Green Schools: Integrating Sustainability in School Curriculum

Tisha Goswami, Ansar Ahmad***

Abstract

Education plays a crucial role in disseminating the meaning of sustainable development. It addresses the integration of all dimensions of sustainability, i.e., social, environmental, cultural and economic. Therefore, it is important to include Education for Sustainable Development (ESD) at all levels of education across the world. ESD leads to the holistic development of learners, and also prepares them to understand and respond to diverse scenarios related to sustainability. Therefore, it becomes important to understand how deeply ESD is implemented in schools to transform them into green schools.

For this study, a sample of 90 teachers and 18 principals teaching at the middle stage of schooling was purposively selected from 18 Delhi schools. Checklist, open-ended questionnaires and semi-structured interviews were used to collect data for the mixed-method approach. The findings revealed that majority of the schools faced challenges in incorporating ESD into the curriculum and had insufficient facilities to qualify as green schools. Moreover, teachers need to take more initiatives to urgently integrate sustainable development into the teaching–learning process.

Therefore, it is essential for schools to integrate ESD into their curriculum to create green schools, a necessity in this globalised world. The study concludes that ESD is an important effort to rethink about the education system at various levels, thereby contributing to building sustainable societies.

Keywords: *Education for Sustainable Development (ESD), green schools, teaching–learning process*

Introduction

According to the Report of the World Commission on Environment and Development: Our Common Future, sustainable development is needed so that the present and future generations can fulfil their basic needs without any compromise (UN Secretary General and WCED, 1987). Moreover, sustainable development is a balance of three dimensions, namely, environmental, economic and social. To achieve development in these dimensions, the United Nations (UN) set eight Millennium Development Goals (2000) on the then emerging global issues and challenges. When the targets were not achieved by 2015, it set 17 Sustainable Development Goals (SDGs) to be achieved by 2030 for global development (UN General Assembly, 2015). In the United Nations Decade of Education for Sustainable Development (2005–14), ESD was referred to as a revolutionary idea for spreading awareness and education, including training the public to be aware of the connection among different issues of sustainable development (Buckler & Heather, 2014). It also focused on developing knowledge, skills, behaviour, and inculcating values in society that would empower all individuals to show

their responsibility for making the future sustainable for all (UNESCO, 2014).

Sustainable development should not be looked upon as a new programme but as a concept that needs to be integrated in the ongoing educational programmes, as education is the key in building the capacity of society to work together and build a sustainable future for all (Timm & Barth, 2021). Thus, integrating topics related to ESD into the curriculum prepares learners to understand and respond to diverse issues. Moreover, ESD is the prerequisite to promote schools in stimulating learners to reflect on their own lifestyle and find sustainability issues (Gough & Scott, 2003). A school that promotes environmental sustainability and caters to the holistic needs of learners is referred to as a Green School (Sharma & Pandya, 2015). Also, in a green school, the focus is on the content, learning outcomes, pedagogy and school environment, which leads to the effective implementation of ESD (UNESCO, 2014). Overall, it can be said that a green school is one where ESD is integrated into the educational activities to promote knowledge and skills for social, economic, cultural and environmental dimensions of sustainable development (UNESCO, 2023).

To impart sustainable literacy and become a green school, a process-oriented approach with emphasis on experiential learning is crucial for learners. All subjects, including science, social science and language, have the capability to promote ESD during the cross-curriculum processes in schools (Sund & Niklas, 2020). The syllabus, when localised by incorporating more nature-related lessons, along with their transaction during classroom engagement, helps learners acquire knowledge about their surroundings and find solutions to make it sustainable (Kuo, et al., 2018). Teachers and the school environment are critical agents in the twenty-first century to equip the young minds with knowledge that helps build a sustainable society (Ferguson, et al., 2021). Consequently, educators need to possess sustainable development competencies to instill them in learners. Also, they should be capable of aligning these competencies with their pedagogical practices (Rieckmann & Barth, 2022).

In India, the Right to Education Act (2009), along with major educational reforms, policies and schemes, started by the NITI Aayog, were not satisfactorily implemented. Besides, the curriculum followed by educational institutions did not align with the necessities of society, and the teaching–learning process was not conducted in accordance with the National Curriculum Framework (2005). Additionally, there was no monitoring of the functioning of schools, and the use of outdated pedagogy resulted in an unsustainable education system in India (Mohanty & Dash, 2018). In alignment to this, it becomes necessary to incorporate ESD into the school curriculum in India. Furthermore, the SDGs, which are an integral part of ESD, are built on global priorities that need to be adopted by every government and educational institution in a modified way catering to the national and localised requirements (Kioupi & Voulvoulis, 2019).

Significance of the Study

Children are the future of every nation, and contributors to change and transformation once they become aware of their responsibilities. When they start understanding the need for sustainable development from an early age, they gain more knowledge and develop various skills to participate in sustainable development activities globally.

ESD empowers learners to take responsible actions for promoting economic feasibility, environmental solidarity and social justice, so that all generations can live in harmony (UNESCO, 2020). This can be achieved by adopting sustainable development practices by schools. Also, by building a common vision based on localised sustainable practices and utilising learner-centric pedagogical approaches, educators can help the nation

achieve SDG 4. The National Education Policy (NEP) 2020 emphasises environmental education, sustainable lifestyles, sustainable reform and promotion of SDG 4, i.e., quality education (Ministry of Education, 2020). Furthermore, green schools are essential to achieve Target 11.7 of SDG 11 (Sustainable cities and Communities), which aims to provide universal, safe, green spaces that are inclusive and accessible for children by 2030 (UN General Assembly, 2015).

The National Curriculum Framework for School Education (2023) was released 18 years after the National Curriculum Framework (2005), incorporating a major upgrade, focusing on the holistic inclusion of all aspects of sustainable development in the school curriculum to achieve the SDGs. Drawing inspiration from this, it is essential to update all other policies, programmes and curricula related to school education to genuinely integrate the concept of ESD, considering the demands of the global society. Against this backdrop, it is essential for all stakeholders, including teachers, teacher-educators, policymakers and curriculum developers to reflect on the relevance of ESD in this rapidly evolving world and acknowledge its need.

The paper, therefore, aims to study ESD and its integration into the curriculum to create green schools. Consequently, it provides insight into ESD to transform every school into a green school, which would help the school community undertake various initiatives through the teaching–learning process.

Operational Definitions

Education for Sustainable Development: It implies empowering middle school students through education gained from schools to be capable enough of thinking critically and taking actions for a sustainable future.

Curriculum: It relates to the overall educational experience, including the subject matter, for the holistic development of students at the middle stage of 18 schools of Delhi.

Green schools: These refer to schools where ESD is integrated into the curriculum to educate students about social, economic, cultural and environmental sustainability.

Objectives of the Study

1. To study the facilities available in 18 Delhi schools to transform them into green schools
2. To study the initiatives taken by the schools to promote sustainable development in the teaching–learning process
3. To study the challenges faced by the school authorities to transform their schools into green schools

Methodology

The researchers employed mixed method of investigation. The sample comprised 18 schools from Delhi. Of these, five were private and 13 were government schools. A total of 108 samples, comprising 90 teachers and 18 principals teaching at the middle stage in the schools of Delhi, were selected using purposive sampling technique.

The responses were gathered using tools like checklists, open-ended questionnaires and semi-structured interview schedules. These tools were developed by the researchers and validated by experts. A checklist was employed to study the facilities available in the schools for creating green schools. Questionnaires were employed to study the initiatives taken by the schools to promote sustainable development in the teaching–learning process. The semi-structured interview schedule aimed to study the challenges faced by the school authorities in making their schools green.

Results and Discussion

Objective 1: To study the facilities available in 18 Delhi schools to transform them into green schools

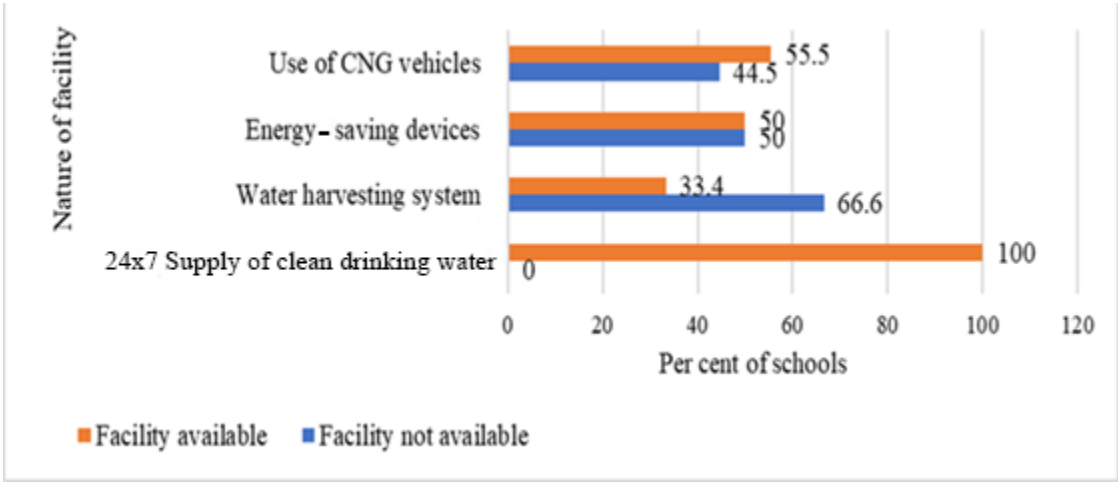

Figure 1: Facilities available to conserve the environment and sustain its well-being

Figure 1 indicates that 55.5 per cent of the schools ensured that all means of transport, whether owned or hired, strictly operated on CNG and were available to learners and staff members travelling over 5 km distance. On the contrary, the remaining 44.5 per cent schools did not provide transportation facility to their learners or staff members. Half of the schools had power backup systems, such as energy-saving devices or solar plants, whereas the remaining lacked energy-saving devices or power backup. Two-third of the schools had not installed rainwater harvesting system and often experienced waterlogging on campus. The remaining one-third schools had a rainwater harvesting system to conserve water, with no means of storing stagnant water. To ensure access to clean and healthy drinking water, all schools maintained 24×7 water supply and drinking water system.

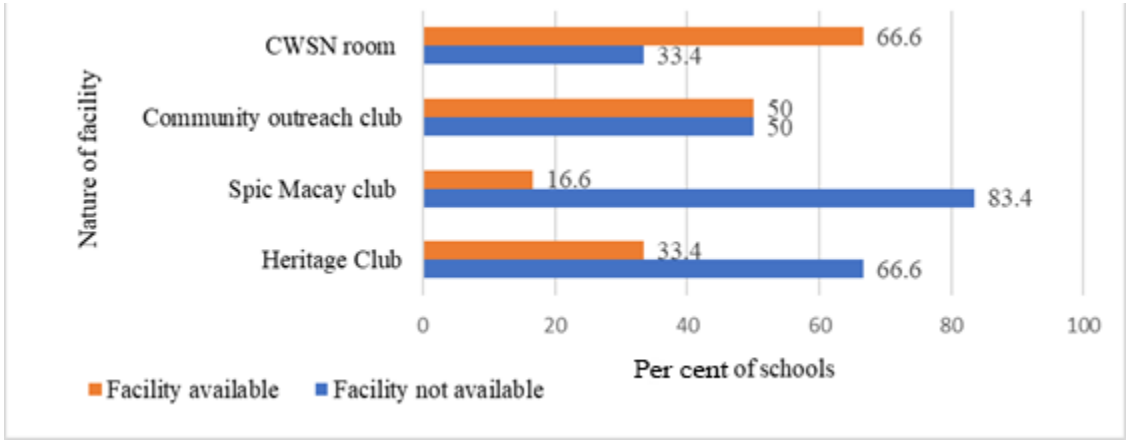

Figure 2: Facilities available to integrate sociocultural heritage

Figure 2 illustrates that two-third of the schools had separate rooms for Children with Special Needs (CWSN), along with the provision of inclusive regular classroom studies. In contrast, the remaining one-third schools lacked separate rooms for CWSN for one-on-one guidance, along with inclusive education. Half of the schools had community outreach clubs, allowing learners to inculcate the values of serving the society and participate in school activities for better educational outcomes. On the contrary, the other half did not have community outreach clubs and experienced minimum community participation in school activities. It was found that 83.4 per cent schools did not have a Spic Macay club, whereas the remaining 16.6 per cent had one to help learners imbibe traditional Indian classical culture and share their learnings with future generations. Furthermore, two-third of the schools did not have a heritage club, whereas the remaining one-third had a heritage or similar club that focused on preserving the past glory of the country and the world.

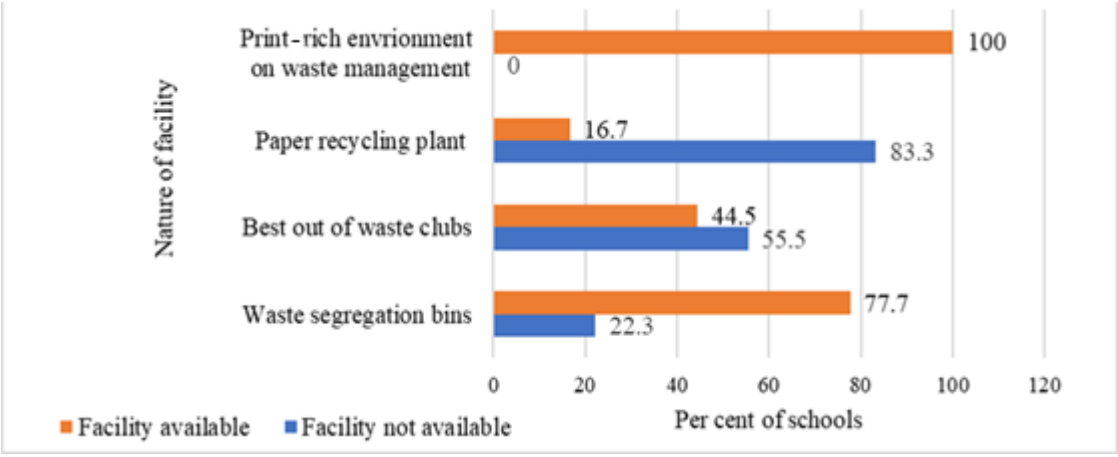

Figure 3: Facilities available to sensitise on the need of waste management

Figure 3 suggests that all schools had a print-rich environment, with posters displayed across the premises to make the learners aware of waste management and its importance. It was found that 83.3 per cent of the schools did not have paper recycling plants or any other recycling provision. The remaining 16.7 per cent schools had paper recycling plants, where used notebooks, waste or rough pages, and old newspapers were collected by learners and teachers for recycling. Additionally, 55.5 per cent of the schools did not have 'best out of waste' clubs, whereas the remaining 44.5 per cent had such clubs to create innovative things from waste materials. Furthermore, 77.7 per cent of the schools had green and blue dustbins for the segregation of biodegradable and non-biodegradable waste, respectively, whereas the remaining 22.3 per cent used common dustbins to throw all kinds of garbage.

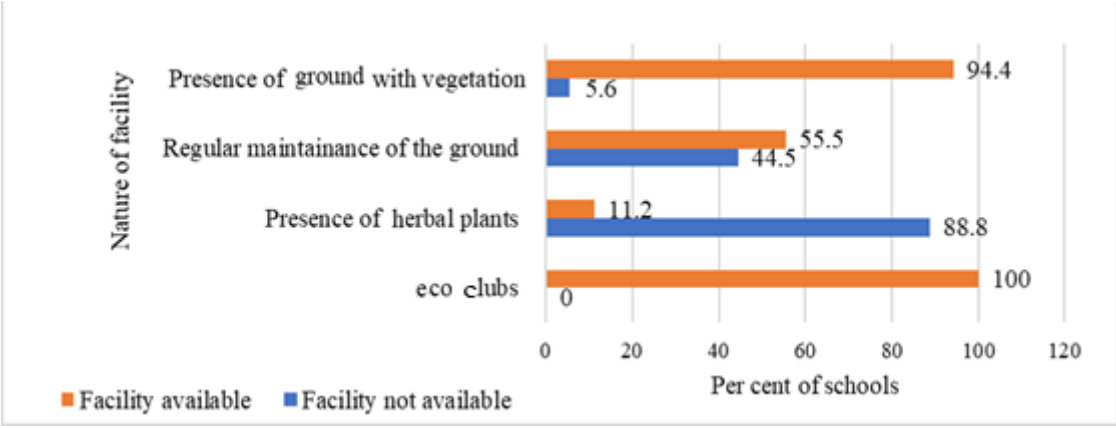

Figure 4: Facilities available to protect the natural environment and biodiversity

Figure 4 shows that majority of the schools (94.4 per cent) had grounds with a variety of plants, insects and birds, whereas the remaining 5.6 per cent lacked flora or fauna on their premises. In 55.5 per cent of the schools, learners looked after the plants and were encouraged to take responsibility of maintaining the school ground. In contrast, the remaining 44.5 per cent schools either lacked a ground or depended exclusively on the gardener for its maintenance. Approximately, 88.8 per cent of the schools did not have herbal plants, whereas the remaining 11.2 per cent had herbal plants or a herbal garden. These were maintained for medicinal purposes and to educate learners about the properties of these plants through experiential learning. Furthermore, all schools had eco-clubs to empower learners to participate in environmentally sustainable activities and spread about environmental sustainability in society.

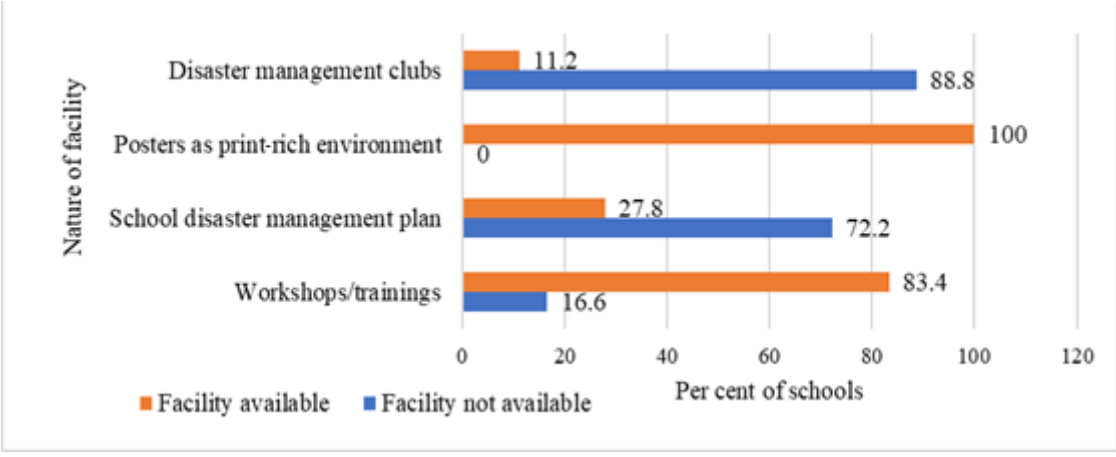

Figure 5: Facilities available for tackling emergency situations

Figure 5 demonstrates that 88.8 per cent of the schools lacked disaster management clubs or societies, whereas such facilities were present in the remaining 11.2 per cent schools. All schools displayed posters highlighting emergency situations and

evacuation methods, along with emergency contact numbers for immediate action. A total of 72.2 per cent schools did not have a school disaster management plan, whereas the remaining 27.8 per cent had fire safety systems, along with evacuation and contingency plans, included in their school disaster management plan. Additionally, 83.4 per cent of the schools regularly conducted National Cadet Corps (NCC) training camp focused on basic skills of survival and emergency response during disasters. These schools also conducted regular mock drills, and invited experts to train learners and teachers on how to tackle emergency situations. In contrast, the remaining 16.6 per cent schools either never or infrequently conducted disaster-related workshops or training programmes.

Objective 2: To study the initiatives taken by the schools to promote sustainable development in the teaching–learning process

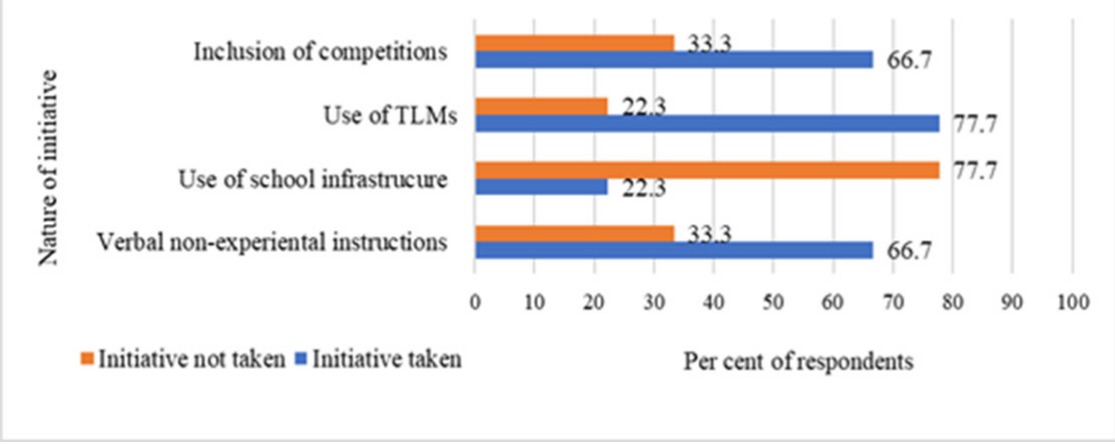

Figure 6: Initiatives taken to conserve the environment and sustain its well-being

Figure 6 shows that two-third of the teachers expressed that learners participated in competitions on conservation and its need, whereas the remaining one-third did not include competitions on conservation in their teaching–learning process. Nearly three-fourth of the teachers (77.7 per cent) used different kinds of TLMs, such as posters, flashcards, poems, case studies, interactive charts, videos, role-play and stories of people living in places without water or electricity, to sensitise the learners about using these resources efficiently. Additionally, 42.8 per cent of the teachers admitted using real-life experiences by intentionally removing certain facilities from the school for a short duration to make the learners realise the difficulties they might face when these resources are exhausted in future. The remaining 22.3 per cent of the teachers did not use any kind of TLM to teach the learners about the conservation of resources, apart from those mentioned in the prescribed textbooks. Approximately, three-fourth of the teachers (77.7 per cent) did not use the available infrastructure in the teaching–learning process, while the remaining 22.3 per cent used solar panels and rainwater harvesting plants present in their schools to teach about their parts and functions by providing experiential learning. Two-third of the teachers used lecture method to give verbal instructions without incorporating experiential learning in the classroom, encouraging the learners to adopt habits that can reduce wastage and save resources for future. On the contrary, the remaining one-third prioritised experiential learning.

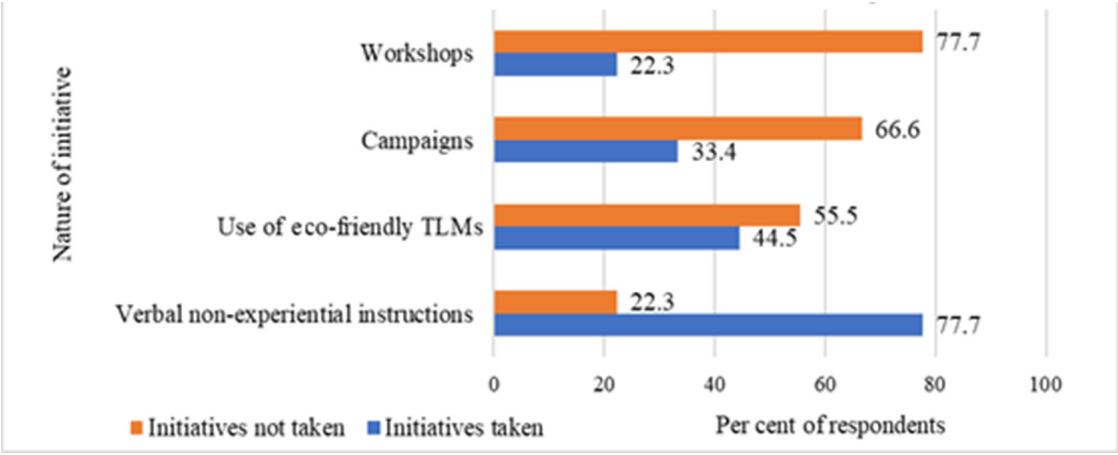

Figure 7: Initiatives taken to sensitise learners about waste management

As observed from Figure 7, 77.3 per cent of the teachers did not use the available infrastructure in the teaching–learning process, whereas the remaining 22.3 per cent conducted workshops involving no-cost experiments to promote hands-on experiences or manage waste by recycling materials. Two-third of the teachers did not include class-level campaigns, nukkad nataks or role-plays in their teaching–learning process, whereas the remaining one-third mentioned conducting campaigns on topics like 'Say no to plastics' and cleanliness drives, along with nukad nataks and role-plays to spread awareness and sensitise learners and community members towards the protection of environment. Additionally, 55.5 per cent of the teachers either did not use any TLM or eco-friendly material to create TLMs to sensitise learners on the importance of waste management. On the contrary, the remaining 44.5 per cent of the teachers used eco-friendly TLMs by making best out of waste material, i.e., preparing recycled or low-cost material, to teach various concepts given in the syllabus based on environment-friendly practices. Lastly, 77.7 per cent of the teachers relied on verbal instructions using the lecture method to develop the habit of waste management in the learners, whereas the remaining 22.3 per cent believed only in experiential learning, where learners explore and learn on their own with some facilitation.

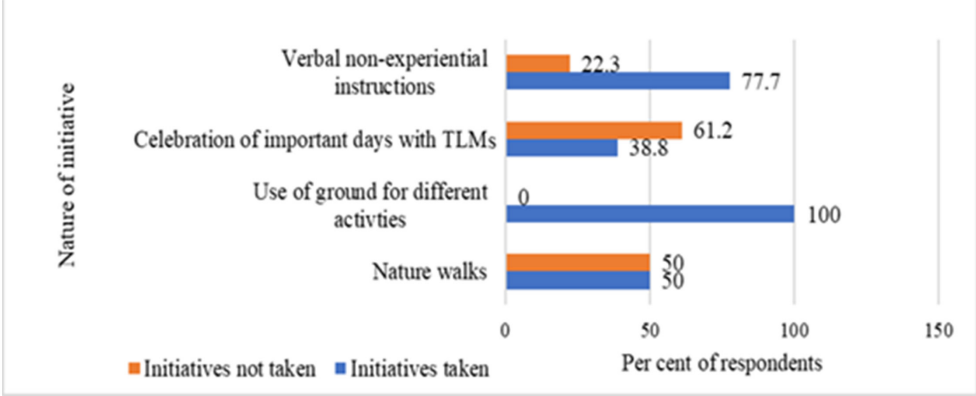

Figure 8: Initiatives taken to protect the natural environment and biodiversity

Figure 8 illustrates that 77.7 per cent of the teachers relied solely on verbal instructions and the lecture method to encourage learners to protect the natural environment and biodiversity, whereas the remaining 22.3 per cent believed in experiential learning, where learners could explore and learn on their own with some facilitation. A total of 61.2 per cent of the teachers did not celebrate important days during the teaching–learning process, whereas the remaining 38.8 per cent celebrated important environment-related days and prepared lesson plans to emphasise their relevance in the classroom. All teachers opined that the use of the school ground to organise assemblies, functions and daily sports activities was necessary. Half of the teachers included nature walk in their teaching–learning process to encourage learning by doing and used the ground as an open classroom to instil an appreciation of the nature's beauty and the need to protect the biodiversity. But the remaining half preferred teaching within the classroom premises due to constrains like big class size, small ground or unfavourable weather conditions.

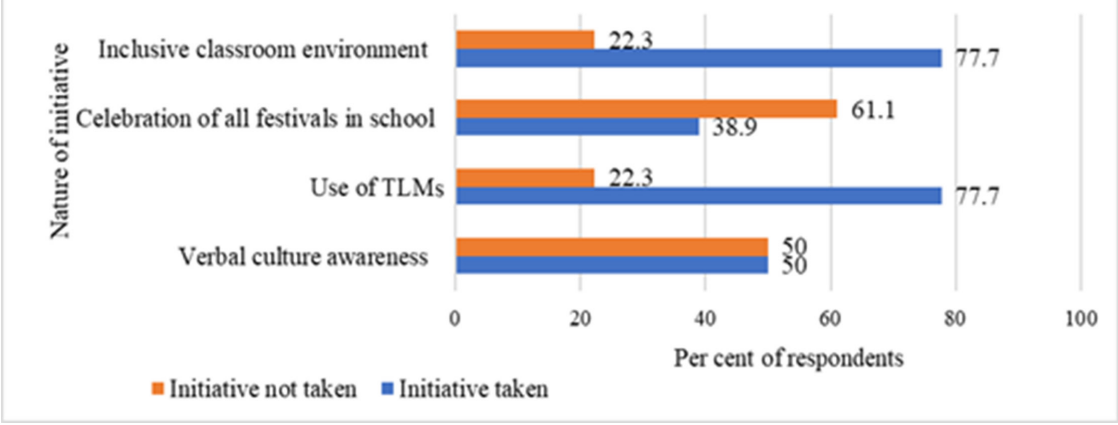

Figure 9: Initiatives taken to integrate and preserve the sociocultural heritage of learners

Figure 9 shows that 77.7 per cent of the teachers took responsibility for making their classrooms inclusive in terms of gender, culture and disabilities, whereas the remaining 22.3 per cent taught in schools that were either only for boys or girls or had large class sizes, making it difficult to focus on every learner. Additionally, 61.1 per cent of the teachers did not prepare a separate lesson plan based on festivals, whereas 38.9 per cent ensured celebrating every festival by creating specific lesson plans. Approximately, three-fourth (77.7 per cent) of the teachers admitted using TLMs like posters, storybooks, charts, role-plays, audio and visual aids, etc., to spread awareness on different cultural practices and their traditional sustainable practices. The remaining 22.3 per cent relied on textbooks and lecture method for teaching. Half of the teachers made sure to be aware of the cultural practices of each learner in the classroom by verbally engaging with them, whereas the other half were not familiar with the cultural practices of their students.

Objective 3: To study the challenges faced by the school authorities to transform their schools into green schools

More than half of the principals shared that they faced challenges in transforming their schools into green schools, while the rest stated that they encountered no challenge and were satisfied with the present situation. Half of the principals expressed difficulty in sensitising learners on sustainability issues because of their low socio-economic background. Approximately, one-third of the principals pointed out lack of motivation and interest among teachers and learners to participate in sustainable development activities due to rigid timetables. Two-third of the principals indicated that schools lacked the required infrastructure to implement sustainable practices. Around one-fourth of the principals gave up on the idea of constructing sustainable facilities due to the cumbersome process of budget approvals, whereas three-fourths of them expressed the need for an official circular from higher authorities to take up such activities. About half of the principals mentioned a shortage of teachers with relevant skills to incorporate and promote sustainable development practices in their schools. Approximately, three-fourths of the principals found it difficult to convince community members to take out time for helping learners in social causes.

Conclusion

A diversity of equipment and devices were present in the schools. But for a school to be called a green school, it is essential that it has sufficient infrastructural facilities to promote ESD. In terms of a child-centric approach, teachers used different kinds of TLMs to promote experiential learning. However, most teachers relied on verbal instructions, focusing more on traditional approach of teaching. Although a variety of initiatives were taken in the schools, their overall performance was minimal. This shows that the teachers were not effectively incorporating activities to promote sustainable development. Majority of the schools faced challenges in integrating ESD into their curriculum. This highlights the need for stakeholders to be more sensitised towards ESD and work together by following a solution-based approach.

Therefore, it is suggested to conduct workshops and trainings programmes for both pre-service and in-service teachers on concepts related to sustainable development and their integration into the teaching–learning processes. Principals should conduct regular school environmental audits to identify initiatives required to transform their schools into green schools. It is recommended for the schools to develop a green school action plan and increase the participation of community members through a mutual benefit approach, involving experts to teach and train on sustainable development issues. Also, there is a pressing need for schools to follow the National Curriculum Framework for School Education and implement it in their curriculum. This will ensure the inclusion of ESD in its true spirit, addressing the demands of the present scenario effectively.

References

Buckler, C., & Creech, H. (2014). Shaping the future we want: UN Decade of Education for Sustainable Development, Final report. UNESCO: Paris, France. Shaping the future we want: UN Decade of Education for Sustainable Development; final report - UNESCO Digital Library

Gough, S., & Scott, W. (2003). *Sustainable Development and Learning: Framing the Issues* (1st Ed.). Routledge, pp. 1–11. https://doi.org/10.4324/9780203464625

Kioupi, V., & Voulvoulis, N. (2019). *Education for Sustainable Development: A systemic framework for connecting the SDGs to educational outcomes*. Sustainability, 11(21), pp. 1–18. https://doi.org/10.3390/su11216104

Kuo, M., Browning, M. H. E. M., & Penner, M. L. (2018). Do lessons in nature boost subsequent classroom engagement? Refueling students in flight. *Frontiers in Psychology*, 8, pp. 22–53. https://doi.org/10.3389/fpsyg.2017.02253

Ministry of Education. (2020). *National Education Policy 2020*. Ministry of Education, Government of India, New Delhi.

Mohanty, A. & Dash, D. (2018). Education for sustainable development: A conceptual model of sustainable education for India. *International Journal of Development and Sustainability, 7*(9), pp. 2242–55.

NCERT. (2005). *National Curriculum Framework 2005*. National Council of Educational Research and Training, New Delhi.

—. (2023). *National Curriculum Framework for School Education 2023*. National Council of Educational Research and Training, New Delhi.

Rieckmann, M., & Barth, M. (2022). 'Educators' Competence Frameworks in Education for Sustainable Development. In P. Vare, N. Lausselet, & M. Rieckmann (Eds.), *Competences in Education for Sustainable Development, Sustainable Development Goals Series*. Springer. https://doi.org/10.1007/978-3-030-91055-6_3

Sharma, Kavita, & Pandya, M. (2015). *Towards a Green School on Education for Sustainable Development for Elementary Schools*. NCERT, New Delhi.

Sund, P., & Niklas, G. (2020). Teaching Contributions from Secondary School Subject Areas to Education for Sustainable Development: A Comparative Study of Science, Social Science and Language Teachers. *Environmental Education Research, 26*(6), pp. 772–94. https://doi.org/10.1080/13504622.2020.1754341

Ferguson, T., Roofe, C. & Cook, L. D. (2021). Teachers' perspectives on sustainable development: the implications for education for sustainable development. *Environmental Education Research, 27*(9), 1343–59. https://doi.org/10.1080/13504622.2021.1921113

Timm, J.M., & Barth, M. (2021). Making education for sustainable development happen in elementary schools: the role of teachers. *Environmental Education Research, 27*(1), 50–66. https://doi.org/10.1080/13504622.2020.1813256

UN General Assembly. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. United Nations, New York, USA. 21252030 Agenda for Sustainable Development web.pdf (un.org)

UN Secretary General, & WCED. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. United Nations Digital Library. Report of the World Commission on Environment and Development : (un.org)

UNESCO. (2014). *UNESCO Roadmap for Implementing the Global Action Programme on Education for Sustainable Development*. UNESCO, France. https://doi.org/10.54675/YFRE1448

UNESCO. (2020). *Educating for Sustainable Development: A Roadmap*. UNESCO Digital Library. Education for sustainable development: a roadmap - UNESCO Digital Library

UNESCO. (2023). *Greening Every School Quality Standards for Green Schools*. UNESCO Digital Library. greening-every-school-cn-en.pdf (unesco.org)