

Assessing the contribution of the Eco-Schools Programme in experiential learning: A study of the pilot project in Kamlapur village, Rajkot district, Gujarat

Final Project Report



Submitted by
ARUSHI MATHUR

*In partial fulfillment of
the requirement for the Degree of*
**Master of Arts in
Sustainable Development Practice**

Submitted to

**Department of Policy & Management Studies
TERI School of Advanced Studies**

June 2022

DECLARATION

This is to certify that the work that forms the basis of this project **“Assessing the contribution of the Eco-Schools Programme in experiential learning: A study of the pilot project in Kamlapur village, Rajkot district, Gujarat”** is an original work carried out by me and has not been submitted anywhere else for the award of any degree. I certify that all sources of information and data are fully acknowledged in the project report.



Arushi Mathur

Place: New Delhi
Date: 15th June, 2022

CERTIFICATE

This is to certify that "Arushi Mathur" has carried out "her" major project in partial fulfillment of the requirement for the degree of Master of Arts in Sustainable Development Practice on the topic "Assessing contribution of Eco-Schools Programme in experiential learning: A study of the pilot project in Kamlapur village, Rajkot district, Gujarat" during February 2022 to June 2022. The project was carried out at the Centre for Environment Education, Ahmedabad.

The report embodies the original work of the candidate to the best of our knowledge.

Date: 15th June, 2022



Ms. Khushbu Shah
External Supervisor
Eco-Schools Programme Coordinator
Centre for Environment Education



Dr. Smriti Das
Internal Supervisor
Associate Professor
TERI School of Advanced Studies



Dr. Sukanya Das
Head of the Department
Department of Policy & Management Studies
TERI School of Advanced Studies
New Delhi

ACKNOWLEDGEMENT

Through the course of my dissertation, I received substantial support from the faculty at TERI School of Advanced Studies and the Centre for Environment Education. I would like to thank my internal supervisor, Dr. Smriti Das for her guidance, constructive feedback, and patience that was instrumental in helping me complete the work. I am grateful to my external supervisor, Ms. Khushbu Shah for providing me with the opportunity to conduct this research and for sharing adequate resources to proceed with the same. I would also like to thank Ms. Mansi Shah, the entire team at CEE Jasdan Field office, and the few locals at Kamlapur village who assisted me through the process and made this a good learning experience. Lastly, I extend my gratitude to my family and friends whose support and encouragement kept me going.

INDEX

1. Abstract	5
2. Introduction	6
3. Background and Rationale	8
3.1. Evolution of Environmental Education: Globally and in India.....	8
3.2. The Eco-Schools Programme.....	12
3.3. Review of Eco-Schools: best practices	15
3.4. The Litter Less Campaign	17
3.5. Curriculum and pedagogy of schools in India	19
3.6. Review of Eco-Schools in Gujarat... ..	22
4. Objectives and Methodology	24
5. Results and Discussion.....	30
5.1. Profile of the school and respondents	30
5.2. Stakeholder Mapping	30
5.3 Curriculum Analysis: reflection of EE and activity-based learning.....	32
5.4. Identified gaps and scope to strengthen curriculum and pedagogy.....	37
5.5. Teaching-learning approaches adopted in the schools.....	40
5.6. Rural vs. urban Eco-schools: influencing factors.....	41
5.7. Case: LLC in Kamlapur schools	43
5.7.1. Overview: Seven Steps and activities... ..	44
5.7.2. Insights on students' learnings: Results from games conducted... ..	45
5.7.3. Observations on students' behaviour... ..	46
5.8. Perceptions of stakeholders: Eco-Schools and LLC... ..	48
5.9. Way forward.....	53
6. Conclusion.....	55
7. Limitations... ..	57
8. References	57

1. Abstract

Aligned with the Sustainable Development Goal Target 4.7 and Agenda 21, activity-based learning and environmental education for sustainable development have been given due recognition. Experiential learning or 'learning by doing' has been repeatedly underlined in models proposed to transform the education system. The Eco-Schools Programme is an international certification programme that follows a Seven Steps methodology for a whole-school approach and promotes environmental education across several themes. The model can be tailored to suit the needs of the institute and geography. The Centre for Environment Education steers the Eco-Schools Programme in India. Having received a positive response from most of the Eco-Schools in urban areas, it has recently been introduced in 22 upper primary rural government schools of Gujarat through the Litter Less Campaign (LLC).

A qualitative study was undertaken with stakeholders from three upper primary government schools in Kamlapur village, Rajkot district, Gujarat to assess the approach of the Eco-Schools Programme in contributing to experiential learning outcomes in environmental education. A SWOT analysis constructed based on literature highlights the strengths and opportunities for the programme to leverage on, weaknesses to address, and threats to be mindful of especially in the rural context. The perspectives of the various stakeholders towards the initiated programme and their experience with LLC were observed to differ with the location of schools within the village and subsequent resources and education levels in households. An analysis of the state board curriculum against the learning material prescribed to the Eco-Schools with respect to hands-on learning activities on environmental themes highlighted the gaps in both.

Some key suggestions for a way forward entail strengthening certain steps of the proposed methodology such as 'monitoring and evaluation' and 'informing and involving', gathering the support of local organisations and the government, and adopting innovative teaching approaches. The themes of water and climate change are expected to be explored for further expansion of the Programme in the rural area.

Keywords: Eco-Schools Programme, Kamlapur village, Gujarat, Litter Less Campaign, curriculum, rural, stakeholder perspectives

2. Introduction

The current Anthropocene epoch has raised an alarm over the unprecedented destruction of natural resources that has greatly disturbed the Earth's systems (Steffen, Crutzen and McNeill, 2007). Environmental stresses have dramatically increased in the last few decades, especially in developing countries such as India (Bangay, 2016). Land degradation, deforestation, industrial pollution, urbanisation, and loss of biodiversity have been drastic, resulting in water scarcity, climate change, and other concerns (Schroder et al., 2020). Strengthening environmental resilience is imperative for sustainable development and it is through educating children in schools that individual and societal behavioural changes can be brought about for a secure future (Bangay, 2016). An urgent need has been established to sensitise people on the environmental problems and the interlinkage with sustainability in order to induce action (Schroder et al., 2020). Having recognised the need for a paradigm shift to sustainable practices, policymakers, activists, and educators have attempted to introduce it to the education system with Environmental Education (EE) forming a significant component (Bangay, 2016, Schroder et al., 2020). Experiential learning, best described as "learning by doing" by John Dewey in 1938, has been highly recommended for the development of curricula especially in the case of EE as it entails a hands-on approach and reflections on lived experiences that can significantly impact the behaviour of the learners through action orientation (Koutsoukos et al., 2015; Gaffney and O'Neil, 2019). Kolb (1984) proposed an Experiential Learning Model that comprises four phases- indulging learners in concrete experience of hands-on activity, allowing them to reflect on the activities, assessing the implications of results, and critically thinking of alternate ways of carrying out the same activity if given another attempt at it.

Sustainable Development Goal 4 strives to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The definition focuses on "lifelong learning opportunities" that stem from skill-building and practical exposure through experiential learning opportunities. Target 4.7 of the Goal recognises Education for Sustainable Development (ESD) as crucial for attaining the SDG2030 target. It emphasises on environmental sustainability along with human and gender rights, and cultural diversity to realise Agenda 2030. According to UNESCO,

ESD plays an instrumental role in enabling progress towards the interlinked Global Goals. It is believed to be essential in imparting the suitable knowledge to take action to combat some of the most serious challenges such as climate change, biodiversity loss, and natural resource depletion (UNESCO, 2021). Implementation of ESD strives to improve the curricula, learning outcomes, and infrastructure of schools (Gan et al., 2019). It aims to encourage the students, community members, teachers, and the staff to develop pro-environmental behaviour (ibid). Scott and Gough (2010) asserted that a student must be perceived as a public actor and be provided with the appropriate platform since he/she has a much bigger role to play.

The Earth Summit in Rio de Janeiro, 1992 urged the importance of EE that provided the impetus to the idea of Eco-Schools, established by the Foundation for Environmental Education (FEE) in 1994. This was considered a vital step for conserving the environment by the younger generations (Greening EU Cooperation, 2018). A seven-step methodology has been specially designed to promote a whole-school approach and align with sustainability practices while working to tackle environmental challenges. There are twelve thematic areas at the global level and coordinators of member countries may choose the ones according to priority and alignment with their respective country's commitments. It emphasises learning through action to induce socially responsible behaviour and environmentally conscious practices (FEE, 2019).

The Centre for Environment Education (CEE) is responsible for steering this Programme in India. Initiated in 2014-15, there are more than 130 Eco-Schools in the country as of May 2022, catering to the students of primary and upper primary classes. CEE has been widely recognised and praised for its efforts to inculcate ESD and overcome the sole 'academic' outcome focus in educational institutions amongst other similar problems reported (Bangay, 2016).

Lack of on-ground and localised learning and insufficient explanation of environmental phenomena were noted to be a problem with the Indian curriculum (India Educational Review, 2018). There emerged a need to go beyond the prescribed textbooks and introduce hands-on learning, activities, and knowledge covering several environmental aspects to enhance pro-environmental attitudes and behaviour. Building an 'emotional connect' aside from inculcating skills and knowledge in this

domain is also noted to be beneficial (India Educational Review, 2018). These concerns seem to be actively addressed by the Eco-Schools Programme with the whole-school approach and material provided by CEE for curriculum linkages in order to boost experiential learning opportunities for students.

While an overwhelming majority of Eco-Schools in India are situated in urban areas, CEE initiated the Programme in 22 rural government schools of Jasdan and Kalavad taluka, Rajkot district, Gujarat in November 2021. This was done through the Litter Less Campaign (LLC) under the theme of waste, engaging students of standards 6th-8th. This study is conducted in Kamlapur village of Jasdan taluka with the three government schools in the area that participated in the campaign. It aims to analyse the state board curriculum and the linkages to respective subjects as prescribed for Indian Eco-Schools, assess the pedagogy and approach of the Programme, and capture the perspectives of stakeholders towards the Eco-Schools model and the LLC. Potential opportunities for adopting the whole-school approach to address the local environmental challenges of the village are also explored. The LLC is taken as an instrumental case to offer insights into the larger changes in educational systems that Eco-Schools Programme proposes to make through experiential learning.

The subsequent sections outline the status of EE and the Eco-Schools Programme globally and in India, review best practices from the Programme and the Litter Less Campaign, and lay out the literature on the Indian curriculum with respect to EE and hands-on activities. The objectives and methodology is followed by the results and discussion section that offers insights into the curriculum and pedagogies adopted in the selected schools and takeaways from LLC. Lastly, a SWOT Analysis is charted for a way forward, with key highlights on the aspects that could be strengthened for the Programme to effectively contribute to experiential learning outcomes.

3. Background and Rationale

3.1. Evolution of Environmental Education: Globally and in India

Environmental matters first gained global recognition and importance in the field of education at the Stockholm Conference on the Human Environment in 1972. This was noted to be essential to instil responsible conduct amongst youngsters and adults that would enable environmental conservation and thus, promote human development.

The Tbilisi Declaration at the first Intergovernmental Conference on Environment Education in 1977 stressed on the inclusion of EE across all age groups to facilitate a holistic and lifelong understanding of the various biological, socio-economic and cultural aspects of the world. One objective was to allow opportunities for all learners to acquire the knowledge, values, skills, and behaviour to help improve environmental conditions. The Thessaloniki Declaration in 1977 united the concepts of EE brought forth in Tbilisi and that of sustainable development, as defined by the Brundtland Report *Our Common Future*. It stated that EE may be understood as education for the environment and sustainability. The fourth Conference on Environmental Education held at Ahmedabad in 2007 urged all stakeholders to build partnerships and refine the vision of sustainability. A special mention was made of EE processes that were believed to “support and champion education for sustainable development” (Ahmedabad Declaration, 2007). As reflected in the International Environmental Education Program (1975) and the Treaty on Environmental Education for Sustainable Societies and Global Responsibility (2011), an interdisciplinary approach with the integration of EE across subjects was recommended for effective outcomes. The proceedings of the United Nations Conference on Education and Development (UNCED) 1992, held at Rio, laid out Agenda 21 as a blueprint of a programme with the dual target of ensuring good environmental conditions and a promising economy for all. Clear links between the fields of environment, economic, and social development were established as it would be incorrect to view them as separate entities. Chapter 36 of Agenda 21 states, “*Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. Both formal education and non-formal education are indispensable to changing people’s attitudes so that they have the capacity to assess and address their sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making.*” (UNCED, 1992). The primary objectives of Agenda 21 aimed at increasing awareness and participation of community members towards the environment and societal development. Sustainable development in the 21st century stresses on addressing environmental concerns to manage collective natural resources through localisation of the goals.

The discourse of EE acknowledging the importance of ESD gained traction over the years and offered insights into developing holistic curriculums at the national and state level. Forming a pillar of sustainability and given the interlinkage of the Global Goals, EE has become an imperative factor in advancing towards them.

Article 51A of the Indian Constitution has stated that it is the fundamental duty of every citizen “to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures” (The Constitution of India, Art. 51A). In India, the Ministry of Forest, Environment and Climate Change established two centres of excellence for EE- one being the Centre for Environment Education (CEE) in 1984. Its primary role revolved around the capacity building through resources and projects in the area of environment and sustainable development. In 1986, the National Council of Educational Research and Training (NCERT) introduced a New Education Policy that emphasised activity-based learning. This was reinforced in 2005 with the New Curriculum Framework (NCF) which stressed on the need to link classroom teaching with the outside world and local realities. CEE was an important actor of NCF.

Bharati Vidyapeeth Institute for Environmental Education and Research (BVIEER), Pune, undertook a massive study in 1999-2000 on the infusion of EE and its delivery in the entire country. The findings indicated a lack of action links to the curriculum, missing locale-specific context and environmental issues, outdated information, poor visuals for supplementing the content, and inadequately covered concepts (MoEFCC, nd). This was done as part of a project named ‘Environmental Education in the School System’ (2002-2008). A revision of the textbooks was carried out for ‘greening’ of the syllabus, assisted by CEE, and piloted in eight states. Later, the project expanded to ten additional states as Strengthening Environmental Education in School Systems (StrEESS). The limitations encountered in this regard were the reluctance of some state education departments, lack of interest shown by MHRD, slow process, and passive participation of agents (Ravindranath, 2016).

The judgement of the Supreme Court in *M.C.Mehta vs Union Of India & Ors*, 2003 in Writ Petition No 860 of 1991, directed NCERT to prepare a module syllabus on EE for all grades. In 2004, the Court asked each state to adopt the syllabus designed by NCERT in their respective schools. An affidavit was submitted by the NCERT to the

Supreme Court in 2007, stating that in order to fulfil the conditions laid down by NCF, EE as an independent subject may not be made mandatory. Instead, its infusion in other subjects for classes above 5th standard was proposed, while ensuring that the component is mandatory in every curriculum. This was accepted in 2010. CEE was the nodal agency for implementing the United Nations' Decade of Education for Sustainable Development (2005-2014) in India. It sparked discussions delving into linkages of subjects in educational institutions with ESD and the contributions of various disciplines to a sustainable future (McKeown and Hopkins, 2005). CEE also organised the 'Education for a Sustainable Future' Conference in 2005. The key takeaway was the empowerment of students and action-orientation with regard to education.

Environmental education experience shows that people must have the skills and values to support the knowledge and awareness to bring about behaviour changes (McKeown and Hopkins, 2005). The New Education Policy 2020 presses on interactive and activity-based teaching methods with the curriculum design fostering experiential learning across subjects. This is to nurture the holistic development of the students, rather than focusing only on cognitive development. Environmental Education has been mentioned as one of the crucial areas that students must be well-versed with to attain the essential skills.

The Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India initiated the Eco-Clubs Scheme in 2001 with the objectives of educating school children by raising awareness of their immediate environment, conveying relevant information on the various ecosystems and their interdependence with human lives via practical demonstrations, encouraging scientific curiosity on environmental phenomena, and engaging youngsters in conservation and preservation initiatives (Kalita, 2017). Eco-Clubs were established across districts, as many as deemed fit by the respective governments for action-oriented programmes. Funding for the same is given by MoEFCC to a fixed number of clubs in each district. MC Mehta, a renowned environmental lawyer, advocated the recognition of a discipline such as EE by the State which he believed to be necessary for people to acknowledge its importance (Kalita, 2017).

According to Kazi (2016), a sustainable school is one that holds “learning by doing” as a core idea and inculcates concepts of sustainability in its curriculum, functioning of the entire school, and maintains relations with the local communities. Integration of local knowledge and traditions in the syllabus, greening of the school infrastructure and transport, and reducing carbon footprint are a few examples of features of a sustainable school (Kazi, 2016). Similarly, scholars from the Australian Research Institute of Environmental Sciences believe a sustainable school to operate in a democratic manner and pursue outdoor classrooms and transdisciplinary approaches (FEE, 2019). Eco-Schools around the world have been lauded for their sustainable approach and for abiding by the Local Agenda 21 (Henderson, 2004). India’s Sarva Shiksha Abhiyan (SSA) 2011, in support of the Right To Education Act 2009 has suggested the execution of a whole-school approach, implying the utilisation of the entire school habitat for effective teaching and learning (Sharma, 2016).

3.2. The Eco-Schools Programme

The Eco-Schools Programme captures the local realities and strives to equip teachers with appropriate resource materials for student-centric learning that invites their parents’ active involvement as well (FEE, 2019). It builds on problem-solving abilities and leadership skills and empowers students to contribute to national and international interests, aligned with the Sustainable Development Goals (Greening EU Cooperation, 2018). This promotes the idea of lifelong learning as such engagements at the initial stages of schooling can largely influence positive attitudes and values through life, extending beyond the individual to the community (FEE, 2021). Having been recognised by UNESCO and UN Environment as a leader in facilitating ESD, the Programme now spans more than 70 countries as the “largest global sustainable schools programme” (FEE, 2021). Given that it is not mandatory and has the incentive of international certification, the schools that register for the Programme reflect the willingness to improve their ESD objectives (Gan et al., 2019). The seven-step methodology aims to establish a whole-school pedagogical approach in schools. The steps may be followed in any order and are subject to modifications to suit the context of the respective schools. It is a guideline striving to induce environmental conscientiousness in the formative age group of children through incremental changes influencing their behaviour (FEE, 2019). It proposes the formation of an eco-

committee that acts as the driving force and leads the entire process of this institutional framework through multi-stakeholder collaborations. An environmental review or sustainability audit is carried out in the school to understand the biophysical conditions of the environment and detect the challenges. This stage ignites a sense of curiosity, builds sensitivity to the local surroundings, and forms the basis to draft a suitable Action Plan in order to address the identified problems. The Action Plans and audits have to be shared with the National Coordinators for approval through an online form before implementation. The monitoring and evaluation step is critical to measure the progress and impact of tasks undertaken according to the Plan. Further investigation and reviews of the activities help students reflect constructively and improvise accordingly for optimising outcomes. Link to the curriculum is essential in enabling teachers to blend the suggested activities in their scheduled lessons and expand students' learning on the given topics. Relevant modules and lesson plans have been designed for this purpose to evade any sense of liability with additional material. Informing and involving the wider community in terms of increased interaction, campaigns, and active participation helps in mapping the stakeholders and their roles along with fostering collective action. The eco-code nudges students' creative skills to depict their commitment and vision for the school, reflecting core values and norms to abide by. The attitudes and values that lay a foundation for sustainable development are necessitated through this pedagogy (FEE, 2019).



Figure 1: Eco-Schools Programme: Seven Steps Methodology.
Source: Eco-Schools Programme. nd. CEE and FEE.

According to the Senior Director of Education, FEE, the seven-step pedagogy has “stood the test of time” and proved to be a successful tool across socio-cultural contexts and education systems (FEE, 2019). HundrED, a global education non-profit organisation recently chose this innovative Programme for its Hall of Fame 2022, for the carefully designed methodology, uniquely adopted by each registered school to promote experiential learning, “focused on positive sustainable actions” (HundrED, 2022).

Key challenges in implementation, identified in a survey of national operators, comprised getting all stakeholders involved in the decision-making process, drafting the Action Plan, capturing the interests of all students, and assessing the scope of integration in the curriculum (FEE, 2019). Examining the impact of positive transformation and behavioural change in the long term posed another difficulty. Hargreaves (2008) argued that often, the activities and projects are perceived as a liability for both teachers and the students as holistic integration in the curriculum is a cumbersome process. The cost-effectiveness of such education is not given due attention either (Hargreaves, 2008). Sustained funding, mobilisation of resources through national sustainability priorities, and multi-stakeholder partnerships have been recommended as critical to the smooth functioning of Eco-Schools. It is imperative to note that while substantial focus is given to the ‘greening of schools’ and associated activities, the socio-cultural and economic dimensions are just as crucial. This aligns with the concept of strong sustainability that envisions social, environmental, and economic aspects as complementary. Thus, compromising any one aspect for strengthening another would have a high opportunity cost.

In India, there are five thematic areas (water, waste, healthy living, energy, and biodiversity) around which the curriculum and projects are centred to help instill responsible behaviour (CEE, 2021). Dedicated work in an area makes the school eligible to apply for a Handprint award. The Green Flag Award is presented to the Eco-Schools that show tangible results of action in at least three thematic areas (having attained three Handprint awards) with 50% or more students involved in the activities. Green Flag Application Report must be submitted to Eco-Schools India by registered schools that wish to apply for the award. Green Flags are awarded if the school obtains at least 85 points based on the report and work done. India’s report

entails four sections comprising the profile of the school and context/background of the learner, a glimpse of the execution of the programme, evidence to support the said engagement, details of the Seven Steps, projects and activities, and the future plan for ensuring consistency of the programme.

The Handprint is a symbolic representation of hope and commitment to action towards sustainability by the young generations, at individual and collective levels. This was also recognised as one of the best practices during the Decade of Education for Sustainable Development, widely appreciated for the whole-school approach (UNESCO, 2018). ESD is viewed as an effective pathway to address the environmental crisis and the model of the Eco-Schools Programme offers valuable tools for the execution of ESD in schools (Gan et al., 2019).

3.3. Review of Eco-Schools: best practices

The Seven Steps methodology and implementation practices have varied across countries and schools to suit their contexts. The methodology has been depicted as a flow rather than a cycle in Malta, whereas Czech Republic has pictured the steps as concentric circles (FEE, 2019). These models conform to the unique interpretation of the design by each Eco-School for developing suitable whole-school strategies.

A comparison of Israeli and Hungarian Eco-Schools by Gan et al. (2019) found that schools that had previously been engaged in ESD activities depicted a more positive change in their feelings, beliefs, culture, and behaviour towards the environment. While a monetary incentive of about \$3000 was provided to fund Israeli Eco-Schools, those in Hungary were noted to work for respect and prestige without any financial support (Gan et al., 2019). Some Eco-Schools in South Africa were lauded for excellent teamwork between parents, teachers, and the school coordinators (FEE, 2019). A Waste Comparison Study conducted in Ontario Eco-Schools in 2016 by a waste audit consultancy attributed the primary reason behind the successful reduction of waste in the school to be the consistency in participation and support from the school authorities, particularly the principals (FEE, 2019). A behavioural and attitudinal shift was noted to occur with consistent positive reinforcements or repeated application of a rule that was valued. For instance, if older students attributed a high value to dustbins and promoted their use, younger children of the same school spoke up against those whom they observed throwing litter on the streets (FEE, 2019).

Eco-Schools across the world have adopted different methods that seem to best boost the efficacy of the Programme (FEE, 2019). A board game was introduced in France in 2019 as an exciting method to train students in execution of the Seven Steps methodology. Malaysia and the Netherlands have actively engaged their respective government ministries of education and environment, as well as the local centres to garner support for the schools. England majorly relies on the intrinsic motivations of the Eco-Coordinators to keep the programme going as there is no imposition on any school to teach EE or ESD. They follow set benchmarks in education and integrate learning in other subjects. In Wales, environmental issues were promoted on commonly used media by the students and communities to keep everyone informed.

Pauw and Petegem (2017) conclude from their study in Flanders that while the Programme most certainly results in a positive educational impact, it is more so in terms of enhanced theoretical knowledge than applied knowledge. They also point towards the major incentive being external pressures rather than internal motivations to act in the desired manner. Innovative approaches, the commitment of the principal and teachers, sustained professional assessment and monitoring tools for practical work are crucial in ensuring a lasting impact of the Programme which would otherwise only have a short-term effect (Gan et al., 2019).

In India, CEE has initiated multiple campaigns and competitions for the registered Eco-Schools such as sustainability competition, clean-tech competition, Global Action Day, Eco-Schools Waste Management Programme and most recently, the Litter Less Campaign. On the official website, reference modules for teachers to infuse EE in the curriculum are provided such as the Joy of Learning and the Litter Less Campaign lesson plan for teachers. A number of videos on thematic areas such as air are also suggested for facilitating conceptual understanding (Eco-Schools India, nd). In the SDGs booklet titled Positive Actions for the Sustainable Development Goals, published by FEE, India is taken as a case study for the commendable efforts of a school working towards waste theme (FEE, 2018). It demonstrates how the activities conducted and whole-school engagement link with every SDG. Seven schools have received a Handprint award in biodiversity, followed by 6 in healthy living, 5 in waste, 3 in energy and 1 in water (Eco-Schools India, nd). Glimpses of activities undertaken by students at school and in their homes have been uploaded on

the official facebook account of Eco-Schools India. Students across states are noted to engage in organic farming in school grounds, kitchen gardening at home, poster making and best-out-of-waste competitions, and have shared eco-friendly ways of celebrating festivals of Holi (playing with *kesoda* or tesu flower water) and Diwali (creating toran with dry leaves and plastic strips, lighting diyas, and using old newspapers for wrapping gifts). Pictures of children showcasing handmade dustbins for segregation of waste, bird feeders from plastic bottles, and pen stands of discarded boxes have also been put up.

The Litter Less Campaign is an ongoing initiative that has brought forth the difference between litter and waste and engaged students in several engaging activities yielding positive educational outcomes.

3.4. The Litter Less Campaign

FEE collaborated with the Mars Wrigley Foundation to introduce the Litter Less Campaign (LLC) in 2011 under the Eco-Schools Programme. It has now been carried out in more than 35 countries. ‘Litter’ is defined as ‘waste in the wrong place’ that may be intentional or unintentional (Litter Less Campaign Eco-Schools, 2021). It poses a threat to wildlife and water bodies, contaminates the natural environment, and is hazardous to public health. Its adverse impact on the tourist industry can also result in economic losses. The aim of the initiative is to sensitise students on litter management and prevention through the Seven Steps. School authorities are provided with an online form in which they have to identify the most suitable measurement criteria and follow the framework to aid with monitoring and impact assessment. Collaboration with other schools is also highly encouraged to share best practices. The process involves registering for the Campaign, post which an online orientation is held and LLC resources provided to the teacher in-charge from each school. The teachers in turn, orient a group of students on its implementation. A report must be shared at the global platform to assess the learning outcomes. The schools displaying best performance are recognised at the national level for selection under the Waste Handprint award.

CEE has helped develop an LLC lesson plan for teachers, each focusing on a relevant SDG, and elaborating how the problem of litter impacts each Goal (FEE and CEE, 2018). The content has been categorised for children of age 6-8 years, 9-12 years, and

13-16 years. A comprehensive compilation of suggestions for classroom activities, sessions, group assignments, and material for the practice of concepts is provided along with the approximate duration for completion of the same. It ensures compliance with the Seven Step pedagogy and lists linkages of each lesson with suitable subjects. The lessons involve participatory tasks such as organising nature walks, conducting surveys for household waste, consumer choices, and school litter, and identifying natural and man-made packaging. Concepts of smart shopping, life cycle analysis, e-waste, marine pollution, and hazards of microplastics have been covered as well. There are also case examples of innovative practices carried out by students from different parts of the world which could inspire others and help them draw insights for their own tasks.

A few glimpses of the work by Eco-Schools during LLC have been highlighted on the official Eco-Schools' Litter Less Campaign website under 'Stories from Schools'. The Observatory Junior School in South Africa extended the principle of Reduce-Reuse-Recycle to Remember-Rethink-Repair-Reconnect during LLC participation in 2018. They learned the art of knitting using strips from single-use plastic bags to produce items such as cell phone bags and necklaces. They prepared compost for the garden and built 'walls' of the seedling nursery using plastic bottles. A school in Kenya, as part of LLC in 2017 gathered support of some traders, local leaders, youth groups, and neighbours of the school to discuss the importance of keeping rivers clean and worked towards protecting the polluted River Kibichi that flowed through the school. An Australian school practiced Return and Earn initiative under the campaign wherein students collected waste cans and bottles to deposit them at specific locations and receive 10c per item (Litter Less in Australian Schools, 2019). The amount was reinvested in the campaign as they purchased recycling bins and other relevant products for proper disposal.

Some initiatives undertaken by Indian schools have also been featured on this online platform. All schools were noted to have been engaged in collection and segregation of waste items, although the categories of segregation differed. Most also engaged in upcycling waste and its conversion into bookmarks, photo frames, posters, paper bags, rakhi, and so on. Awareness activities for the local community were carried out. Students of Uniqyou International School, Gujarat and Seth Anandram Jaipuria

School, Ghaziabad collected biomedical waste from their school including cotton, gauze, bandages, and medicine bottles. These were combined with the waste from a nearby hospital and sent for proper disposal. Students of Delhi Public School, Jamnagar created eco-bricks using plastic bottles, wrappers, straws, and paper. Aside from this, they planted saplings in cut plastic bottles, and made bags out of waste cloth. Lower Primary School in Pura, Karnataka received the State Award in 2017 at the World Environment Day event as well as a letter of appreciation from the Minister of Education, Government of Karnataka for their efforts as part of Eco-Schools LLC. Students collected waste from households in the area and segregated it into wet and dry waste on a weekly basis. While wet waste was used for composting in the school garden, dry waste was accumulated through the year and sold for recycling. In 2017, this generated Rs.8,000/- which was used to buy new notebooks and water bottles for the underprivileged students in the school.

The campaign has positively impacted the knowledge, values, attitudes and opinion leadership of students in the areas of litter and waste management. It has been found that students who were a part of the campaign grew to be more conscious of waste management practices, conserved resources, and were less likely to litter as opposed to students who were not a participant in LLC (Eco Schools, 2020).

3.5. Curriculum and pedagogy of schools in India

The textbooks and pedagogy adopted in schools drives progress towards sustainable development in influencing instructional delivery by teachers, empowering students, and mediating ‘between intended policy and classroom practice’ (UNESCO, 2021). Murthy and Singh (2021) argue that in both central and state boards in India, there is little practical value given to EE in the curriculum. Students fail to grasp the depth of the problem owing to mere fact-based information without any connection to ground realities (Murthy and Singh, 2021). Kaur and Sharma (2016) argued that the pedagogical practices in most government as well as private schools across Indian states are poor as they largely focus on theoretical learning. They also found that the teachers experienced the problem of a large and lengthy curricula. ESD as an educational approach was noted to be ineffective largely due to the inadequacy in understanding the on-ground socio-economic and environmental concerns (Iyengar and Bajaj, 2011). Being ‘science-dominated’, the Indian curriculum mentions EE

multiple times and builds on cognitive components but has failed to account for the affective, action-oriented, and impact components (Iyengar and Bajaj, 2011; Sarmah and Bhuyan, 2015; Verma and Dhull, 2017). The authors argue that the role of educators is crucial here as they can supplement the textbook content with additional material to facilitate learning. However, owing to time-constraints, lack of incentive, and biased focus on preparing students for examinations, most educators evade a more comprehensive teaching approach (Iyengar and Bajaj, 2011). Two models have been considered over time to integrate EE in the education system: interdisciplinary and multidisciplinary. The first model attempts to have EE as a separate subject in the curriculum and the second infuses it in other subjects thereby allowing the teachers to leverage their resources and creativity in highlighting the relevant environmental aspects in diverse topics (Chikati, 2018). Kelani (2015) asserted that the interdisciplinary model only made the curriculum more congested. Verma and Dhull (2017) also listed several challenges in having EE as an independent subject. Aside from the increased curriculum load, they highlighted the lack of interest and qualification of teachers in this area along with poor allocation of time for the subject. Often, the class for this subject was scheduled in late afternoon or over the weekend, which, coupled with the perception of its low academic value did not yield fruitful educational outcomes. The authors reiterated the dearth of application-based learning in the chapters and the gap in understanding of students coming from different backgrounds (eg. rural vs urban). In contrast, Qadeer et al (2018) found that separate units dedicated to environmental issues were most significant and prevented teachers from potentially skipping such concepts.

While environmental studies is a separate subject for primary classes of I-V, the infusion approach is adopted up till class X in India, largely as part of science and social science. In a report prepared for the Ministry of Environment and Forests in 1998, CEE had suggested infusion given the deep interlinkage of environment with every subject (Murthy and Singh, 2021). It was not seen as a separate topic and was urged to be intertwined with diverse topics across subjects for students to gather a more holistic and real-world perspective through schooling. However, despite several efforts made by NCERT, there appeared to be a lacking focus on EE at the student level, with a few projects and activities concentrated in urban high-profile schools (Murthy and Singh, 2021).

An assessment by UNESCO (2021) found that biology, science and geography were most likely to have aspects of the environment included as part of the syllabus whereas the extent of its infusion in other subjects is rather low. Jackson's work in 2001, 2003, and 2004 was cited to explain the concern over complications in the curricula with integration of EE, owing to the limited and casual explanations of complex issues such as land degradation or industrial pollution (Johns and Pontes, 2019). He argued that EE would remain a formality if textbook writers failed to explain the nuances, especially regarding the reasons for environmental issues and potential solutions (ibid).

Hungerford and Volk extensively studied pathways to change learner behaviour through EE and produced a paper in the 1990s. They noted that the primary focus of most environmental modules is to impart relevant information which itself is deemed to be highly inadequate in resulting in behavioural changes (Kalita, 2017). Environmental sensitivity, "an empathetic connection with the environment" develops outside the confines of a classroom and has shown strong correlations with behaviour (ibid). Monroe et al. (2008) proposed a framework for programmes related to EE. This asserted the need to convey adequate information to supplement the prevailing knowledge and build understanding of topics via group discussions, creating models, writing and other hands-on engagements. Improving cognitive and social action skills for behavioural change and indulging in "ecological monitoring skills" such as composting besides enabling sustainable action through collaborations also formed a part of the framework. The experiences and knowledge of people differs in urban and rural areas. Educators need to account for this variation and leverage the strength of proximity to nature that people residing in villages have. Environmental programmes and interventions in rural areas aim to help communities live more sustainably and in harmony with nature while for urban areas, the focus is more towards reducing waste and consumption and assisting the people "return to nature" (Johns and Pontes, 2019).

A consensus drawn from the studies over time is on the adoption of a whole-school approach that aligns with sustainability principles and involves all stakeholders in optimising the resources within and beyond the school (IER, 2018; UNESCO, 2021). Collaborations between teachers, staff, students, their guardians, and community

members is believed to be imperative in guiding appropriate practices for effective continued learning. Mehrotra (2015) stressed on the involvement of the community to be able to grasp the local problems concerning the environment. This may be done through field-based activities and proximity to nature (IER, 2018; Murthy and Singh, 2021). Teaching-learning material comprising more illustrations, cartoons, and ‘multimedia packages’ may also be resorted to (IER, 2018). Localised education is emphasised to instill responsible behaviour in students in their formative stages in order to bring about change in the community (India Educational Review, 2018).

3.6. Review of Eco-Schools in Gujarat

Currently, there are 8 Eco-Schools in Gujarat. All these schools are in urban areas and most of the students come from middle and upper middle-class families. Information in the Eco-School database and Green Flag Application Reports reflects the profile of schools and background of their students. Active involvement of the parents has been appreciated throughout. The schools have elaborated on the Seven Steps, the key learnings from the programme, and the challenges faced in the Green Flag Application reports.

Gajera Global School in Surat laid out the Action Plan listing ideas on creating kitchen gardens, composting, awareness drives on waste segregation, eco-friendly festivities, and best-out-of-waste. The school had linked activities to science, math, social science, and EVS. For instance, leaves and plant drawing and measuring angles using such local natural resources was infused with Math and Science. Analysis of waste, identification of plastic and creation of eco-bricks became part of Science. Additionally, this was the first school to introduce a new subject of Green Education. The school stated that experiential learning was adopted as the primary mode of education, especially for Green Education and 3D robotics subject. Evaluations were completely activity-based. Projects suggested as part of Eco-Schools Programme blended very well with the school’s mission and vision.

According to the teacher-in-charge of Nand Vidya Niketan, Jamnagar, the students would not otherwise make efforts to “have the real mud on their boots” experience. Located near a coastal area, the major challenges noticed were saline water, lack of proper waste disposal, and sparse green areas due to city conditions. Measuring and

comparing electricity bills and waste generated formed a part of Mathematics while making face masks, bird-feeders, finding science-based solutions to environmental concerns were activities as part of Science and Art and Craft. Understanding the impact of water scarcity, waste, and global warming on the society and economy and interacting with stakeholders to understand how lifestyles have changed over the years was infused in Social science. The school formed their eco charter of “Educate, Enable, and Empower which sends a strong message by itself.

Shree Vasishtha Vidhyalaya, Surat worked towards the themes of energy, water, and healthy living. The school authorities observed students to have become more aware of the need for kitchen garden and differentiate between organic fertiliser versus the one with chemicals and pesticides. Some were given the title of “environment rescuer” for their proactiveness, which posed as positive reinforcement. The eco-code of this school was “Conserve” with the core message “Save Nature for Sustainable Future” circulated in the community.

All schools were noted to use social media and YouTube for broadcasting the work done as part of the Eco-Schools Programme. School websites, blogs, Parents Teachers Meetings, Zoom sessions, school functions, and newsletters were some other means to inform and involve people through webinars, meetings and skits. Informing and involving was mostly done through ripple effect wherein students of the eco-committee planned and conducted certain activities which were then shared with their peers. This learning shared with parents at home. The proactive approach of the school, engagement of all parents and residents in the area for functions and school assemblies, and online sessions, played an important role.

Some of the key learnings reported by the schools included a sense of responsibility towards the larger community, networking and building relations, an in-depth understanding of the environmental concerns and the seriousness of the future impact, and the need to promote green skills. The teachers reported creative and critical thinking in students after engagement in the activities over a period. They displayed more curiosity and intervened if they noticed someone littering, wasting water, or electricity. Being more conscious of their actions, they took it upon themselves to water the plants and feed the dogs, cows, and birds.

Constant feedback was noted to be taken in schools from parents to understand how the child behaves outside the classroom. Interactions and insights of teachers and students before and after a project also helped in improving the execution. *Safai karamcharis*, gardeners, administrative staff, and some field experts were also included in most schools. Observation sheets, measurement of waste collected and reduced, trees planted, biodiversity noticed over time, engagement in meditation and yoga, bringing healthy snacks, minimised plastic use, and other such measures were undertaken for monitoring and evaluation. Given the linkage of activities as part of the curriculum, the assessment was done in some schools through the usual periodic tests. As per Nand Vidya Niketan, the whole-school approach also allowed for debate and discussion with the entire school community and parents to assess the impact.

According to feedbacks reported by the teachers, the Programme has been lauded for its focused and organised yet flexible approach with the benefit of raising awareness and environmental sensitivity as well as leadership skills amongst students. The team at Shree Vasishtha Vidhyalaya believed that “none of us are as smart as all of us” that conveyed a sense of unity and belongingness. The schools have reported that the experiential learning opportunities offered by the Programme not only boost their own efforts in greening the school but adopt a sustainable approach to include all agents of change and instil responsible behaviour. Getting students out of the classroom raises their interest, addresses health concerns, discourages rote learning, allows them to feel closer to nature in an urban backdrop, and most importantly, helps them apply their learning.

A few common challenges that schools faced in adopting the Programme were reported. The initial process of understanding the Seven Step methodology and charting out the plan of implementation seemed complex. They also mentioned difficulty in community outreach and following up with people to involve them in the activities, especially during the Covid-19 pandemic. Devising suitable monitoring measures and ensuring that all relevant stakeholders turn up for the scheduled meetings were highlighted as other concerns.

4. Objectives and Methodology

The aim of this study is to assess the role of the Eco-Schools Programme in contributing to experiential learning in government schools of Kamlapur village, Rajkot district with the pilot of the Litter Less Campaign as a case example.

Objectives

1. To analyse the approach, curriculum and pedagogy of the Eco-Schools Programme piloted in the rural government schools of Kamlapur village, Rajkot district, Gujarat for its contribution to experiential education
2. To assess the gaps and scope in the curriculum and pedagogy for potentially expanding the Eco-Schools Programme in schools of Kamlapur village, Rajkot district, Gujarat
3. To analyse the perception of the stakeholders towards the Eco-Schools approach in general and the Litter Less Campaign in particular, in Kamlapur village, Rajkot district, Gujarat

Methodology

Study Area

The study was undertaken in Kamlapur village, Jasdan taluka of Rajkot district in Gujarat. The state is rich in flora and fauna with more than 2000 species of birds and one of the largest dry deciduous forests in western India. According to Census 2011, Kamlapur has a population of 6141 people. The percentage of females and males residing in the village is 49.11% and 50.89% respectively. The literacy rate of Kamlapur village is 58.80% with about 67% males being literate. The villagers are engaged in agriculture and allied activities. Being a large village with more facilities, it experiences a substantial inflow of people from nearby villages for grocery shopping, medical purposes, and so on. There are three government schools for upper primary classes of 6th-8th in the village, aside from one government senior secondary school and two private secondary schools.

For the purpose of this study, the three government schools in the village of classes 6th-8th that participated in the Eco-Schools Programme pilot through the LLC were selected, namely Taluka Shala, Kanya Shala, and Plot Shala. Of these, Taluka Shala

is an all-boys school, Kanya Shala is an all-girls school, and Plot Shala is a co-educational school. Moreover, Taluka Shala had received the ‘National Best Waste Wise Handprint Award’ for commendable work under the Litter Less Campaign. Kanya Shala was the runner-up in the same category. Geographically, the co-educational school is farther away (about 0.5km) from the main village area and the other two schools.

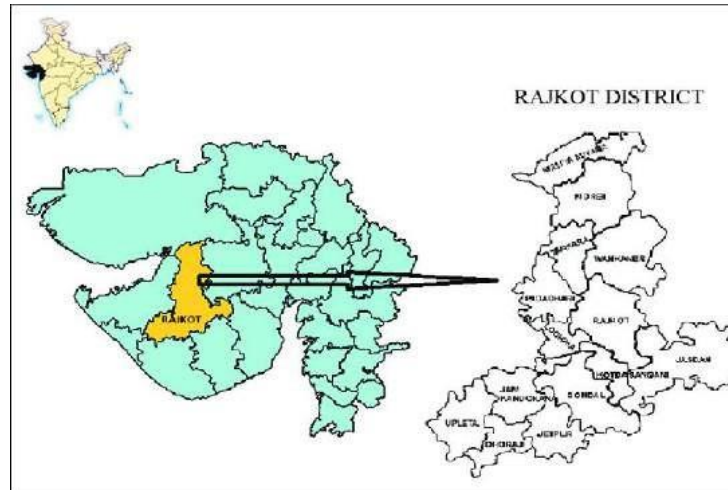


Figure 2: Map depicting Rajkot district in Gujarat. (Ankit Sheth, 2016)

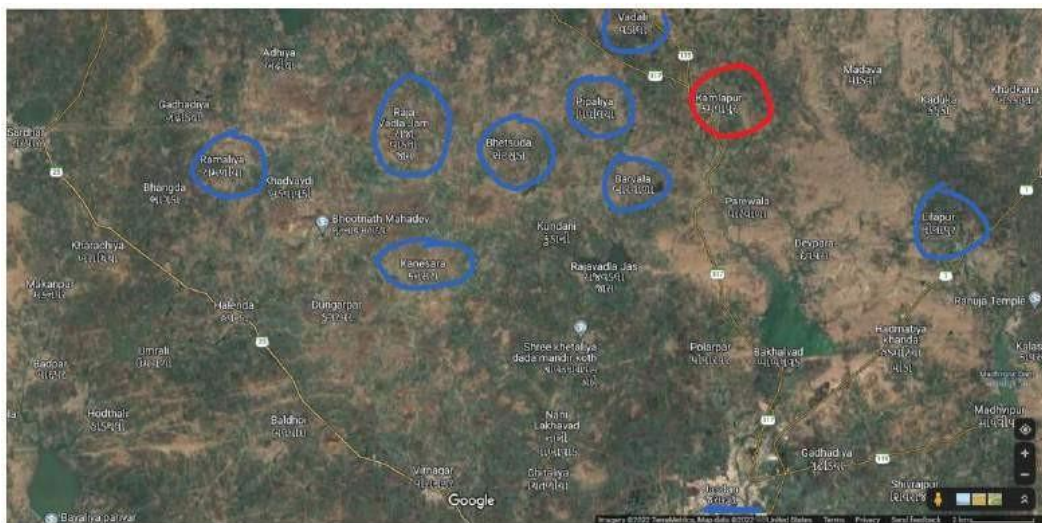


Figure 3: Map depicting the nine villages that were a part of the LLC with Kamlapur village highlighted as the study area



Figure 4: Image of the three upper primary government schools in Kamlapur- Kanya Shala, Taluka Shala, and Plot Shala

Methods and Tools

Secondary research sources comprised websites of FEE, Eco-Schools, research papers analysing Eco-Schools models across countries, curriculum guides prescribed by CEE such as the LLC lesson plan and the Joy of Learning handbook, school records, Green Flag Application Reports of Eco-Schools in Gujarat, and Gujarat State Education Board (GSEB) curriculum of upper primary classes (6th-8th).

Qualitative research method was undertaken for primary data collection. Key Informant Interviews (KIIs) were conducted with the CEE Jasdan Field office Head, National Eco-Schools Programme Coordinator, Sarpanch of the village, and the Academic Head of the Jasdan block Resource Centre to get insights about the whole-school approach and implementation of the pilot through LLC in rural government schools as well as the curriculum with respect to EE. Semi-structured interviews were conducted with the school principals, teachers, and parents of the students enrolled in the three government schools of the village. This was to account for the various perspectives of stakeholders towards the model in general and the LLC activities conducted. It may reflect on the potential effectiveness of the program, the gaps in the existing curriculum, and any changes observed in and around the school due to the pilot. The students of classes 6th-8th in the three schools were engaged in participatory activities to capture their experience with the Eco-Schools methodology and understanding on environmental concerns, in particular on the theme of litter. A brief on the participatory activities is given here.

Activity1: The snakes and ladders game devised by CEE to enhance knowledge on environmentally and socially responsible behaviour with a focus on climate change was introduced as an ice-breaker with the students. Responsible actions led the players up the stairs while harmful acts to the environment and humans pulled them down via snakes. Students were divided into teams with one representative from each team playing on the sheet while others explain why their respective team member successfully went up the ladder or was pulled down by a snake. The purpose was to gauge their understanding of environmentally and socially conscious practices across domains such as energy, litter, and healthy living.

Activity 2: The second game aimed to extract the creative ideas in students with respect to utilisation of waste material and items usually found littered around, given their experience with LLC and other engagements such as best out of waste. Students were asked to sit in a circle and given products such as a torn cloth, old newspaper, polythene bag, bottle cap, plastic juice bottle, thin cardboard box, etc. They were asked to pass the items around as music was played. When the music stopped, each student had to share what she/he would do with the object in hand if they found it discarded on the street.

Activity 3: The third game was to get an idea from the students about how they would perceive themselves in terms of their position and responsibility as a Sarpanch, a teacher, and as students, in that order. The problem of single-use plastic and litter was discussed. Following this, students were asked to act as the aforementioned actors to address the issue.

Sampling

Purposive sampling technique was undertaken for interviewing parents of students in the three government schools studying in the upper primary classes. A sample of 10 parents each with children going to Taluka Shala and Kanya Shala and 5 parents of students in Plot Shala were selected. The criteria of sample selection was to ensure representatives from each school, based on the strength of 6th-8th standard. While Taluka Shala and Kanya Shala had about 100 students in total in the upper primary classes, the strength of students in Plot Shala was 41. A tabulated approach to the study corresponding to the objectives is given below

Table 1: Objectives, research questions, and methodology of the study

Objectives	Research questions	Tools
<p>To analyse the approach, curriculum and pedagogy of the Eco-Schools Programme piloted in the rural government schools of Kamlapur village, Rajkot district, Gujarat for its contribution to experiential education concept</p>	<p>What is the broader aim with which the programme was implemented?</p> <p>What are the unique elements of the suggested curriculum and how are these adapted to area and stakeholder needs and capacities?</p> <p>What are the pedagogical approaches specified and followed under these schools?</p> <p>How does the Eco-School Programme in the rural district of Gujarat comply with the whole-school approach?</p>	<p>KIIs with CEE Jasdan Field office Head, National Eco-Schools Programme Coordinator; semi-structured interviews with school heads; Analysis of curriculum of GSEB textbooks and CEE prescribed Joy of Learning and LLC Lesson Plan</p>
<p>To assess the gaps and scope in the curriculum and pedagogy for potentially expanding the Eco-Schools programme in schools of Kamlapur village</p>	<p>What are the challenges identified in current curriculum and pedagogy?</p> <p>How can the curriculum be improved to maximise learning outcomes?</p> <p>Which other Eco-School theme(s) must be prioritised factoring the local environmental conditions?</p>	<p>Semi-structured interview for parents; teachers, Sarpanch; KII with CEE Jasdan coordinator, Block Academic Head</p>
<p>To analyse the perception of the stakeholders towards Eco-school approach in general and the Litter Less Campaign in particular, in Kamlapur village, Rajkot district, Gujarat</p>	<p>What are stakeholders' perceptions regarding the Eco-School programme as against the regular schools?</p> <p>How do stakeholders perceive the various components of the Eco-Schools Programme, specifically the LLC?</p> <ul style="list-style-type: none"> - Has LLC added to any new knowledge? - Are there any major local challenges that LLC methodology attempts to address? - Has LLC inspired environmentally conscious practices amongst students? 	<p>Semi-structured interviews for parents; teachers, Sarpanch, games for students</p>

5. RESULTS AND DISCUSSION

5.1. Profile of the schools and respondents

There are four teachers in Taluka Shala and three teachers in Kanya Shala for the upper primary classes. Plot Shala has two teachers catering to this age-group. Kanya Shala was noted to have facilities such as a projector that was absent in the other two schools. All schools were observed to have parks, bird feeders, and trees.

The parents of students enrolled in Taluka Shala and Kanya Shala were majorly engaged in agriculture. Some of them earned additional income via tailoring, running grocery shops, selling dry fruits, and dairy products from their livestock. Most houses were *pakka makans* with attached gardens, sheds for livestock, and water tanks for storage. Even though the houses had refrigerators, they drank water from *matkas* and used steel utensils. Villagers residing in the area of Plot Shala were reported to be relatively under-resourced with more *kachha makans*, low educational levels, and agriculture as the sole occupation. The school going children in this area were enrolled in Plot Shala. The stark difference in the socio-economic profile of this area despite the 0.5km distance between the three schools may be attributed to the students of Plot Shala belonging to the descendants of the *Harijan Samudhay* or the community of ‘untouchables’, as explained by a Taluka Shala teacher.

5.2. Stakeholder Mapping

The various stakeholders involved in the study have been mapped to underline their interests, motivations, and strategies in influencing EE and a whole-school approach as brought forth by the Eco-Schools model. The tabular analysis can offer ideas on the management of key actors and stakeholders and ways to build their capacities.

Table 2: Mapping the interests, power, and strategies of stakeholders to potentially influence Eco-Schools approach in Kamlapur village

Stakeholder	Interest	Power to influence	Potential medium/strategy to influence EE and whole school approach in the village
Students	High; active engagements in activity-based learning;	Low	Active and sincere participation in activities,

	development of soft and hard skills; incentive of awards and appreciation for efforts		reflection and sharing their learning on EE with families and community members
Teachers	Medium; leading students as part of a national programme, pedagogies and materials suggested to ease their burden with regard to EE integration	Medium; based on autonomy	Through classroom sessions, additional information and hands-on activities, meetings with parents, student-centric teaching
Principal	High; opportunity to transform learning in their school; national and international level recognition; build school reputation	High	Through overall supervision and coordination for establishing whole-school approach, guiding teachers and staff in meetings
Block Academic Head, Resource Centre	High; receive assistance and evidence-backed data on local concerns to enable educational change and strengthen EE in curriculum	High	Through suggestions on improving EE infusion in the curricula in the feedback process of GCERT post consultations with experts and stakeholders
Parents	High; secure their children's future as well as the environment; strengthen their role in shaping their child's education	Medium; based on education levels	Through interactions and teaching at home, coordination with teachers, encouraging environmental conscious practices
Sarpanch	Medium; address village level environmental concerns and garner support of students in mobilising the local community	Medium	Through an award incentive system during school visits, inviting suggestions from school on local environmental issues for due addressal
CEE Jasdan Field Head	High; Ensuring EE through whole-school approach in Jasdan, building relations with local authorities and establishing trust, expanding the impact of CEE	High	Understanding the local concerns, coordinating with the block level academic head for support with curriculum and pedagogy, introducing whole-school EE approach in schools of the area
National Eco-Schools	High; Expanding the Programme and strengthening the role of CEE, progressing	High	Mobilising teams and resources to suit the needs of rural schools in India,

Programme Coordinator	toward national commitments on quality education, showcasing Eco-Schools' impact in India at global platforms		exchanging ideas and insights globally for better contextualisation of best Eco-School practices, undertaking monitoring and evaluation of the schools' performances for Handprint/Green Flag award
------------------------------	---	--	---

5.3. Curriculum Analysis: reflection of EE and activity-based learning

The Eco-Schools Programme in India has prescribed Joy of Learning as a reference book to suggest links to curriculum and experiential activities. Litter Less Campaign Lesson Plan for teachers has recently been designed by CEE to be used by the schools participating in the ongoing campaign.

The Joy of Learning is a handbook of participative activities on EE for students of standard 3rd-5th, 6th-8th, and 9th-11th (3 editions) devised by CEE and Vikram A Sarabhai Community Science Centre. The idea is to emphasise on hands-on learning rather than textbook content across several themes including energy, health, waste, and wildlife management. This is in line with the thrust areas of the New Education Policy. It encourages students to better understand the human-environment relations and inculcate environmentally conscious practices. It has been developed for NCERT, to assist with the prescribed curriculum but has also been shared with the state boards. It may be noted that the primary focus has been given to science. Other subjects such as art and craft, language, social sciences, and mathematics also have a few activities suggested for integration. Corresponding to each activity, the handbook spells out the objective, thrust area, materials required, and suitable place and time to conduct the same. Specific details about the approximate duration to carry out the task and group size have also been given to facilitate planning. One or more subjects in which it may be integrated are listed, along with evaluation criteria or potential variations in the practice of a few activities. Most activities are suited for students to have experience on the field while others can be conducted in the classroom or even at home. Thematic areas of environment and energy have been widely covered, followed by ecology,

health and nutrition, and agriculture. On the lower end of the spectrum, pollution and forestry have only been mentioned twice.

The textbooks for 6th-8th standard prescribed by the Gujarat State Education Board (GSEB) based on modules prepared by NCERT reflect little information on environmental education, especially with respect to activities and projects. Science continues to have most environmental concepts present, followed by Social Science but the infusion is not as prominent in other subjects, as also suggested in the various studies conducted. Separate units have been designed to address topics of environmental conservation. A comparison of the content in these textbooks with the material prescribed for the Eco-Schools through Joy of Learning and Litter Less Campaign Lesson Plans suggests various ways of better infusion across subjects.

Science

The Science textbooks of classes 6th-8th have multiple activities within sections, and suggested projects listed after each chapter along with some questions to boost thinking skills. Chapters on ‘Getting to know plants’, ‘Living organisms and their surroundings’, ‘Water’, ‘Air around us’, and ‘Garbage in, Garbage out’ align with the Eco-Schools themes for class 6th. Building on these themes, there are chapters on nutrition in plants and animals, adaptation to weather and climate, story on waste water, and value of forests and water in 7th class. The focus in 8th standard is on understanding sources of pollution of natural resources and their conservation, uses and hazards of coal and petroleum, crop management, and so on. The chapter on weather and climate adaptations introduces the two concepts and outlines the various adaptive measures undertaken by animals. One activity suggested in the chapter is the collection and assessment of data from a weather report.

The Joy of Learning contains an activity on understanding the working of evaporative cooling through *matkas*, wet *khus*, and maintaining comfortable cool conditions with greener areas. Deliberations on climate change, impact of rise in temperature and ways to keep buildings and surroundings cooler for humans and animals alike are recommended for students to expand their horizons on this topic.

The textbook chapter on garbage contains an activity directing students to collect the garbage from their homes and separate items of biodegradable and non-biodegradable

waste. This is further tested as the waste is covered in a pit and checked for black color and no foul smell as indications of completely rotten waste that could be used to provide nutrients to the soil. The harmful use of plastics, need for segregating waste, and a note on garbage collectors is given. The LLC lesson plans provides additional activities for students to delve into the issue of litter in particular, which has not been covered in textbooks, and carry out a litter pick and audit around their school.

Mathematics

Mathematics textbooks entail a few activities such as flipping coins to understand probability and using paper to make figures such as parallelogram, rhombus, and so on. However, there hardly seem to be any hands-on or outdoor activities. Topics on measuring the volume and distances are theoretical. Chapters on graphs and tally marks have exercises for students to solve in the class. The Joy of Learning lists some activities aligned with the mathematics syllabus. One of these includes measuring water dripping from a tap in a minute and estimating the volume of wasted water in an hour or a day. This makes students aware of the need to conserve water and helps them undertake calculations on volume of the water, surface area of the cylinder, etc. In another activity conducted outdoors, students are asked to walk in certain directions and reach a set point to get a sense of direction and distance as two important components of navigation. Ideas for improvisation with a blindfold are also mentioned along with reflections on potential errors and alternative approaches after the game, which align with the idea of experiential learning as proposed by Kolb. The LLC Lesson Plan provides a sample questionnaire for conducting a waste audit survey and using the data to create bar graphs and pie charts for representation. Most material used as part of activities can be found locally. For example, specific mention of utilisation of fallen leaves is suggested for one task.

English

The English textbook has some stories and poems titled “Trash to Treasure”, “Water, water everywhere”, and “Amazing animals” in 6th standard. The chapter on waste brings out the concepts of reuse and recycle with situational questions attempting to extract the students’ thought process and creativity with respect to finding alternate uses for unused or discarded materials. Questions are inserted in the middle of chapters as well for students to pause and think before proceeding with the narrative.

Wise utilisation of water, identifying its misuse and exchanging ideas with classmates or creating a story on their own is suggested to help build vocabulary, comprehension, and knowledge in this domain. There is a section of “going beyond the textbook” that lists some additional material that may be referred to, and directs the teachers to indulge students in group discussions and plays. Additional readings from the library are encouraged to be accessed by the students. In 7th and 8th standard, a few exercises ask students to visit a nearby park to identify birds, insects, and trees and interview a social worker in the area to identify the major problems faced in the area. Critical thinking is encouraged with presenting a slogan of “save paper, save trees” and asking students to deliberate on the goal and target of the advertisement and whether it would be fulfilled.

Building on the last example on the topic of advertisement, one activity aligned with Language in Joy of Learning asks students to read newspaper regularly and clip out news articles and slogans addressing environmental concerns, especially those applicable to the local conditions for further discussion in the class. These may be categorised under domains of water, wildlife, waste, etc. and publicly displayed for the entire school. Students may further present their findings and write a letter to the editor on the chosen topic.

Social Science

In Social Science, “Think” boxes have been placed within each chapter to offer questions for reflection while reading. In the material designed for class 6th, the human-environment relation and climate change has been touched upon. The importance of natural resources and need for preservation is explained. Under sections listing the importance of water bodies and forests, points of obtaining valuable fish like shark and pearls in oysters, and procurement of wood for furniture and so on are mentioned respectively. Tasks include finding information on the oldest tree in the village and on the crops grown. The 7th standard textbook has more discussions and dialogues in the activity section. Questions are asked regarding how one would react to someone wasting water in the school, cutting a tree, littering, and damaging plants. For the 8th standard, “What is Around Us” chapter entails the task of identification of sources of pollution, its effects and possible solutions for reduction. Hazards of industrial effluents, dumping waste in water bodies, and the imbalance caused by

humans to fulfill their needs has been elaborated. Another chapter titled “Environmental Changes” conveys information on the difference between weather and climate, introduces terms of global warming, renewable energy and its types, and short points on preventing the greenhouse effect.

One activity in the Joy of Learning directs students to draw a landscape scene of their neighbourhood, and over a period of one-two weeks, interact with people who can describe how the place used to look like 20-30years ago. A revised drawing based on their descriptions would be created and possible reasons for the status of trees, houses, roads, *kachha* vs *pucca* infrastructure discussed in class. Further, a vision of how the student would want the scenario to be could be discussed with prompts on actions that could have avoided the undesired aspects that exist today. The LLC lesson plan suggests a litter-pick followed by a survey in and around school to understand its social impact on people. A periodic follow up may be done for evaluation and further insights on the problem as well as communication on the issue and how it can be improved.

Gujarati

Gujarati textbooks for 6th-8th do not hold any specific topics on environmental themes but a few chapters do reflect on them. Local conditions especially for rural areas are noted to be accounted for with poems and stories on life of various people and creatures in the village and relation with the natural environment. An activity listed at the end of a poem in class 7th titled ઝાલમીલકા asks students to initiate a small project on the conservation and importance of trees in their school and note the varieties that exist while discussing the ways to nurture and protect them. There is at least one such activity suggested in the exercises. The Joy of Learning and LLC Lesson Plan hold suggestions for linking certain tasks to language subject. Locale specific activities can thus be extracted as deemed fit but would require proper planning and structure of integration in fixed subjects.

Thus, it may be inferred from the analysis that the modules prescribed by CEE for Indian Eco-Schools certainly facilitate activity-based learning across subjects and chapters. Some of the ideas must be carefully infused in subjects such as Science and Social Science that already contain multiple suggestions for activities. It may be

difficult to administer EE and related hands-on learning in every subject but inspiration can be taken from the Eco-Schools modules for instigating critical thinking, curiosity, and application-based learning on suitable topics, as deemed fit. For instance, although inclusion of environmental themes may be far-fetched for mathematics, the misuse and waste of resources should not be encouraged in the process and students may be given a disclaimer to reuse paper and ensure that they don't litter after an activity.

The National Coordinator of Eco-Schools Programme India strongly believes that the Seven Steps and activities in the designed lesson plans for EE are promising for students, parents, school faculty and staff, as well as policymakers. The action-oriented approach aims to influence all stakeholders and have them practice waste segregation and management, water and energy conservation, adopt healthy lifestyle, and care for biodiversity in their daily lives. She also stated that it helps build essential soft-skills including communication and leadership skills which, along with creative and critical thinking can positively influence decision making abilities of this young generation. With continuous efforts and monitoring mechanisms in place, students feel a sense of empowerment when they notice positive results because of their actions which drives them to work more and be responsible. She envisions expansion of the Programme with equitable and participatory practices in rural and urban areas, innovative methods for student-centric learning and scaling up to build partnerships for the National and Global agendas on quality education and sustainable development.

5.4. Identified gaps and scope to strengthen curriculum and pedagogy

The Academic Head of Jasdan Block Resource Centre, Rajkot district, emphasised on the need to infuse EE in the curricula particularly through experiential learning. He confirmed that a grant of about Rs.15000 was provided annually for classes 1st-8th of government schools specifically to conduct eco-club activities. Ecosystem maintenance, kitchen gardening, and *adhunik kheti* or modern irrigation were a few important areas he felt should be prioritised when schools develop their activity plans. He was appreciative of the idea of lesson plans developed by CEE for Eco-Schools and stated that they would be instrumental in enabling the students to understand

concepts better. Although he believed that the revised textbooks did have activities and projects suggested for students and substantially covered environmental themes, he felt that the exam questions could also contain some aspects to test the practical understanding of students in the upper primary stage.

Taluka Shala teachers felt that it would be helpful if the activities from Eco-Schools prescribed textbooks could be merged with the state board textbook since the activities had to be compromised to complete the syllabus. Addressing the need for EE, the Principal of Taluka Shala said, “*ye syllabus wali cheez nahi hai, mahine ya season ke hisaab se activity design karenge saal bhar tab bachhe kuch kar paenge gaon ke liye*” (“this is not something that can just be a part of the syllabus; students would be able to contribute to the village if activities are designed throughout the year based on the months or seasons”). He strongly believed in activity-based approaches to enable action through students.

The teacher at Plot Shala was fairly satisfied with the curriculum but stated that it would definitely be helpful to the students because the current textbooks did not require them to take action or think as critically as the Programme’s modules do. A teacher of Kanya Shala stated, “*paryavaran ke baare mei toh bata diya kitaabo ne, lekin bachhe khud kar kya sakte hain us baat pe zor nahi diya jata, bas ek do line mei likh diya jata hai*” (“the textbooks inform children about the environment in a few lines but do not focus on how they can contribute to it”). He believed that there was limited information in textbooks. Stating the example of the climate change section in an 8th class textbook, he said it was quite theoretical and the teachers have to explain its practical relevance in relation to the local conditions of the village. Another example he shared was of a Gujarati poem on Lord Krishna that talked about his *bansuri* made of bamboo, the flora, fauna, and birds around him, and the tree he is standing against. According to him, it would rely on the teacher to discuss the use of bamboo, bring out the richness of the natural environment and biodiversity, and elaborate on the types of leaves and trees. The Head of Kanya Shala suggested that the curriculum content could be made lighter and designed at the level of understanding of a child in class 6th-8th. He observed that puzzles and activities that were present in older versions of textbooks had been replaced with more lengthy and content-heavy chapters and exercises that can be done on paper. The CEE Jasdhan Field

Office Head said that the students may indulge in rote learning and mug up definitions and bullet points if not encouraged to go on the field and experience the environmental phenomena.

A lot of parents interviewed were not very critical of the current curriculum and felt that environmental topics were adequately covered. The pedagogy seemed to have improved over the years, according to majority respondents. An elderly member of a family with a student enrolled in upper primary Taluka Shala noted the government school teachers to have become much more diligent and active in their duties. The mother of a student in Kanya Shala was impressed with the activities and sessions that were conducted in school and encouraged her to participate in as many as possible for her growth and development. Pointing to her daughter, she exclaimed, “*Mai isko bolti hu ki sab kuch karna chahiye, saare karyakram mei bhaag lena chahiye. Hum kuch bhi kar sakte hain agar mann laga ke karein!*” (“I tell her to participate in all events and activities. We can do anything if we set our heart on it!”). Like her, many parents believed the learning in schools to be student-centric. Others voiced their suggestions on aspects such as more focus on the health of students and lessons involving outdoor activities, and funding from the government for boosting effective education.

While one parent was confident that students need not be engaged in any additional activities as they already hold substantial knowledge of the environment, given their proximity to nature in everyday lives, another disagreed with the sufficiency of teaching about the same in schools and felt the need to go beyond the textbooks for them to learn better. The father of a student who had a degree in MA Journalism and worked with an NGO in the village specified topics such as organic farming, ayurveda, and climate change. He felt that the textbook content and teaching at school failed to address certain aspects. He took the responsibility of imparting as much knowledge on these topics as possible to this child, and often took him to the field. Aside from this, General Knowledge was another area that he often quizzed his son on. His son was also noted to be watching *Kaun Banega Crorepati* at home and asking questions. He stated that schooling should trigger a sense of curiosity in the child and address such major topics in detail as unlike him, many other villagers would not be as adept in teaching their children at home, given the average education levels. Three other respondents mentioned the gravity of single-use plastic and litter that seemed to

not be properly addressed in textbooks. A lot of parents suggested YouTube as a platform to spread more awareness on environmental issues that are not a part of syllabus and inform students about the local situations in an engaging manner. CEE Jasdán Field Head shared that the delayed appointments and lack of interest of government officials due to other commitments and priorities was an obstacle and could greatly scale up the Programme and learning outcomes, if overcome.

5.5. Teaching-learning approaches adopted in the schools

The teachers at each school were noted to administer different methods to enhance learning of their students. In Taluka Shala, nukkad natak (street play) and picture-based discussions and explanations of environmental phenomena were the methods most resorted to. Follow-ups on chapters to invite any queries from the students were regularly taken. They sometimes recommended videos or displayed it on their phone for students to see in small groups. The activities, if conducted, were usually introduced by the CEE coordinator in the village and the students were reported to enjoy that. Teachers of science and social science subjects initiated more class discussions and abided by the textbook content. They said that if they felt the need to elaborate on a concept, they would add additional information. They encouraged students to plant a sapling each year especially on their birthdays and update on the nurture and growth of the tree, to instill a sense of responsibility towards the environment. Teachers of Plot Shala did not go beyond the prescribed material and sometimes explained concepts through drawings on chart and other picture based methods. With less number of students in each grade of 6th-8th, it was not difficult to address individual queries or notice interest or disinterest of the class in a chapter. She felt that this kind of focus given to each child was important so that they feel comfortable discussing their concerns.

Kanya Shala used the projector in a classroom to display videos as supplementary material to the lessons taught. They had a dedicated YouTube channel to capture and showcase the activities conducted in the school. The teachers believed that it would not only build the school's reputation but also promote sharing of ideas across other schools. Plantation drives, skits, and other functions were organised to keep students enthusiastic and engaged. The teacher in-charge of the eco-committee urged the need for repetitive learning through different media to ensure that students truly understand

a topic instead of just memorising words out of the textbook. Hence, he adopted the method of verbal teaching along with class discussions, videos, and sometimes a live demonstration. Concepts of soil erosion, flooding and its impacts as a result of deforestation, and forest fires were some of the many live demonstrations conducted in the school backyard which was reported to attract students and facilitate learning as they saw the cause and effect relations for themselves. The teachers also resorted to peer learning and assigned certain parts of a chapter or whole chapters to each student. They were required to explain the same to the class after one-two weeks. Thus, it may be noted that the teachers were already adopting innovative ways to deliver the lessons and opted for more participatory mechanisms to involve students.

5.6. Rural vs. urban Eco-schools: influencing factors

According to the National Eco-Schools Programme Coordinator, this skill-based learning whole-school initiative should extend from urban to rural areas as well to ensure equitable opportunities and work to fulfill our National commitments towards access and quality education for all. Enabling action is imperative in this regard and the Eco-Schools Programme offers just the right platform that can be suitably modified according to local conditions and empower students and communities to identify environmental problems and act accordingly. She stated that the urban schools have reported positive impacts and a change in behaviour of students and parents since the Programme was launched, and she imagines the same positive response from the rural areas that could largely benefit from such resources. Digital divide and language barriers persist in implementing the programme in rural areas. The local CEE village coordinator along with the Jasdan field team facilitated the process of the online forms. Some teachers have also been fairly comfortable filling that up. Since the material exists in English and Hindi, it will have to be converted in other languages especially to be used by the rural authorities.

As noted in the official documents of registered urban Eco-Schools, most students belonged to middle and upper-middle class families with good educational qualifications. Many schools have stated that the parents of students are quite active in the process, help students with projects, engage in discussions, and actively home-school their children especially on environmental matters. The schools also boast of good infrastructure, space, large grounds, and other facilities such as projectors and

auditoriums. This was an evident gap in case of rural schools pertaining to absence of or low educational qualification of most families, especially in the households near Plot Shala. The lack of facilities and space also hindered the type of activities that could be undertaken in the premises. Aside from this, some students failed to attend school due to social and economic constraints such as having to take care of their siblings, resort to some work to contribute to the family income, or the disinterest of some parents toward sending their children to school.

It was also noted that some activities suggested in the textbooks and the Joy of Learning involving the use of equipment such as a beaker or tripod etc. may be more convenient for urban schools. Other experiments using local resources and examples from the farm would be more appropriate for the rural students. The Academic Head was of the opinion that experiential learning has to be largely contextualised and the responsibility to ensure that tasks are carried out suitably lies with the teachers. Hence, the incentive provided to them, in both rural and urban areas, would make a difference.

Majority of the parent respondents were in favour of the teachings in rural government schools. Elderly members compared the pollution and lack of regard for the environment in big cities to the respect and dependence their children have towards the natural resources. The father of a student said that even though he could afford sending one of his children to an urban school, he would not be very willing to despite better job opportunities there because of the better learning that occurs in the government schools of Kamlapur village. However, three respondents commented on the problem of illiteracy in the village, the dismissive attitude towards education and children voicing their opinions in public. They argued that urban schools would have more activities, take care of students' health and be more disciplined. One parent was particularly concerned over communication skills which he felt would be better developed in urban schools and was important for children in the future.

Both the National Eco-Schools Programme Coordinator and CEE Head of Jasdan Field Office expressed the need of government support to implement the Programme, be able to influence the state level textbooks, and further scale-up the Programme for greater impact. Collaboration of the various actors in the education sector is hoped to be realised in rural government schools that are often reported to be lax in their teaching approaches.

5.7. Case: LLC in Kamlapur schools

The School Heads, Sarpanch, and CEE Head of Jasdan Field Office unanimously agreed that adopting the LLC in rural villages would be highly instrumental, given its success in other areas and the persisting problem of litter in Kamlapur village. There were no dustbins in the area and despite a few registered complaints made to the Gram Panchayat, no steps had been taken to solve the problem at hand. Single-use plastic was observed to be littered around, aligned with the claims made by the stakeholders. There was no garbage collector and people were not aware of any disposal so they littered on the roads, burnt plastic and other dry waste. One household respondent also shared that she disposed of the waste right outside her house in a pit that got filled with water during the monsoon season with the garbage flowing along. This resulted in skin diseases and also invited snakes. Owing to the poorly built house, she said that the water sometimes flooded the house but did not consider that to be a huge problem. Most villagers seemed to be accustomed to the situation. The ease of availability of plastic products particularly as packaging material continues to plague the village, according to Taluka Shala Principal.



Figure 5: Litter observed in Kamlapur village

The Litter Less Campaign was introduced in the three government schools of Kamlapur village for students of standard 6th-8th in November 2021. This was a 45 day campaign wherein the first 30 days were used to sensitise the students and carry out environmental reviews and activities and the last 15 days were dedicated to reaching out to the local people and shops. This formed part of informing and involving the larger community. Activities had to be halted thereafter due to Covid-19 restrictions.

5.7.1. Overview: Seven Steps and activities

An Eco-club was already present in all the three schools, as mandated by the government. All teachers stated that forming an eco-committee was a smooth process due to the existing club. The teachers in-charge were invited for an online orientation session, conducted by CEE, that briefed them about the Campaign and conveyed relevant instructions. No additional material was provided to them yet. No other training sessions had been conducted either. The local CEE representative personally interacted with the school heads and teachers about the execution of the campaign and facilitated the Seven Steps process. A nature trail resulted in the collection of 12kg, 25kg, and 28kgs litter from the grounds of Taluka Shala, Kanya Shala, and Plot Shala respectively, as reported in the online form on the environmental review conducted. Action Plans and activities were designed according to the materials collected. Taluka Shala and Kanya Shala students created vertical gardens by planting saplings in littered plastic bottles as well as a compost pit. Given more milk packets found at Taluka Shala, students used those to plant a sapling too. In Kanya Shala and Plot Shala, plastic bottles were stuffed with waste wrappers, papers, and polythene bags and arranged along the perimeter of a park and trees. However, the bottles were found to be lying in a single heap near the gate of Plot Shala upon the visit. The teachers there also explained that a compost pit was initiated but due to lack of space and other implementation issues, it could not be completed. Measurement of litter collected was undertaken periodically to note the change for the purpose of monitoring.



Figure 6: Saplings in bottles and milk packets at Taluka Shala



Figure 7: Bottles used during LLC at Plot Shala



Figure 8: (L-R) Vertical gardening, compost pit, and wrappers in plastic bottles along a park at Kanya Shala

Additionally, according to the coordinator, students were also told not to waste water and pour the remaining water from their glasses to plants. Single use plastic had also been discouraged and students were provoked to think of alternate ways to minimise or reuse discarded products. Plantation drives and best out-of-waste activities were conducted by all three schools. Students of Taluka Shala had initiated rallies and door-to-door campaigns every year to discourage littering in the village. They also dedicated some days to go for garbage collection outside the school and cleaning the roads. A number of additional activities were conducted in Kanya Shala. Reusing ice cream sticks to make pen stands or paint over them, pasting fallen leaves on used paper to write about their characteristics and importance, and using matchsticks to understand the figures and angles as part of math syllabus were some examples. The students were asked to write a postcard to their families, informing them about the campaign and the need to properly treat litter. They wrote in their own words and highlighted the 3Rs that had been taught. Students had also visited shopkeepers to discourage plastic use.

5.7.2. Insights on students' learnings: Results from games conducted

Students of class 8th in all three schools were noted to be relatively more proactive in participating. In Plot Shala, the co-educational school, most boys suggested making paper planes and toys with the given items, to be thrown outside or burnt later. One of the boys shared his idea of using the bottle cap as a toy motor. Girls offered ideas of planting a sapling in used plastic bottles, using an old container for storing other items, or for putting seeds and water bath for birds, making a doll out of the waste cloth and giving it to their younger siblings or friends later instead of throwing it away.

Most of the class pitched in their strategy as a Sarpanch to tackle the problem of plastic and litter in the village. Ideas included ordering plastic producing factories to shut down and find alternate jobs for all workers, banning use of plastic in shops, spreading awareness and discouraging litter through street-plays, and mandating bins in the community and homes. As teachers, the general reaction was around sensitising children through activities and textbook material with more projects and less written homework. Their stand on the role of students was to be alert and refuse plastic especially in shops, to keep trash in their pockets until they see a dustbin, and to convey the issue to the Sarpanch for appropriate action.

Students of Taluka Shala were active in responding to the activities and discussed their role in addressing the problem of litter in the village at length. Boys of 8th standard were relatively more vocal and expressive. They pressed on the need to be aware of their immediate surroundings and utilize every opportunity in ensuring that cleanliness is maintained. They were able to articulate well and explain the snakes and ladders game. A majority of them listed ways to reuse the given object in the second game, over reducing or recycling. Some ideas suggested included using the cloth piece to tie to a bottle and prevent leakage, making a bag out of old newspaper to use for the market, making a button out of bottle caps, and using *nimda*, an eco-friendly glue from neem tree instead of fevicol.

5.7.3. Observations on students' behaviour

During a visit to Kanya Shala in the morning and Taluka Shala during lunch break, the children were observed to be brooming the grounds and floor of the building. They worked in teams with some responsible for brooming, another two picking up a mop, and some students walking with a dustbin towards the school gate. Students were also checking the grains and water in the bird feeders and watering the plants in plastic bottles. Both the visits were made without prior information to the school authorities. Although the ground and building seemed tidy in Plot Shala, no such activity was observed during the hours of visit to the school for the study. However, a pile of litter was noted in a corner, beside the school gate.



Figure9: Students brooming at Taluka Shala



Figure10: Students carrying a dustbin to throw waste at Kanya Shala



Figure11: Litter noted at Plot Shala



Figure12: A dustbin at Taluka Shala with unsegregated waste

In Taluka Shala, there was a four-compartment dustbin but there was no attempt to segregate it. Food waste, plastic bottles, straws, collected dust from the floor, etc. were seen to be thrown in the same compartment. When inquired about the disposal of the waste in the bins, the teachers said that they transfer it in the heap of waste nearby as there is no collector or alternate way of treatment at the moment. According to the teachers, the students themselves had reduced the use of plastic, carried cloth bags to the market, brought food from home in brown paper bags or steel containers, and thought of innovative ways to reuse an item that was about to be discarded.

It was also observed that students threw the remaining water from their glasses in the sink, and often forgot to turn off lights and fans when they went outside the classroom. In another incident, a student kindly offered sugarcane juice in a steel utensil but with a plastic straw. This was rather ironic given the discussion on litter and plastic that was conducted just before the lunch break. At the same time, it is crucial to note that change in mindset and behaviour is a long process and thus, this incident cannot indicate any conclusive remarks on the influence of LLC in the schools. Aside from this, when asked about the source of obtaining the wrappers and plastic bottles for the

LLC activities, one student each from Taluka Shala and Kanya Shala said that they got it from the market.

The teacher of Plot Shala shared that since LLC, the students have drastically reduced littering on school grounds which used to be a regular practice earlier. The children enjoyed participating in the activities and seemed to have more knowledge on the issue, its impact on the environment and their own health. Some parents also reported their child to have become more interested in watering the plants at home, and feeding the birds and livestock. Another parent mentioned that it was his son's idea to create a compost pit on the farm and to collect plastic waste in a separate container. The mother of a student of Kanya Shala in 8th standard shared that inspired by the activities conducted in school, her daughter had written a letter to the Sarpanch of the village and requested him to address the problem of litter by assigning a collector and providing dustbins. Although there was no response from the Sarpanch, the young girl was hopeful that if more of her friends approached him, he would take action.



Figure13: Compost pit suggested by a student at home

5.8. Perceptions of stakeholders: Eco-Schools and LLC

The Head of the CEE Jasdan Field Office stated that the Seven Steps encourage students to identify the environmental problem in the local area, interact with others to grasp the intricacies, and undertake activities to tackle the same. He explained that many heads of government schools in nearby villages were hesitant to be a part of the pilot because the model seemed complicated to them and they felt it would be a liability. They assume such interventions to be for the short-term or just for broadcasting on social media. Hence, they agreed to have a few activities after school hours and get pictures clicked but that was not what the Eco-Schools Programme was about. While the Principals of both Taluka Shala and Kanya Shala in Kamlapur village

had high hopes from this programme and reacted positively, particularly towards informing and involving the community, the Principal of Plot Shala believed that such an intervention could be more impactful at the college level as it did not seem very likely for children to bring about a huge transformation in the mindset and behaviour of the villagers. Although he found the Seven Steps to be a good model for inclusivity and action towards environmental issues, one major concern was the incentive structure because he felt the villagers would not take it seriously without a monetary or personal benefit. The larger value of breathing cleaner air, drinking potable water, or living in clean surroundings would not appeal to them as much.

The teachers of all three schools found the activities to be complementary to their subjects and not a liability, as initially feared. They also noticed the students to be more responsive in class, particularly the ones that were a part of the eco-committee. This could easily be observed as most of the students of classes 6th-8th in all schools showed great interest in the games that were conducted for the purpose of this study.

The parents' perception of the Eco-Schools Programme was largely positive. They believed that such a model would enhance the knowledge of their children and enable them to spread it across the village. One parent said, "*swachhata aur paryavaran ke liye bachho se seekhna chahiye aur sabko milke kaam karna chahiye*" ("we should learn about cleanliness and the environment from our children and work for this together"). They felt peer learning was effective and in such an encouraging school environment, children would have much better opportunities to thrive. Many of them praised the idea of engaging the entire community and agreed that their children enjoyed participating in activities outside the classroom. It was suggested that the impact created only by students may be limited but given the approach, involvement, and interest of the local NGOs and Gram Panchayat could be very helpful. The father of a boy going to Taluka Shala stated, "*bachhe bolenge tab hi log sunenge*" ("people will listen only when children speak up"). He also felt that door-to-door campaigns and rallies would be instrumental in mobilisation. Another parent talked about how planting trees is often understood as a trivial act when it is highly beneficial. He appreciated the school's initiatives of encouraging children to plant their own trees, especially on their birthdays. Three out of five parents interviewed who have their children in Plot Shala were not very bothered about the teaching mediums and said,

“jo kar rahe hain theek hi hoga, bachhe ko padhna hai theek se bas. Zyada khel mei padhai se dhyaan nahi uthna chahiye” (“whatever they are doing must be okay but children should study properly. These activities and games must not divert their attention from studies”). A student’s grandfather elaborately explained how going beyond textbooks is very essential and such an approach would cater to the student’s physical as well as mental health. Conducting an environmental review to identify the problem and involving the community, according to him, was a commendable step.

On the other hand, some parents felt that the idea was good but only as a concept as it might face a lot of hurdles during implementation. While one believed that this would not result in drastic changes owing to the difficulty in reaching uninterested villagers, another was concerned about the consistency of the Programme. Both of them were of the opinion that irrespective of what children do to attempt to sensitise the community members, they would either dismiss them or listen but not care to act. An interviewee argued that the only way villagers would act on something is to relate it to religion, stating that *“ye dharmic pareshaani hai. Dimaag mei bhagwan ke siwa kuch ghusta nahi hai, usse jod do toh ye kaam ki cheez hogi varna na bade kuch samjhenge, na apne bachhon ko samajhne denge”* (“this is a religious problem. People don’t comprehend anything if it isn’t related to their God, so this would be useful only if you explain it that way, otherwise neither the adults would understand nor would they let their children”). Thus, even though a majority appreciated the Eco-Schools Programme and the Seven Steps based on their belief in experiential learning that occurs with hands-on engagement and field activities as part of the syllabus, there were a few who appeared to be indifferent or even doubtful of the extent of the impact. Informing and involving as a step in the programme pedagogy seemed to be most appealing but that was also the one that parents raised concerns over.

The Academic Head of Block Resource Centre, Rajkot district was intrigued by the Programme and felt the need to better infuse activity based learning in the textbooks. He talked about the training of teachers in this domain because they would be the highest influencers in enabling student action. The Sarpanch of Kamlapur village believed that such a model can extend to help address the prominent issues of water scarcity and litter in the village by bringing all people together and empowering students.

Reacting to the LLC, the Heads of Taluka Shala and Kanya Shala stated that although they had already been involved in conducting several activities such as plantation drives, best out of waste and cleanliness drives, the new approach and innovative suggestions brought forth by LLC boosted their personal commitments toward adopting effective learning strategies. Principal of Plot Shala felt that the villagers were not particularly bothered about the litter, although it was an evident problem and thus, students may not have substantial influence. There had been no prior initiative to tackle the problem of litter in Plot Shala and the teacher was very appreciative of this campaign. She explained that the children had not been very disciplined or conscious about the environment prior to the campaign. The Principal of Taluka Shala shared that some parents often criticised engagement of their children in cleanliness drives of public places and commented that “*bachho ko padhne ke liye bhejte hain school, kachra uthane nahi*” (“we send our children to the school to study and not to pick up waste”). He stated that it was more difficult to get through to the villagers as they are unaware of the need of litter management. Amongst the respondents, most parents had a faint idea of the Campaign itself but recalled the activities that their child was engaged in and shared at home. Parents with students in Plot Shala were almost oblivious to the campaign and were not very supportive of the idea of their child working with littered items.

Table 3: Stakeholders' perspectives on Eco-School Programme and the LLC in Kamapur village

Stakeholder	Eco-Schools Programme	Litter Less Campaign
National Eco-Schools Programme Coordinator	Finds the action-oriented methodology to identify and address environmental challenges as promising through contribution to knowledge and soft skills	Given its success in urban schools, she wishes to extend and expand this programme to make rural areas litter free, while enhancing educational outcomes and contributing to health and well-being of all
CEE Jasdan Field Head	Lauds the local applicability in the area; envisions it to be a long-term project unlike the view of some school authorities who offered conduction of a few days' activities and broadcasting that	Believes that although it might not be received very well by community members, it provides an important instrument to identify and resolve challenges of litter; concern regarding government support is expressed

Block Academic Head, Resource Centre	More intrigued about the curriculum changes it can offer and emphasised on the role of teachers to be trained and supervise students	Appreciates the distinction between waste and litter and activities suggested in the material
Principals	Taluka Shala and Kanya Shala: enthusiastic reaction to the whole-school approach, Plot Shala: felt that it would be more effective for college students and school children would not have much influence; villagers would need monetary incentives	Taluka and Kanya Shala: Refreshing approach especially with curriculum linkages; difficult to get through to villagers Plot Shala: Indifferent, believed that villagers were habituated and students hold limited power
Teachers	All teachers depicted high interest and felt that it could complement their teaching methods and resources	Taluka, Kanya Shala: despite being involved in multiple activities, the new approach boosted their teaching methods Plot Shala: Appreciative of the first effort of its kind that had enabled student action
Sarpanch	Believes that such a model can extend to help address the prominent issues of water scarcity and litter in the village while allowing individuals to identify problem for themselves through environmental review	
Parents	Most are supportive of the model and strongly believe in action through children, participation of community, and acknowledge that children enjoy beyond the class activities. Door-to-door campaigns, peer learning, and tree plantations were considered crucial. A few expressed disapproval in the programme for possibly diverting from prescribed syllabus.	Parents of students in Plot Shala were not well-versed with the campaign and vaguely recalled the activities their child engaged in; Majority respondents were appreciative of the efforts, but others expressed specific concerns in their children dealing with littered items <i>"Hum bachho ko school padhne ke liye bhejte hain, kachra uthane nahi"</i> <i>"swachhata aur paryavaran ke liye bachho se seekhna chahiye aur sabko milke kaam karna chahiye"</i>

Eight of the parent respondents were a part of the Student Management Committee (SMC). They shared that they went to the school for meetings approximately every two months and were informed of the revisions in curriculum and the events and activities scheduled for the students. They were advised on ensuring good values imparted to their children such that the child gets timely sleep, healthy food, and practices cleanliness. The role of this committee was essentially to be updated on the functioning of the school, funding utilisation, and supervision, and to give suggestions or feedback regarding the academic and extracurricular plans of the school. None of the respondents recalled any suggestion they had recently shared with the school authorities and were aligned with the current manner of teaching. They reacted favourably towards the Eco-Schools Programme pilot with LLC and translated this as an opportunity to strengthen the role of their group in the school functions.

A major concern expressed by the Sarpanch was regarding the temporary nature of such interventions in schools. Envisioning consistency especially in informing and involving the villagers, he hoped for more successful results through this program. He stressed on reviewing the monitoring and evaluation methods and being stringent with that to yield scalable impact. The head of Taluka Shala felt that mandating such activities and participation on students may not be very wise because it would not yield optimal results to have someone uninterested participate in an event. He underlined the need to develop interests in the area and then proceed to engage only those who are intrinsically driven to make a difference in this context. He suggested that best practices from other villages and schools across states that can inspire others should be shared through YouTube or other appropriate media for schools to learn and adopt similar practices. Lack of awareness and understanding of the environmental crisis amongst the villagers was seen as an obstacle. The Principal of Plot Shala suggested that since everyone does not have the means or skill to operate online, door-to-door service would be helpful, as initiated during Covid-19 pandemic to impart information to students and address any difficulties they may be facing.

5.9. Way forward

The Sarpanch elaborated on the polluted water bodies due to the litter overflowing in the rivers that made the water unfit for use and hazardous to health. Water scarcity

also plagued the village especially during the summer months as any water hardly reached the end of the elevated land where the village is located. He suggested the theme of water to be initiated with the whole-school approach which could have a greater combined impact on the pressing environmental challenges. Some teachers and parents shared similar concerns. The theme of climate change was also sought by some parents as they elaborated on the rising temperature, fear of damage to crops, and the need to enhance the knowledge of children on the emergency, highlighting the immediate impact and adaptation measures. The CEE Jasdan Field Head was aligned with this thought but looked forward to proceeding with LLC activities, infusing the LLC lesson plan in school teachings, and then introducing subsequent themes, given their interlinkage. Consultations with SMC members and school teachers would have to be held to arrive at a consensus and draft a suitable agenda. Monitoring mechanisms would have to be reviewed and activities for community involvement planned to strengthen the pedagogy. The National Eco-Schools Programme Coordinator also had climate change as a new theme in mind to be introduced at the country level. She felt that private schools in villages such as Kamlapur would have more resources to utilise and could show impressive results if they participate. Moreover, since private schools are required to pay a fee for registering under the Programme and the monetary investment may work as an additional incentive for the authorities to commit to the activities.

Based on the assessment of available literature, a SWOT Analysis is presented to capture the strengths, weaknesses, opportunities, and strengths of the Eco-Schools Programme with special focus on its implementation in rural areas.

Table 4: SWOT Analysis of Eco-Schools Programme in rural areas

<p>STRENGTH</p> <ul style="list-style-type: none"> - Establishes a whole-school approach - Offers a flexible methodology that can be contextualised across geographies - Provides additional material for hands-on learning - Suggests appropriate infusion in existing curricula - Lays out measures to evaluate impact - Covers a wide range of critical environmental concerns - Promotes and empowers children to act 	<p>WEAKNESS</p> <ul style="list-style-type: none"> -Curriculum linkage in Joy of Learning and LLC Lesson Plan is still dominated by Science and Social Science -Online resources may be inaccessible in remote rural areas -Language barriers as texts only exist in English unless specially converted -Lengthy online process of registration and review
---	---

sustainably - Aims to enhance knowledge and induce positive environmental behaviour - International certification and global recognition as incentives	
OPPORTUNITY -NEP 2020 emphasises on activity-based learning as well as environmental education -Alignment with SDG4.7 -Potential to influence national educational policies with the whole-school approach -Prepare students early for green jobs -Facilitate development of teacher skills and knowledge through workshops and lesson plans	THREAT -Lack of cooperation from local authorities -Inadequate funding channel -External motivation of certification hampering consistent commitment

6. Conclusion

The Eco-Schools Programme has been lauded for its sustainable approach to administer EE in schools across the globe for years. The structured yet flexible Seven Steps methodology has been contextualised across geographies and varying educational institutions. India’s exemplar examples have also been given due recognition at the international level by features of stories on the official website and certification. Extending the Programme in the rural areas had been a challenge. The CEE team has been uplifting the rural communities in Jasdan of Rajkot district since 1988 and enabling the perusal of sustainability education (CEE Annual report 2014-15). The trust and cooperation established through the years played an important role in the heads of schools showing interest in the new Programme, as shared by them. The pilot of the Programme through the Litter Less Campaign under the thematic area of waste lasted only for 45 days before the pandemic put a halt, but seemed to have created a positive impact on the school authorities and community in Kamlapur village. Almost all stakeholders appeared to be impressed with the Eco-Schools model and hopeful of the transformation that can be brought about in the long run. While the whole-school approach seemed promising, questions were raised about the intrinsic motivations of those involved and the passive participation of the community. As also suggested by the literature, most respondents urged that sustained efforts would be required to ensure proper implementation of the Programme with support from the

local authorities being crucial for the same. A difference of opinion was expressed by the parents with regard to their children's involvement with litter items. Sensitisation of the community is extremely important for them to understand the desired objective of the Programme and the larger benefit it entails for all. The ultimate goal must not be to complete an activity to attain a certificate but to work towards quality education and learn to imbibe the learning in everyday lives. The various mediums of delivering concepts such as videos, live demonstrations, and plays could be instrumental to students' learning. As reflected in the literature, schools that were noted to be already engaged in hands-on activities and disseminating environmental knowledge to students had a more positive outlook and greater participation. The Joy of Learning and LLC lesson plan do offer innovative activities but it continues to be dominated by science and social science. The handbooks seem to offer adequate examples for teachers to engage students in hands-on learning for select topics across disciplines. Certain requirements of the material and setting as mentioned in Joy of Learning such as taking students to a beach, using equipment of a beaker, a solution or tripod etc., particularly for science experiments may not be available in rural government schools. Aside from this, asking students to work with paper and plastic bags for many activities in the exercises of some textbooks and listing bullet points on saving paper, reusing materials, and refusing plastic in another subject may offset the environmentally responsible behaviour as desired. The curriculum for 6th-8th standards also did not adequately reflect on the distortions in the global systems caused by man nor did it emphasise on the urgency of it. Disasters such as forest fires and flooding that could also be triggered by man were clearly marked under natural disasters. Content on exploiting and safeguarding resources to satisfy man's wants seemed to be elaborated as opposed to its importance in maintaining healthy ecosystems.

Skill-based and hands-on activities could certainly address these gaps if properly infused in subjects. Driving students' intrinsic motivation and providing appropriate training and workshops to the teachers along with periodic feedback sessions could help in successfully steering the Programme. Themes of water and climate change may be considered for expansion as they align well with the local conditions and concerns, and are linked to the problem of litter. It is pleasantly surprising to note

behavioural change in students induced by the 45-day campaign, and most likely prompted by previous similar engagements, so much so that it inspired students to suggest the development of a compost pit in their homes and write to the Sarpanch. The households near Plot Shala were observed to be relatively less aware and enthusiastic. This may be correlated to lower educational levels and caste-based discrimination. It would be important to account for the socio-economic constraints in the local context and the potential barriers towards learning.

7. Limitations

The limitations of the study are the following

- a) Restricted to one village: Out of the 22 schools in rural Gujarat and 12 schools in Jasdan villages, the study was only conducted in Kamlapur village which may offer limited and village specific insights and perspectives on the rural programme
- b) Behavioural influences beyond Eco-Schools: The schools had already established eco clubs and were engaged in environmental activities at some level. Thus, the environmental conscious practices observed in students may not solely be due to the programme
- c) Kamlapur being a large village still had better school infrastructure and facilities to conduct activities as compared to that available in other poorer villages that were not a part of this study

8. References

1. Agenda 21, Chapter 36: Promoting education, public awareness and training. <http://www.gdrc.org/sustdev/un-desd/c36-a21.html>
2. Ahmedabad Declaration, 2007. A Call to Action. CEE. http://www.unevoc.net/fileadmin/user_upload/docs/AhmedabadDeclaration.pdf
3. Bangay, C, 2016. Protecting the future: *The role of school education in sustainable development – an Indian case study*. International Journal of Development Education and Global Learning 8 (1)
4. CEE and Vikram A. Sarabhai Community Science Centre. The Joy of Learning: Handbook of Environmental Education Activities. CEE. <https://ecoschools.in/pdf/JOL%206-8.pdf>
5. CEE Annual Report 2014-15. CEE. <https://www.ceeindia.org/admin/action/files/010120052120annual-Report-2014-15.pdf>

6. Declaration of Thessaloniki, 1997. International Conference Environment and Society: Education and Public Awareness for Sustainability. <https://unesdoc.unesco.org/ark:/48223/pf0000117772>
7. Eco Schools, 2020. Litter Less Campaign. <https://www.ecoschools.global/news-stories/2020/9/14/press-release-litter-less-campaign>
8. Eco Schools. n.d. *Stories from schools — Eco Schools*. [online] Available at: <<https://www.ecoschools.global/stories-from-schools>> [Accessed 13 June 2022].
9. Exposure. 2017. Government lower primary school Pura. [online] Available at: <<https://esllc.exposure.co/government-lower-primary-school-pura>> [Accessed 13 June 2022].
10. Exposure. 2017. *Makini School Kenya*. [online] Available at: <<https://esllc.exposure.co/makini-school>> [Accessed 13 June 2022].
11. Exposure. 2017. Seth Anandram Jaipuria School Ghaziabad. [online] Available at: <<https://esllc.exposure.co/seth-anandram-jaipuria-school-ghaziabad>> [Accessed 13 June 2022].
12. Exposure. 2018. *Observatory Junior School South Africa*. [online] Available at: <<https://esllc.exposure.co/observatory-junior-school>> [Accessed 13 June 2022].
13. Exposure. 2019. Litter Less in Australian Schools. [online] Available at: <<https://esllc.exposure.co/litter-less-in-australian-schools>> [Accessed 13 June 2022].
14. Exposure. 2019. Litter Less in Australian Schools. [online] Available at: <<https://esllc.exposure.co/litter-less-in-australian-schools>> [Accessed 13 June 2022].
15. Exposure. 2019. Waste segregation projects in Uniqyou International School. . [online] Available at: <<https://esllc.exposure.co/waste-segregation-projects-in-uniqyou-international-school>> [Accessed 13 June 2022].
16. Gaffney J.L., O’Neil J.K., 2019. *Experiential Learning and Sustainable Development*. In: Leal Filho W. (eds) *Encyclopedia of Sustainability in Higher Education*. Springer. https://doi.org/10.1007/978-3-319-63951-2_348-1
17. Gan et al., 2019. *Do eco-schools really help implementation of ESD?: A comparison between eco-school systems of Hungary and Israel*. *Hungarian Educational Research Journal*. Vol.9, Issue 4 <https://akjournals.com/view/journals/063/9/4/article-p628.xml>
18. Green Flag Application Report 2021-24. *Gajera Global School*. Eco-Schools India.
19. Green Flag Application Report 2021-24. Nand Vidya Niketan, Jamnagar. Eco-Schools India. CEE.
20. Green Flag Application Report 2021-24. Shree Vasishtha Vidhyalaya, Surat. Eco-Schools India.
21. Greening EU Cooperation, 2018. *Eco-Schools: environmental education and sustainable development/ stories of transformational change*.
22. Gujarat State Board of School Textbooks, 2019. GSEB 6th Standard textbooks. <http://gujarat-education.gov.in/textbook/textbook/index.htm>
23. Gujarat State Board of School Textbooks, 2019. GSEB 7th Standard textbooks. <http://gujarat-education.gov.in/textbook/textbook/index.htm>
24. Gujarat State Board of School Textbooks, 2019. GSEB 8th Standard textbooks. <http://gujarat-education.gov.in/textbook/textbook/index.htm>
25. Henderson, K. A., 2004. *Whole School Approaches to Sustainability: An International Review of Whole-School Sustainability Programs*. ARIES

26. Hickey, L, nd. Literature Review of Research Studies. Changing Together: Eco-Schools 1994-2019. <https://static1.squarespace.com/static/552bcd30e4b02ed06b97c76d/t/5e4bb262190cbb27f15a2077/1582019198413/1.+Changing+Together+-+Eco-Schools+1994-2019+Introduction.pdf>
27. India Educational Review, 2018. Vol 56, No. 1. NCERT
28. Iyengar, R., & Bajaj, M., 2011. *After the Smoke Clears: Toward Education for Sustainable Development in Bhopal, India. Comparative Education Review*, 55(3), 424–456. doi:10.1086/660680
29. Johns and Pontes, 2019. Environmental Education in India: Constructing Environmental Citizens through Narratives of Optimism. *Education Research Highlights in Mathematics, Science and Technology*. https://www.isres.org/books/Erhmst2019_24-12-2019.pdf#page=167
30. Kaur, G. and Sharma, 2016. Curricular Intentions, Teachers' Comprehension and Transaction of Contemporary EVS Textbooks: A Study. ERIC, NCERT, New Delhi.
31. Kazi, S, 2016. *Sustainable Schools*. TERI. <https://www.teriin.org/opinion/sustainable-schools>
32. Kolb, DA, 1984. *Experiential learning: Experience as the source of learning and development*. Vol. 1
33. Koutsoukos, M., Fragoulis, I., & Valkanos, E., 2015. *Connection of environmental education with application of experiential teaching methods: A case study from Greece*. *International Education Studies*, 8(4), 23-28.
34. M.C.Mehta vs Union Of India & Ors. [2003] Writ Petition 860/1991 (Supreme Court).
35. McKeown, R. and Hopkins, C, 2005. *EE and ESD: Two Paradigms, One Crucial Goal*. *Applied Environmental Education and Communication*, v4 n3 p221-224
36. Monroe, M.C., Andrews, E. and Biedenweg, K., 2008. A Framework for Environmental Education Strategies, *Applied Environmental Education & Communication*, 6:3-4, 205-216, DOI: 10.1080/15330150801944416
37. New Curriculum Framework, 2005. NCERT. <https://ncert.nic.in/pdf/nc-framework/nf2005-english.pdf>
38. Pace and Sharma (nd), *The Seven Step Methodology*. Changing Together: Eco-Schools 1994-2019. <https://static1.squarespace.com/static/552bcd30e4b02ed06b97c76d/t/5e4bb262190cbb27f15a2077/1582019198413/1.+Changing+Together+-+Eco-Schools+1994-2019+Introduction.pdf>
39. Positive Actions for the Sustainable Development Goals, nd. FEE. <https://www.ecoschools.in/PDF/SDGs-Publication.pdf>
40. Ravindranath, S., 2016. Environmental Education in India – The Shifting Paradigm. In: R. Gorana and P. Kanaujia, ed., *Reorienting Educational Efforts for Sustainable Development*. [online] Netherlands: Springer. Available at: <<http://doi:10.1007/978-94-017-7622-6>> [Accessed 13 June 2022].
41. Schröder, LMU, Wals, EJA and Koppen, CSK, 2020. *Analysing the state of student participation in two Eco-Schools using Engeström's Second Generation Activity Systems Model*. *Environmental Education Research*, 26:8, DOI: [10.1080/13504622.2020.1779186](https://doi.org/10.1080/13504622.2020.1779186)

42. Scott, W.A.H. and Gough, S.R, 2010. Sustainability, Learning, and Capability: Exploring Questions of Balance. Open Access Sustainability. doi:10.3390/su2123735
43. Steffen, W., Crutzen, P. and McNeill, J., 2007. *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?*. Vol. 36, No. 8. Royal Swedish Academy of Sciences.
44. Stockholm Declaration. (1972). Declaration of the United Nations Conference on the Human Environment. Stockholm. <http://www.un-documents.net/unchedec.htm>
45. The Constitution of India. Article 51A. <https://legislative.gov.in/sites/default/files/COI...pdf>
46. The Litter Lesson Lesson Plan for Teachers. CEE. <https://www.eco-schoolsni.org/eco-schoolsni/documents/007474.pdf>
47. UNESCO, 2021. *Learn for our planet: a global review of how environmental issues are integrated in education book*. <https://unesdoc.unesco.org/ark:/48223/pf0000377362>