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"School Leaders' Challenges in Establishing Green Schools: A Perspective Study"

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Abstract

Climate change has become a menace to the living creatures on Earth. Addressing the issue is a challenging task that needs a multifaceted approach. Educational institutes have a major role to play in the mitigation and adaptation of climate change. For this purpose, a study was carried out to know the perspectives of school administrators about challenges in Greening Schools". The study adopted a qualitative approach. Census sampling was done. Participants of the study were all the school leaders of the Federal Directorate of Education. Out of 432 school leaders, 315 (73%) responded to the open-ended questionnaire administered through Google Survey forms. Data were thematically analyzed through NVIVO 14. Codes were developed to see the patterns, make comparisons, and identify relationships among the sub-themes and the main themes to answer the research question. The results revealed that the leadership has financial and physical constraints, besides having community and stakeholder engagement issues. It was concluded that the successful implementation of green school initiatives is hindered by educational constraints, lack of community engagement, inadequate infrastructure, environmental challenges, and insufficient teacher and student support. It was recommended to comprehensively address the curriculum integration, community engagement, infrastructure development, financial support, teacher training, student involvement, and progress monitoring that enable schools to successfully implement green initiatives.

Keywords: School Leaders, Challenges, Greening Schools

Introduction

Climate change has made the people and the planet very vulnerable. It has become essential for educational institutions to now play their vital role in developing green climate-resilient societies by empowering both teachers and students. Climate variation occurs as a result of human actions known or unknown, leading to inconsistency in the normal climate. When there is an hourly or daily change then it is called the changes in the weather and if consistently the same patterns occur they lead to climate change. Climate change therefore can be attributed to the continuity of similar patterns for weeks, months, and years (Jepma & Munasinghe, 1998).

SDG 13 urges United Nations member states to endeavor towards the restoration of planet Earth and to collaborate in preventing the effects of climate change. Numerous regions around the world have grown vulnerable to these effects, and the environmental crisis is intensifying with each passing day. The necessity for adaptation and mitigation measures to address climate change is becoming increasingly apparent. It is being told that countries should now be assessed not solely based on per capita GDP, but also considering their susceptibility to natural disasters (ESCAP, 2019).

However the integration of sustainability is stressed for the K-12 students and there is a need for the integration of sustainability themes in the national standards, teacher trainings, and in the ESD pedagogies. Education around the globe must focus on attaining target 4.7 and it must include pre-service teacher education which must cover eco-literacy and environmental education and the pedagogies should focus on the ESD. Similarly, the climate themes must be taught to the principals and the teachers of in-service being the stakeholders of the institution, the head must ensure that climate education is part of the teaching-learning process and the innovative approach needs to be adopted and the relevance of climate education in the local and the global scenario must be taken into account (Iyengar & Kwauk, 2021).

Pakistan is a country more susceptible to climate change and being an agricultural country climate change is causing the loss of billions of dollars. The extreme rise in temperature, the glaciers melting, the unseasoned rains, severe flooding, land sliding and droughts are all due to climate change, and addressing this issue is very essential to save Pakistan and the world at large from this global threat (Mahmood & Hassan, 2022). There is a dire need to address this challenging issue of climate change both for our present generation and for the generations to come.

Statement of the Problem:

School administrators play a crucial role in making schools climate-resilient. Schools, offices, businesses, and other organizations are the places where lots of energy and water are utilized. Hence saving natural resources in these places can be highly beneficial. Lots of resources can be saved only with awareness and conscious and responsible use. Therefore to undertake such climate-friendly initiatives, it's essential to initially identify the gaps and challenges in greening and understand the perspectives of school administrators as the school leaders are the main stakeholders in creating sustainable schools and addressing climate change issues.

Rationale of the Study: To address the increasing need for sustainable practices in schools, this research was carried out to uncover the key perceptions and the approaches that can facilitate the transformation of schools into ecologically sustainable institutions. The outcomes of the study will contribute to the development of more effective and inclusive greening practices in the education sector leading to significant improvement in the climate-resilient environment.

Significance of the study:

This study will enable the policymakers to address the genuine issues highlighted by the school administrators in making schools climate-friendly. It will enable inter-ministerial collaboration and coordination among the departments of Environment, CDA, Water and Sanitation, Planning and Development, Finance, Energy, and Transport to collectively sit with the Education Ministry to plan and work for the Greening of Schools. It will help the administrators to make plans to address the identified challenges. It will benefit the school administration, supporting staff, learners, and the community in gaining the understanding and knowledge related to climate change issues. It will serve to educate society at large, encouraging the adoption of greener attitudes and values. It will enable every member of the community to adopt climate-friendly behaviors.

Research Questions:

1. What challenges do the school leaders encounter in implementing green school initiatives?
2. How can these challenges be addressed to achieve the overall goal of creating a sustainable and climate-resilient environment in educational institutions?

Delimitation of the study:

1. The study will be delimited to Islamabad district only
2. It will be delimited to Federal Directorate of Education (FDE) public schools and colleges only

Limitations of the Study:

Due to time constraints, only public school heads were engaged in the study.

Theoretical Framework:

Climate change is backed by the theoretical framework developed by Urie Brofenbrenner. "The Ecological Systems Theory" explains how individuals grow and change within different environmental contexts. This theory suggests that human development happens gradually over time, deeply connected to the dynamic interaction between a person and their surroundings. Bronfenbrenner's significant framework includes four primary components: the Microsystem, Mesosystem, Exosystem, and Macrosystem ((Ettekal & Mahoney, 2017; Rus et al., 2020).

Literature Review:

Education builds awareness in the masses and enables them to change their actions and approaches and embrace climate change-related dispositions empowering the community to adopt climate resilient practices. It allows the masses to critically think, resolve the issues, and make decisions leading to mitigation and adaptation to climate change. It prepares societies to battle climate change and contributes towards a healthier economy (Dhal, 2021).

To adopt climate change strategies in schools it is necessary to find the gaps and challenges and the heads of institutions are the ones to comprehend and implement these strategies for this purpose, the challenges they face also need to be deliberated. With the world moving towards

sustainability awareness regarding eco-friendly institutions is increasing in some of the developing nations of the world. The role of institutional heads in this regard is seen as crucial not only in developing the capacities of the students and the staff for more environmentally friendly attitudes but for the building of innovative capacities to deal with climate change. The international agencies' commitments to climate change are promoting educational institutions to adopt climate-resilient measures (Najafian, & Karamidehkordi, 2018).

Climate change studies mainly aim to facilitate society in dealing with the huge challenge of climate-related problems and primarily focus on the reduction of carbon footprints. Unfortunately, there are indications of high carbon emissions in some universities and national and international institutions. In the study conducted about climate change awareness, the participants were however cognizant of climate change but were ignorant about greenhouse gases. The study acknowledged more awareness drives on climate change especially through electronic media and training for adopting climate-responsive attitudes and behaviors in collaboration with the community (Elsharkawy, Elsheikh & Refaat, 2023).

On the other hand, the journey towards sustainability started with a SCARP where the children started to separate their waste after eating their lunch into the waste which could be separated and used for recycling, landfilling, and composting. Greening schools need the collective efforts of the stakeholders of schools including the parents and the society at large (Uline & Kensler, 2021).

Moreover, institutions are not only asked to get climate-ready but they are expected also to adopt just and inclusive climate policies. International institutions like the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), and the European Union (EU) are the major climate institutions to make strategic plans for climate change. Studies highlight the crucial role of women in decision-making for climate change. Their involvement is vital for maximizing the benefits of climate-resilient policies. Genuine representation of women in these institutions is necessary, not only for implementing climate-resilient policies but also for their formation. Ensuring gender involvement is key to achieving climate-resilient societies (Magnusdottir & Kronsell, 2024).

It is an undeniable fact that education plays a vital role in educating about climate change but the knowledge of educators regarding environmental issues is very limited and in this regard, the role of curriculum can be vital. The need is felt to integrate the global climate topic or the topic of the environment into the curriculum but is assumed as a complex issue. If environmental topics are related to Earth structure instruction, then it becomes easier for the learners to understand global climatic changes. Including the topics of climate change in the already overburdened curriculum makes learning about the environment quite difficult and if the interdisciplinary approach is adopted then the teachers may require training in understanding the interrelation of different topics related to climate change. The role of teacher educators can be vital in training the teachers (Fortner, 2001).

However, in sustainable schools, learning is considered as collaboration and communication and not simply the exchange of information. Curricula play an important role in the imparting of sustainability education. Such type of education can stimulate systematized urban planning with importance given to both the rural and the urban areas and promoting cultural heritage. Challenges like improving, financial, societal, and ecological conditions need to be addressed so that citizens improve their prominence of life and contribute to the continuation of sustainable actions (Demosthenous, 2023).

It is agreed that climate resilience needs every school to become a climate advocate focusing especially on the strategy of considering the whole school approach where every stakeholder of the school assumes the responsibility to play their role in tackling climate change for climate action and every school must serve as a model where climate-friendly picture is seen. The community has an important role to play. Include the parents of your students in communicating the climate-friendly actions. Monitoring all along the process can keep climate action schemes aligned (Gibb, 2016).

Besides this, greening schools also need the focus on saving precious water resources. The artificial recharging arrests the decline of the water level under the ground. Small steps like not washing in the running water, reusing water after washing vegetables and using non-soapy water for the plants and using smaller flush tanks and showers, using buckets to wash cars, avoiding leakage, consuming minimum water usage wherever possible will save lots of water (Kumari & Singh, 2016).

Greening requires transportation also to be eco-friendly. Green jobs may be promoted in the transportation sector and people who can contribute towards sustainable cities be hired. Donor countries can play an important role in developing green transportation in developing countries (Bongardt & Schaltenberg, 2011). Making vehicles more energy efficient is necessary. When planning for green transportation, adopting a systemic approach is essential. Strict regulations should be implemented to promote pollution-free vehicles. People must change their lifestyles, adopt fuel-efficient practices, and prefer walking, biking, and using public transportation (Zahedi, 2012). Sustainable transportation can become possible with the increase in multi-stakeholder involvement and increased national and international interactions and collaborations (United Nations, 2021).

Another important aspect of greening schools is plantation led by the students. In the Philippines, a descriptive-qualitative study was carried out with 12 participants studying the Earth and Life Sciences as they were felt to be the most suitable sample for the said research. The study concluded that this research led to bringing awareness of preserving the planet and pondering upon the multiple benefits it reaped in the plantation of trees (Punzalan & Balanac, 2020). Besides cross-sectorial coordination is necessary to plant and protect the trees and urban forests. They require care and compassion and may be treated as a future investment. Every person must plant a tree so that we reap a sustainable future in the coming years (Turner-Skoff & Cavender, 2019). Similarly, for the growing of the trees several challenges are faced like insufficient space or land for tree plantation, lack of knowledge for its seedlings and care like watering, insecticides, fertilizers and placing and selecting of plants as per the seasons, human resources to maintain the plants, ownership of the staff and the students is essential in this regard (Golpo & Ricafort, 2023).

The biggest barrier to greening homes, schools, and societies is the irresponsible use of plastic. The legislation to ban plastic is sometimes time-consuming and whatever steps are taken to stop the usage of plastic for the long-term effects, it must be part of education and awareness. Every member of society has to play their role so that the use of plastic is minimized and a healthy sustainable society can be advanced (Da Costa, Rocha-Santos, & Duarte, 2020). Responsible consumption of food is essential to keep the environment green. In this way sustainable food consumption can be ensured and waste management can also be done. Donations of the extra food can be sent to public charities and food banks (Camilleri, 2021). Greening schools utilize open spaces for learning as it enhances the interest of the students. The schools have to make use of outdoor learning spaces involve the communities and involve the students and staff in preparing projects related to sustainability including greening activities and align the greening component with an appropriate vision and mission of the schools. There is a need to tailor the sustainability needs to the local context meeting the sustainable needs at the regional and local levels (Iyengar & Kwauk, 2021).

Consequently in another study, upon examining the perceptions and attitudes of students and faculty regarding climate change, it was found that teachers had greater awareness compared to students. They emphasized the importance of including climate-related themes not only in the curriculum but also in co-curricular activities. Additionally, they felt the need for further investigation and awareness on sustainability topics in Pakistan, particularly for the uneducated and in various languages spoken and understood by the people. The development of a national climate awareness policy, especially targeting teachers, was highlighted as indispensable (Natalia, Ullah, Khan, Wahid, Mehmood & Naz, 2023).

Pakistan, positioning itself as a responsible global actor, ratified the United Nations Convention on Climate Change in 1994, demonstrating its recognition of the imperative to curtail anthropogenic activities driving unfavorable climatic impacts. Aligned with global requisites, the Pakistani government is dedicated to upholding its international obligations by implementing various measures. Despite the obstacles, Pakistan persists in nurturing its populace as responsible global citizens, self-assured to actively contribute to the building of resilient societies. These measures include an extensive afforestation campaign, and the inauguration of the Clean and Green Pakistan initiative, which notably encompasses sanitation, afforestation, efficient waste management, environmental health, and potable water provision (Ministry of Climate Change, Government of Pakistan, 2018).

Despite genuine efforts, Pakistan is extremely susceptible to the hostile effects of climate change, and with this comes disasters like droughts, flash floods, landslides, extreme heat and cold weather coastal flooding, droughts, etc. These natural calamities make the continuation of education

difficult for the school-going children at large with the most affected among them being the girls. This affects the learning of the students. The escalating carbon emissions are driving a steady global temperature increase, causing ice melt and subsequent sea-level rise. Even though Pakistan's heightened susceptibility to climate change, research on the subject remains limited. There is no proper data either in national or provincial educational documents on the climate variation effects on the school organization, education admittance, and staff and students' health care (Kagawa, 2022). Education is pivotal in this context, and schools serve as critical bridges between knowledge and communities, facilitating the adoption of climate-resilient skills. Against this backdrop, this study becomes highly significant for identifying the challenges of addressing climate change issues and making schools green.

Research Methodology

This study aims to investigate the challenges in making schools climate resilient. This research applied the qualitative research method with an ethnographic research approach. In a qualitative study, the sampling procedure is different, and usually, purposive sampling is taken, and reaching saturation is considered (DeJaeghere, Morrow, Richardson, Schowengerdt, Hinton & Muñoz Boudet, 2020). In the present study census sampling was done. All 432 public school leaders of the Federal Directorate of Education (FDE) were taken as the target participants out of which 315 school leaders responded. The participation rate was 73% and the data were collected through a Google survey with an open-ended questionnaire. The data were analyzed using NVIVO 14. Thematic analysis was done and the codes were developed to see the patterns comparisons, and relations among the sub-themes and the main themes to answer the research questions.

Data Analysis:

Data were analyzed using NVIVO 14 and the following themes, subthemes and codes came out of the study. Six major themes were generated from the findings.

Table-1

Financial and Resource Constraints

S. No	Theme	Sub-Theme	Code/Examples
1.	Financial and Resource Constraints	Budget and Funding Constraints	No budget, Financial problems, Cost management
		Resource Allocation	Poor resource allocation, Resource management issues
		Infrastructure Adequacy	Problems with water supply, Electricity issues, Sewage problems

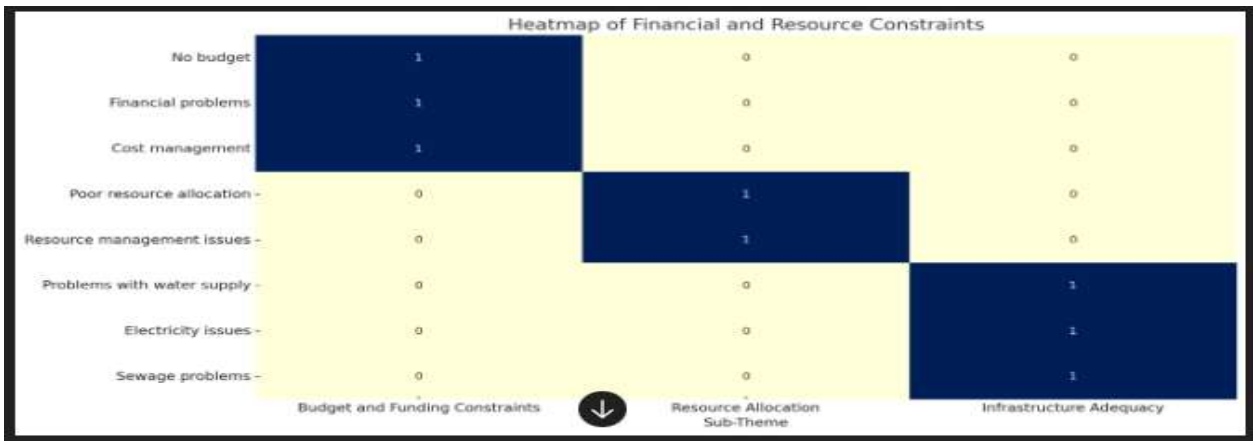


Figure 1 Financial and Resource Constraints

The table and the heat map envisage the distribution under the major theme of financial constraints and its specific focus is on the three key sub-themes: Budget and funding constraints, Resource allocation, and Infrastructure adequacy. The budget and funding constraints like no budget, financial problems, and cost management specify that there are financial issues and need better and deliberate financial planning. The subtheme of resource allocation which focuses on poor resource allocation and resource management draws attention to the more intentional resource distribution.

Infrastructure issues like water supply issues, electricity issues, and sewerage issues suggest the critical need for infrastructure improvement.

Table-2

Space and Environmental Management

S. No	Theme	Sub-Theme	Code/Examples
2.	Space and Environmental Management	Space Availability	No ground available, Lack of space for gardening
		Water Resource Management	Water scarcity, Water resource management issues
		Waste Disposal and Recycling	Problems with waste disposal, Lack of recycling facilities
		Weather Adaptability	Plants affected by harsh weather

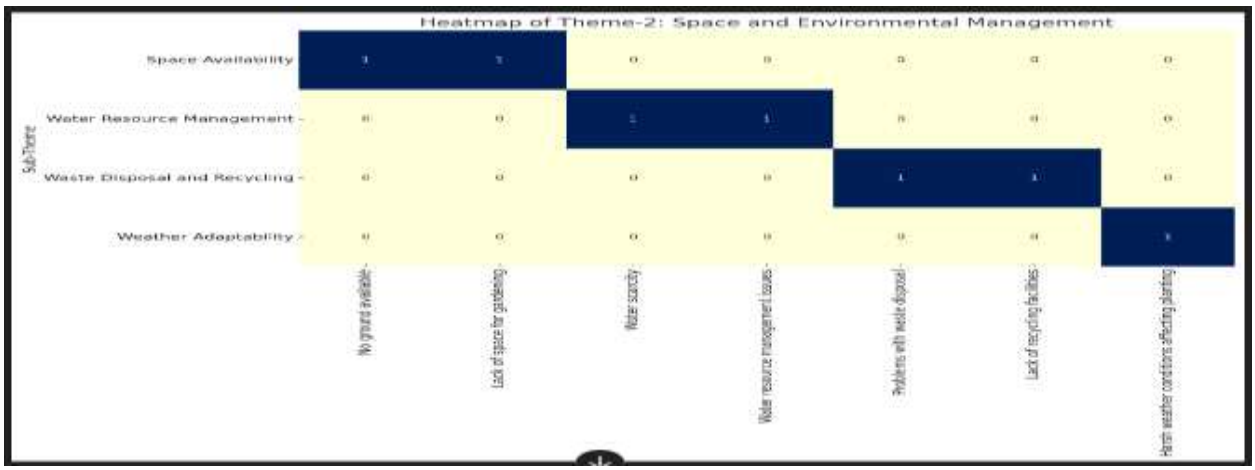


Figure 2 Space and Environmental Management

As per the table and the sub-theme of Space Availability, focus on the non-availability of ground and lack of space for gardening, highlighting the need for maximum resource utilization and innovative solutions like vertical gardens and rooftop gardens. For Water Resource Management, addressing water scarcity and management issues requires water conservation measures, efficient irrigation systems, and sustainable water use. Waste Disposal and Recycling issues can be mitigated by educating the community and providing adequate recycling facilities. In the sub-theme of Weather Adaptability, selecting resilient plant species and adopting protective measures and strategies to adapt to changing weather patterns are necessary to sustain green initiatives.

Table-3

Awareness and Education

S. No	Theme	Sub-Theme	Code/Examples
3.	Awareness and Education	Environmental Awareness	Low awareness about environmental issues, Climate change
		Knowledge and Skill Development	Insufficient training, Lack of knowledge in environmental practices
		Integration of Environmental Education	Lack of environmental topics in the curriculum
		Availability of Teaching Resources	Lack of educational materials for greening
		Technical Competence	Need for technical skills in environmental practices

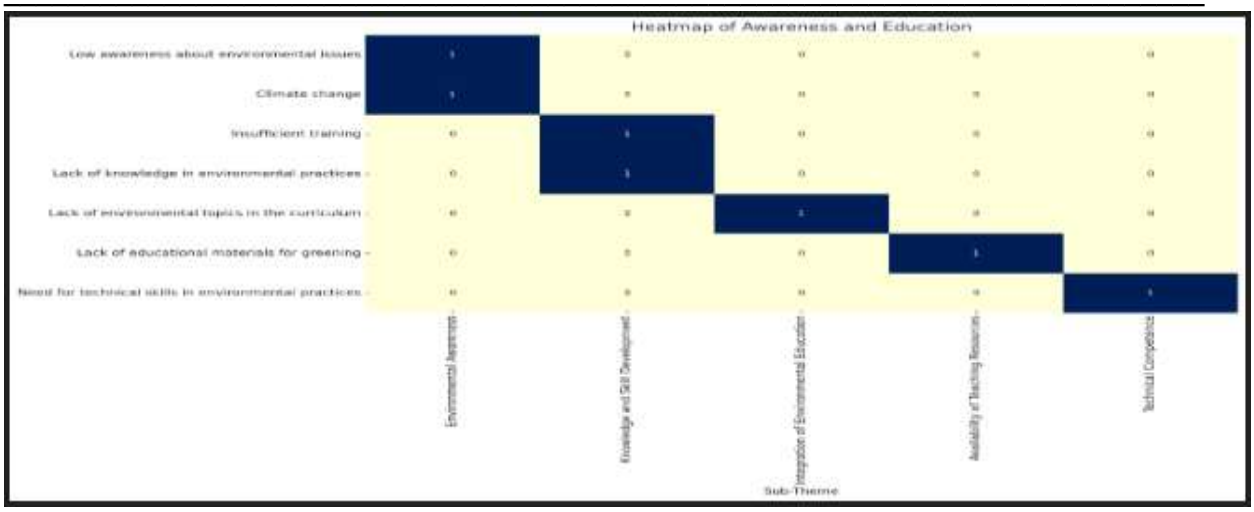


Figure 3 Awareness and Education

This sub-theme as per table-3 is marked by "Low awareness about environmental issues" and "Climate change." The heat map indicates a significant lack of awareness, suggesting an urgent need for educational programs to raise understanding of environmental concerns. Issues of "Insufficient training" and "Lack of knowledge in environmental practices" highlight a considerable gap in training, emphasizing the need for comprehensive educational programs to enhance environmental skills. The heat map points to the "Lack of environmental topics in the curriculum" as a major issue, indicating the need for curriculum development to include environmental education. Marked by "Lack of educational materials for greening," the heat map shows a shortage of resources for teaching environmental practices, highlighting the need for investment in educational materials. Finally, the issue of "Need for technical skills in environmental practices" underscores the need for specialized training programs to equip individuals with essential technical competencies

Table-4

Policy and Planning

S. No	Theme	Sub-Theme	Code/Examples
4.	Policy and Planning	Strategy and Policy Development	Absence of clear planning, No greening policies
		Supportive Framework	Lack of supportive policies and regulations
		Building and Land Constraints	Limitations imposed by school buildings and land

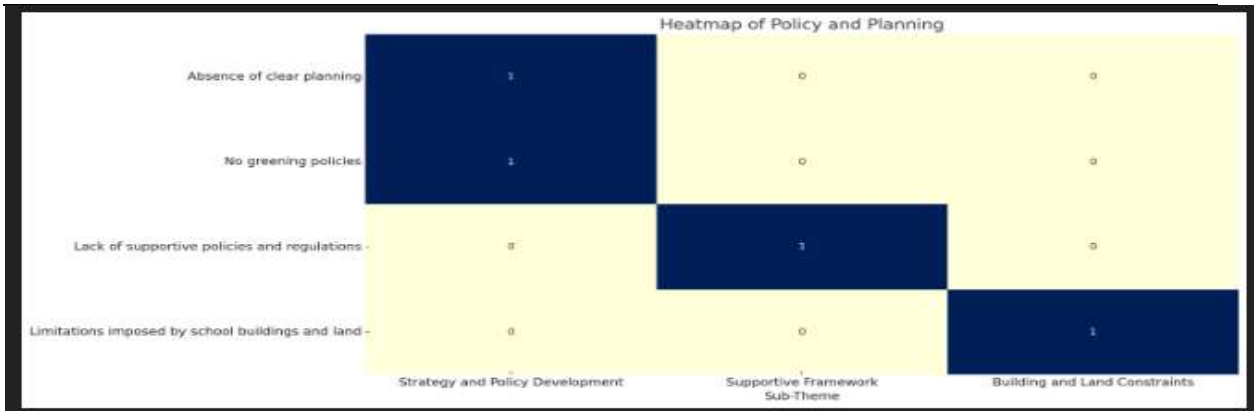
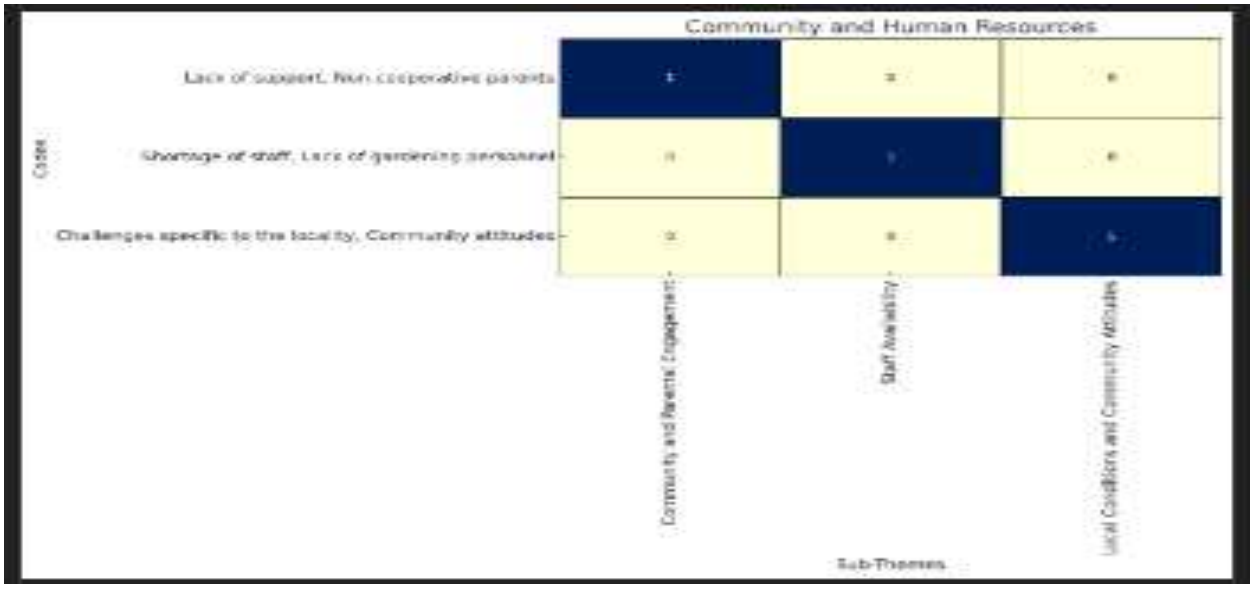


Figure 4 Policy and Planning

The above table-4 and the sub-theme are marked by "Absence of clear planning" and "No greening policies," indicating a significant lack of strategic planning and specific policies for greening initiatives. This suggests an urgent need for developing comprehensive strategies and policies to guide environmental efforts. The issue of "Lack of supportive policies and regulations" highlights a gap in the regulatory framework necessary for greening initiatives, emphasizing the need for creating and enforcing supportive policies. "Limitations imposed by school buildings and land" indicate that physical constraints are significant barriers to greening projects, highlighting the need for innovative solutions and strategic planning to optimize available space for environmental initiatives.

Table-5
Community and Human Resources

S. No	Theme	Sub-Theme	Code/Examples
5.	Community and Human Resources	Community and Parental Engagement	Lack of support, Non-cooperative parents
		Staff Availability	Shortage of staff, Lack of gardening personnel
		Local Conditions and Community Attitudes	Challenges specific to the locality, Community attitudes



'*Figure 5* Community and Human Resources

Table 5 and the sub-theme lack of support and non-cooperative parents indicate significant barriers to community and parental engagement. This highlights the necessity for strategies to foster community involvement and parental cooperation. Initiatives such as community workshops, parental involvement programs, and awareness campaigns can help bridge this gap and enhance community participation in environmental projects. The shortage of staff and lack of gardening personnel are critical issues that hinder the implementation and maintenance of greening projects. Addressing this requires hiring additional staff, providing training for existing personnel, and possibly recruiting volunteers. Ensuring adequate staffing is essential for the successful execution of environmental initiatives. Challenges specific to the locality and prevailing community attitudes can significantly influence the success of environmental projects. This suggests a need for tailored strategies that address local conditions and work to shift community attitudes positively. Engaging local leaders, conducting needs assessments, and implementing community-specific solutions are crucial steps to overcoming these challenges.

Table-6
Behavioral and Safety Aspects

6.	Behavioral and Safety Aspects	Attitude and Behavioral Change	Need for changing attitudes towards conservation
		Security of Green Areas	Concerns related to the safety of installations
		Workload Management	Heavy workload, Syllabus pressure
		Other Unspecified Challenges	Miscellaneous issues not covered in other categories

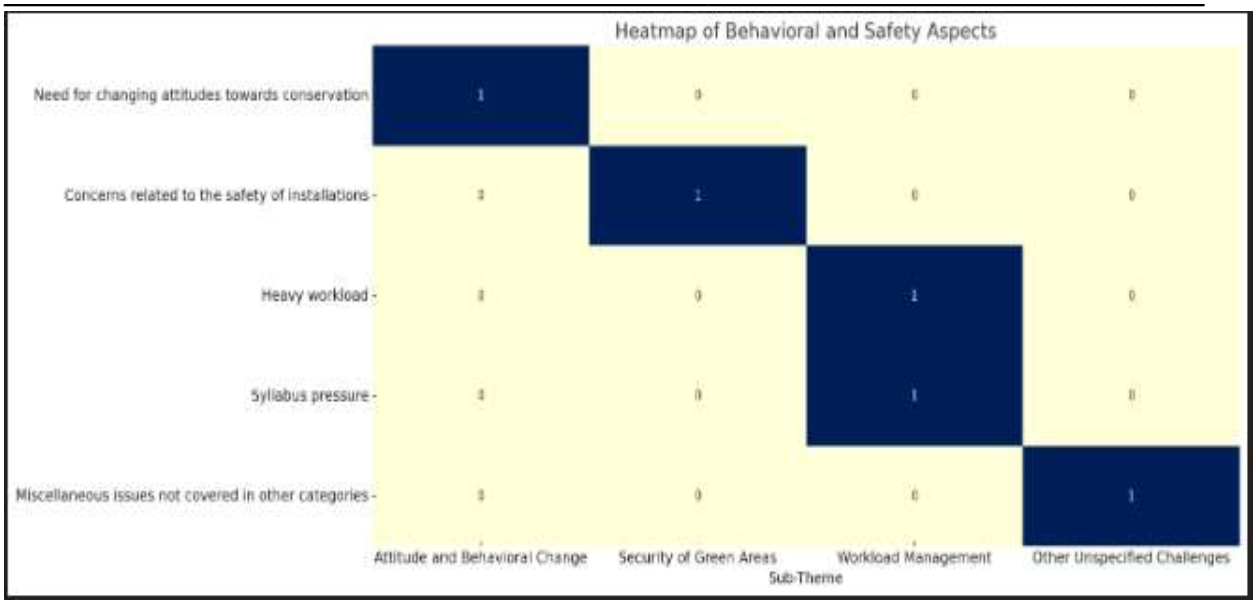


Figure 6 Behavioral and Safety Aspects

Table 6 and the sub-themes highlight "Need for changing attitudes towards conservation," indicating a significant need for educational and motivational strategies to promote positive environmental behavior. "Concerns related to the safety of installations" suggest robust security measures are needed for green areas. The issues of "Heavy workload" and "Syllabus pressure" highlight the challenge of balancing academics with environmental activities, suggesting better workload management and integration of environmental practices into the syllabus. The sub-theme of "Miscellaneous issues not covered in other categories" points to various unspecified challenges, emphasizing ongoing assessment and flexibility in addressing emerging issues.

Word Cloud of Challenges in Greening Schools:

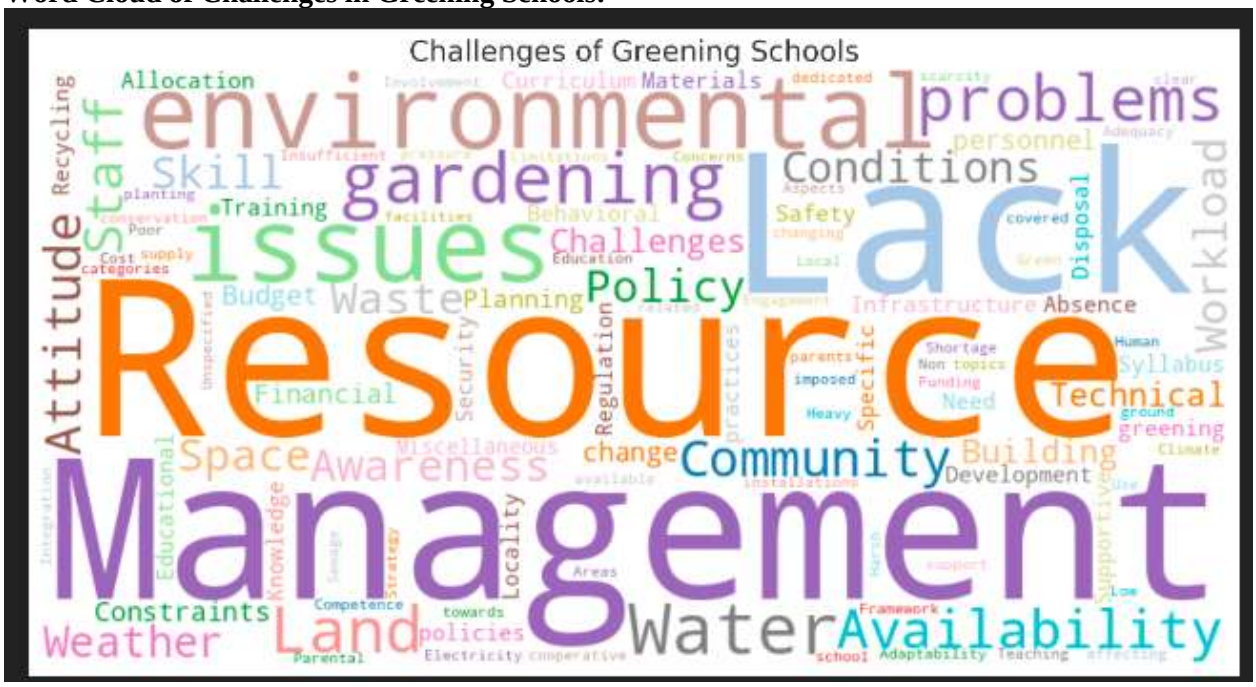


Figure-7 Challenges of Greening Schools

The word cloud titled "Challenges of Greening Schools" highlights several key terms that indicate the main obstacles in implementing green school initiatives. "Resource Management" stands out prominently, suggesting that managing available resources is a significant challenge. The word "Lack" also features prominently, indicating a shortage in various areas, possibly including resources, funding, and support. "Environmental" and "Issues" suggest that environmental problems are a core concern. The terms "Community" and "Awareness" emphasize the need for community involvement and raising awareness. Additionally, "Gardening" and "Water" point to specific areas of focus within

greening efforts. "Staff" and "Training" indicate that having adequately trained personnel is crucial for successful implementation. Overall, the word cloud underscores the multifaceted challenges in creating sustainable, green schools, with a strong emphasis on resource management and community engagement.

Discussions

The present study examined the challenges related to greening schools. And found in agreement with Elsharkawy, Elsheikh & Refaat (2003), where the participants agreed on building awareness about climate change. This study is also in accord with Natalia, Ullah, Khan, Wahid, Mehmood, & Naz (2023), whereby they agree upon educating the community, especially the uninformed ones on climate change. The study does not see consensus with Magnusdottir & Kronsell (2024) as the study participants did not specifically mention the gender role. The participants were also in agreement with Uline & Kensler (2021) & Najafian, & Karamidehkordi (2018) where both focus on the role of institutional heads and collective efforts for greening. Similarly, there was consensus with Fortner (2001), who stressed including climate themes in the curricula.

Conclusions

The study determines that effective resource management, policy development, and enhanced awareness remain essential to overcome the multifaceted challenges of implementing greening initiatives in schools. Addressing the deficiencies, technical problems, and community engagement are vital for success. A comprehensive approach involving targeted training and better resource allocation is required to alter schools into environmentally sustainable institutions. It was finally concluded that the successful implementation of green school initiatives is hindered by financial, physical, and infrastructure constraints and insufficient teacher and student support.

Recommendations

To address climate change challenges and promote greening school projects, it is suggested to incorporate green school concepts into the curriculum, with a focus on hands-on learning. The need for government, public-private funding, community collaboration, and enhancement of infrastructure with green spaces, playgrounds, and operational waste management systems was felt indispensable. It was also recommended to formulate supportive financial policies and plans which include grants and funds necessary for greening. Training programs for both the in-service and the pre-service on environmental education were recommended. It was endorsed that engaging students with activity-based ventures, providing financial aid to deserving students, launching awareness campaigns, and nurturing partnerships with local stakeholders will support community involvement. Establishing a monitoring framework to track progress and involving students in the process to ensure ownership was also recommended.

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