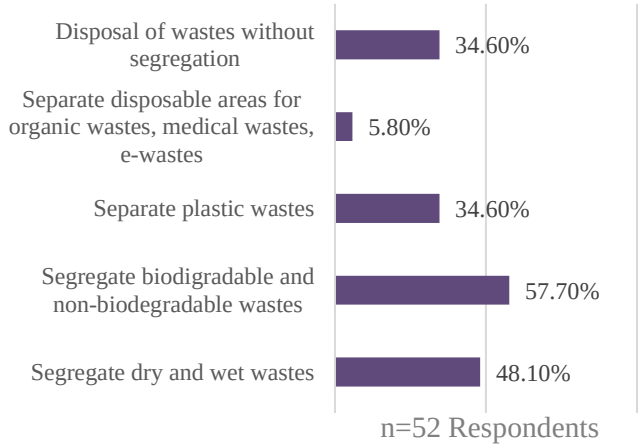


SOURCE: PRIMARY SURVEY,

Approximately 23% of respondents mentioned regularly engaging themselves in recycling goods at home and school, expressing a positive view, while around 13.5% rarely practiced it. A significant majority, accounting for 63.5%, demonstrated a moderate level of commitment to recycling. This suggests potential for enhancement, indicating the need to encourage more students to embrace recycling practices and conserve resources.

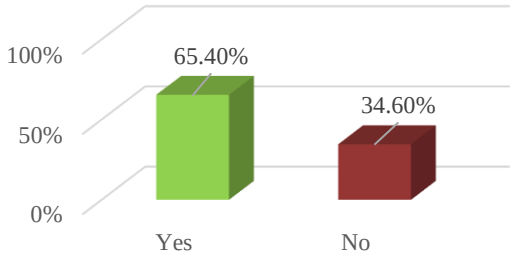
Given the colossal scale of waste generated in cities, it becomes crucial for students to grasp various waste segregation methods. The respondents exhibited a moderately positive inclination toward waste segregation, with approximately 57.7% separating biodegradable and non-biodegradable wastes. Additionally, 48% engaged in the segregation of dry and wet waste, while 34.6% practiced the separation of plastic waste from other types. However, 34.6% demonstrated negative results by not disposing of waste through segregation, highlighting the need for improvement and increased awareness.

Figure 5: Ways of Waste Segregation Taught by Schools



SOURCE: PRIMARY SURVEY, FEBRUARY 2024

Figure 6: Students' Awareness about Sustainable Development Goals related to Sustainable Cities



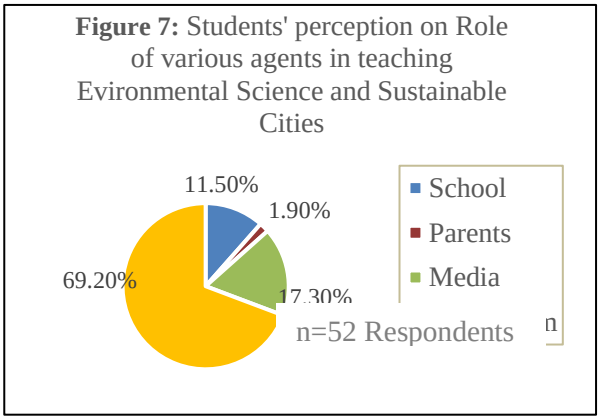
SOURCE: PRIMARY SURVEY,

The integration of Sustainable Development Goals into students' daily lives is crucial, yet there exists a significant gap between theory and practice.

Approximately 65.4%, has a rough understanding of SDGs, particularly focusing on SDG number 11, which pertains to "Sustainable Cities and Communities." While the rest, were uninformed about it.

In conclusion, the study assessed students' perceptions regarding the significance of various entities in promoting environmental science and sustainable cities. The results revealed that the majority (69.2%) acknowledge the crucial roles of schools, parents, and media collectively. Specifically, 17.3% emphasize the media's importance, 11.5% highlight the role of schools, and a minimal 1.9% attribute significance to parents. This underscores the importance of a collaborative effort involving schools, media, and parents to instill environmental awareness in students and foster informed citizenship.

Figure 7: Students' perception on Role of various agents in teaching Evironmental Science and Sustainable Cities



SOURCE: PRIMARY SURVEY, FEBRUARY

Missions related to the Management of Urban Problems in India and the Role of Students

The management of environmental problems in India involves strategic initiatives to address challenges like pollution, housing, waste, and traffic, where students play a vital role in driving awareness and sustainable change.

Swachh Bharat Abhiyan (Clean India Mission): Launched in 2014, this nationwide campaign aims to eliminate open defecation and improve solid waste management practices across urban and rural areas. It focuses on building toilets, promoting waste segregation, and ensuring proper waste disposal. Over 4,000 educational institutions across India participated in cleanliness drives during the Swachh Bharat Summer Internship program. Students organized over 1.5 lakh cleanliness drives in schools and communities during certain years, resulting in the cleaning of millions of kilometers of streets and public spaces. Many schools and colleges organized competitions, debates, and workshops centered on cleanliness and sanitation, involving thousands of students. Student-led initiatives in various states resulted in the construction of toilets, installation of waste bins, and significant improvements in waste management practices in local communities.

Solid Waste Management Rules (2016): The Government of India revised the Solid Waste Management Rules in 2016 to emphasize waste segregation at the source, efficient collection, transport, and disposal of waste. It encourages recycling and promotes the concept of Extended Producer Responsibility (EPR). Thousands of schools and colleges have integrated waste segregation and management into their curriculum and extracurricular activities. Student-led initiatives and campaigns have led to the segregation and proper disposal of tons of waste, significantly reducing the amount of waste sent to landfills. Numerous student-driven programs have focused on educating communities, resulting in increased awareness and adoption of sustainable waste management practices.

Pradhan Mantri Gram Sadak Yojana (PMGSY): This scheme focuses on improving rural connectivity and includes provisions for rural waste management and construction of solid and liquid waste management infrastructure in villages.

Waste-to-Energy Projects: Initiatives to convert waste into energy have been encouraged. Projects involving the generation of energy from municipal solid waste aim to address the issue of landfill overflow while producing renewable energy.

National Clean Air Programme (NCAP): While not solely focused on waste management, the NCAP aims to control air pollution by reducing particulate matter. Waste burning is one of the targeted sources of pollution addressed in this program.

Smart Cities Mission: Under this mission, several cities have adopted innovative waste management solutions, including decentralized waste processing, efficient collection systems, and technology-driven approaches for waste disposal.

Clean Ganga Mission (Namami Gange): This initiative focuses on rejuvenating the Ganges River and includes efforts to address solid and liquid waste management along the river banks.

Recommendations for advocating Environmental Science Education amongst Students

Environmental education empowers students to raise awareness about waste issues, assisting communities in collection, sorting, and safe disposal. Educating about biodegradable and recyclable waste, they contribute to

wider society's well-being. Students maintain cleanliness in schools, promoting proper disposal of solid waste like plastic and paper in classrooms and beyond.

1. **Advocacy and Awareness:** Students can raise awareness among their peers, families, and communities about environmental issues in cities. They can organize campaigns, workshops, games and other events to educate others about the importance of environmental conservation and sustainable practices. Celebrating important days and assemblies in school related to environmental conservation, such as Earth Day, Environment Day, Water Day and so on can bring about a positive attitude in students about conservation of the earth's resources.
2. **Community Engagement:** Students can actively engage with local communities to initiate and participate in clean-up drives, tree planting initiatives, and recycling programs. They can encourage community involvement in environmental conservation efforts.
3. **Participation in Policy:** Students can advocate for environmentally friendly policies in their cities by engaging with local governments, participating in town hall meetings, and voicing their concerns about issues like pollution, waste management, green spaces, and sustainable transportation.
4. **Innovation and Solutions:** Students often bring fresh perspectives and innovative ideas to the platform. They can develop and implement solutions to tackle environmental challenges, such as proposing eco-friendly alternatives, participating in hackathons or competitions focused on sustainable urban development, or initiating projects that promote renewable energy sources.
5. **Education and Leadership:** Students can lead by example, demonstrating sustainable practices in their daily lives. They can also inspire and mentor others, such as their family and peers, to adopt eco-friendly habits and become leaders in environmental conservation.
6. **Collaboration and Networking:** Students with the help of schools can collaborate with environmental organizations, NGOs, and other stakeholders to amplify their impact. Networking with like-minded individuals and groups can lead to greater collective efforts in addressing city-related environmental problems.

CONCLUSION

The integration of environmental science and sustainable cities into school curricula is a vital initiative highlighted in a recent study, emphasizing the increasing concern among youth for environmental sustainability. The study's objectives stress the urgency of incorporating environmental science into school curricula, analyzing city ecology concerns, understanding the roles of teachers and parents, and proposing practical activities for students. The literature review reinforces the global consensus on the significance of environmental education, showcasing diverse strategies used worldwide to tackle environmental challenges.

The research method, utilizing a mix of secondary data and on-site interviews, analyzes the current state of environmental education in schools, particularly in India. Findings unveil positive and concerning aspects of students' awareness and engagement with environmental issues, emphasizing the need for a more practical approach in the curriculum.

The study sheds light on environmental challenges in modern cities, emphasizing the pivotal role of students in advocating for sustainable urban development. It points to a gap between theoretical knowledge, especially related to Sustainable Development Goal 11, and its practical implementation in students' lives.

The analysis of students' perceptions and practices regarding environmental conservation indicates a positive trend but also highlights areas for improvement. The study stresses the importance of collaborative efforts involving schools, parents, and media to instill environmental awareness in students.

In conclusion, the study outlines concrete steps for promoting environmental science education among students. It underscores the role of students in raising awareness, community engagement, participating in policy discussions, contributing innovative solutions, leading by example, and collaborating with stakeholders. Initiatives like Swachh Bharat Abhiyan and Solid Waste Management Rules in India exemplify the impact of student-led efforts in addressing environmental challenges.

Ultimately, the study emphasizes the urgency of integrating environmental science and sustainable cities into school curricula to equip students with the knowledge, skills, and values necessary for addressing complex environmental issues. The goal is to foster a generation of informed and responsible citizens committed to environmental conservation and sustainable living.

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