Impact Assessment of FDP

- Smart Schools for Rural Students in Tamil Nadu & Puducherry

Impact Assessment Report

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Impact Assessment of FDP - Smart Schools for Rural Students in Tamil Nadu & Puducherry

- Impact Assessment Report

Project ID	P0648

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Abbreviations

AV	Audio-Video
BaLA	Building as Learning Aid
CSR	Corporate Social Responsibility
KABP	Knowledge, Attitude, Behaviour and Practices
MI	Monitoring and Impact
NAF	National Agro Foundation
NGO	Non-Government Organization
RO	Reverse Osmosis
SMC	School Management Committee
SS	Smart Schools
STEM	Science Technology Engineering Mathematics
TLM	Teaching Learning Materials
WASH	Water Sanitation and Health

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Executive Summary

1. Background

HDFC Parivartan provided a grant to the **National Agro Foundation** (NAF) to implement the Smart School project in 25 rural schools from Puducherry and Tamil Nadu. One of the primary contributions of the project was to provide Smart Class to all these 25 schools across 5 districts of Tamil Nadu and Puducherry. The break-up of 20 schools in 5 districts of Tamil Nadu was Kanikal (4), Cheydapatti (5), Cuddalore (5), Tenkasi (1) and Dindigul (5). Also included were 5 schools from Puducherry. Activities carried out through the project over 3 3-month period.

A research agency: 'Impact PSD' was assigned to undertake the third-party impact assessment study. A summary of the assessment is shared below:

Project/Impact Assessment Details	
Implementing NGO Partner	**National Agro Foundation** (NAF)
Project Location and coverage	Tamil Nadu – 5 districts – 20 schools (Kanikal (4), Cheydapatti (5), Cuddalore (5), Tenkasi (1) and Dindigul (5)) and Puducherry – 1 district – 5 schools
Project Duration	October 2022 – March 2023
Assessment Approach and Methodology	
Study Objectives	• To assess the extent to which the project achieved its intended results. • To ascertain the perception of stakeholders and project participants on the relevance and usefulness of the project interventions. • To identify learnings from the project that can be adapted for similar projects in future.
Research Design	Mixed methods approach (Quantitative and qualitative) Quantitative - Digital classroom checklist, STEM Lab, Interviews with Teachers Qualitative – In-depth interviews with school principal and Focus Group Discussion with students
Sample Covered	Out of 25 schools covered in 6 districts, 8 (more than 30%) schools were selected to get a representative sample.

2. Key Observations and Impact

2.1 Digital Classroom Intervention

The physical verification process was administered to assess the current status of digital classrooms in terms of availability, functionality and current usage by the intended target groups (teachers and students). The results of the physical verification and interaction with teachers, principals, SMC members and students are discussed as follows:

- The smart classrooms in all eight schools are fully operational and accessible to both students and teachers. These dedicated classrooms are equipped with all the necessary smart class resources, allowing teachers to conduct interactive lessons tailored to the grade-level curriculum.
- All eight schools have confirmed the receipt of the smart class setup. The setup includes a flat TV interactive panel, a sound bar, a web camera, e-content for Grades 6-10, and Android-based applications. This comprehensive support meets all the teachers' classroom teaching needs.
- During the discussion, students expressed their satisfaction with the help provided by smart classes. They mentioned several benefits, including a better understanding of the subject matter and the ability to understand experiments, which improved their visual retention. Almost all students said that learning happened instantly as they could observe practical demonstrations involving motion with sound, leading to immediate clarification of doubts. Some students also noted an improvement in their overall knowledge due to the digital content.
- Across 8 schools, teachers from 7 schools stressed that students were more open to learning when they were exposed to live videos. Five teachers observed that live videos helped monitor students' academic progress, while teachers from four schools highlighted the increased potential for student engagement and confidence-building during digital tool-based pedagogy. Also, teachers from two schools reported better learning outcome(s), and an equal number mentioned the effectiveness of live videos in assisting students with project and model creation.
- Implementing smart classes across three different schools has resulted in a notable increase in student attendance. Teachers attributed this positive trend to the engaging nature of the smart classes and the innovative teaching methodologies they have adopted. The smart class methodologies encompass a range of visual and auditory elements, including interactive presentations, educational videos, and audio clips, all of which have significantly enhanced the overall learning experience for the students.
- HDFC's support was highly acknowledged and has been considered significantly advanced educational practices by integrating digital tools.

2.2 STEM Labs

Under smart schools for rural students, HDFC Bank supported STEM labs in the target schools. The results of the physical verification and interaction with teachers, principals and students are discussed as follows:

- All eight schools reached under the assessment confirmed receipt of STEM lab support. Five of these eight schools did not have STEM labs, and the remaining three had usable labs.
- The STEM Lab setup provided schools with various resources, including models and equipment related to Science and Mathematics (100%), posters and IEC materials (100%).
- Teachers from seven schools observed that practical activities simplify topics, enhancing students' understanding. Additionally, teachers from five schools noted increased interest in specific topics, engaging models, videos, equipment, and easy contextual understanding through practical demonstrations, all contributing to a more engaging learning environment. Teachers from the same number of schools indicated that the STEM lab encouraged discussions and boosted

students' confidence in the subject. Few teachers also reported improved attendance and better marks in STEM subjects, amplifying interest in science and mathematics.

- The principals and teachers appreciated the HDFC Bank's assistance with STEM labs.

2.3 Other Support under the Project

Library Support

- Four schools have acknowledged receipt of library-related support. All four schools have received storage shelves for books and textbooks. Additionally, three of the schools have confirmed the receipt of the latest books and support for a reading corner/area, including tables and chairs.
- The teachers from all four schools have noted that the provision of library resources has ensured that books are accessible to students in need. Furthermore, teachers from three of the schools have observed a convincing increase in students' interest in educational and entertaining books, which not only impart knowledge but also provide an enjoyable learning experience.
- The libraries in the four supported schools are accessible and actively utilized by the students. However, ongoing maintenance remains a challenge for government schools due to space limitations and the lack of dedicated rooms. Nevertheless, the library support has successfully fostered a conducive reading environment for the students.
- Based on discussions with students, it was observed that students derive great enjoyment from reading library books and engaging in storytelling activities with their peers at school and in their homes. The students demonstrated their overwhelming enthusiasm during the conversations about their experiences with libraries.

Repair and Refurbishment of WASH Structures (Toilets)

- Only seven out of eight schools confirmed receiving support for repairs and renovation of WASH structures within the schools (toilets). This was found true with the implementation partner report.
- Four schools' principals and teachers were informed about the new construction of toilets, and three schools received repairs and renovation work on floors, windows, and doors. Pipes provided water supply, and faucets, sinks, and wash basins were installed.
- Out of four newly constructed toilets, one was found to have a faulty design and a water logging problem.
- Teachers at five schools articulated that the presence of enhanced infrastructure has made female students more at ease when utilizing restroom facilities. The improved amenities resulted in increasing restroom usage across the five schools, with four institutions noting improved hygiene maintenance, two reporting a decrease in the incidence of illnesses, and one observing enhanced punctuality, particularly among female students.
- The school authorities expressed their satisfaction and commended HDFC Bank for its support in optimizing the WASH (Water, Sanitation, and Hygiene) systems in the schools.

Repair and Refurbishment of WASH Structures (Drinking Water)

- Four out of eight schools received support for drinking water. All four schools confirmed that the Aqua Guard UV water purifiers were given to the schools.
- All four schools reported fewer incidences of water-related illnesses, as students received pure water that prevented water-borne diseases.
- All the students in the discussions confirmed that the drinking water facilities are now clean and well-maintained, providing filtered water for drinking.
- The principals expressed their satisfaction and acknowledged the support received from HDFC Bank.

3. Findings on the OECD Criteria

This section provides the impact assessment findings considering the OECD research framework or criteria to oversee the overall impact of the HDFC Bank-supported FDP in TN and PY.

OECD Criteria	Score
Relevance	5
Coherence	5
Efficiency	3.5
Effectiveness	4
Impact	3.5
Sustainability	3
Overall Score	**4**

4. Key Recommendations

- ***Smart Class:*** Strengthen technical support and provide ongoing training for teachers to ensure effective use and maintenance of smart class equipment, addressing challenges related to equipment functionality and content updates.
- ***STEM Lab:*** Extend the availability of STEM labs to senior students and provide regular, comprehensive training for teachers on effectively using STEM lab resources to maximize educational benefits.
- ***Library:*** Increase Library resources, hours and accessibility for all students, including those in senior grades.
- ***Drinking Water:*** Invest in improving and maintaining water filtration and distribution systems to provide a reliable and safe drinking water supply for all students, as current facilities are insufficient for the number of students.
- ***Toilet:*** Establish a regular cleaning and maintenance schedule for toilets to ensure they remain functional and sanitary. Many schools report insufficient budgets for upkeep.

Introduction

1.1 Background

HDFC Bank Parivartan supports focused development programs (FDPs) in multiple focused areas such as education, rural development, skills development and livelihood enhancement, healthcare and hygiene and financial literacy. In one of the focused development programs, HDFC Bank has committed creation of 2500 smart classrooms in partnership with non-profit organizations under its key objective of promotion of education wherein Digital Classrooms were introduced.

During the last few years, HDFC Bank supported the efforts of the government education department by providing them with need-based support to many schools in many states across India. Primarily, the aim is to strengthen the school infrastructure holistically so that students are provided with an enabling environment for joyful learning, promoting enhanced participation and engagement and strengthening teacher-pupil dialogue and discussions. Ultimately, including SMART classes and digital classrooms along with developed infrastructure led to improvement in student learning outcomes, and an increase in enrolment and attendance. The HDFC Bank's support for the schools enhances the school's reputation among the local communities and stakeholders and teachers get equipped with techno-pedagogy also.

1.2 About the Project

HDFC Parivartan provided a grant to the **National Agro Foundation (NAF)** to implement the Smart School project for rural students in 25 rural schools from Puducherry and Tamil Nadu. One of the primary contributions of the project was to provide Smart Class to all these 25 schools, across 5 districts of Tamil Nadu and Puducherry. The break-up of 20 schools in 5 districts of Tamil Nadu was Kanikal (4), Cheydapatti (5), Cuddalore (5), Tenkasi (1) and Dindigul (5). Also, 5 schools from Puducherry were included in the project. Activities carried out through the project over 3 3-month period.

1.3 Key Activities Undertaken under the Project

Repair work/refurbishment of the school building such as walls, verandah, etc.
Repair work for Toilets
Repair work for Drinking water facilities
Provision of RO and Filter for Drinking Water
Supporting basic furniture in the school or smart class
Upgrading library with books and/or sitting arrangements
Installation of a Smart class
Setting up Digital classrooms
Activity Corner in Primary Schools
Set up of mini science lab government schools
SMC training and exposure visits for the SMC members to model schools

1.4 Objective of Impact Assessment Study

Broadly, HDFC Bank intends to evaluate the effectiveness and efficacy of the project interventions and the sustainability of the project outcomes.

IMPACT PSD Private Limited was entrusted to undertake the impact assessment of the smart school development project. The ensuing chapters of this report present the study's methodology and findings.

The Intervention Model

The project carried out several activities in the target schools. The table below provides the list of activities, as reported by the National Agro Foundation (NAF). The matrix also includes the indicators proposed for the assessment.

Activity	Tasks achieved	Qualitative	Assessment Indicators
Smart/ Interactive learning infrastructure	25	The activity shall enhance the teaching and learning experience of the teachers and students respectively and ensure effective learning by the students.	• Functionality of equipment of digital classroom, including power backup • Average weekly attendance in digital class against overall school attendance • Teachers' perception/ confidence in managing smart class • Students and teachers' perception on usefulness of Digital Class • Ease of access to Digital Class including crowding, waiting and time allocated to students
Painting for interior walls	25 Schools 3,770	Enhance and provide a conducive learning environment for the students of the government schools	• Availability of supplied equipment and their functionality • Quality of products supplied • Repair and maintenance (provision, funds, warranty) • Usefulness of products • Perception of its impact on student attendance and regularity • Perception of its impact on school reputation
Drinking Water	9	Ensures proper health and safety of the children against water borne diseases	
Toilet Renovation	78	Ensuring sanitation and hygiene of the students.	
New Toilet Construction	11	Ensuring sanitation and hygiene of the students.	
STEM Labs	23	Ensures the effective understanding of the concepts in science and maths through practical experimentation.	• Functionality of equipment of digital classroom • Average weekly attendance against overall school attendance • Teachers' perception/confidence in managing STEM Labs • Students and teachers perception on usefulness of STEM Labs • Ease of access to STEM Labs including crowding, waiting and time allocated to students

Activity	Tasks achieved	Qualitative	Assessment Indicators
Library	10	Increased access to accurate and comprehensive information for enhanced competitiveness.	• Weekly rate of issue of books • Students perception on reading habits • Average weekly time spent by students in the library • Inclusion of library period in school timetable

Study Methodology

The project carried out several activities in the target schools. The table below provides the list of activities, as reported by the National Agro Foundation (NAF). The matrix also includes the indicators proposed for the assessment.

2.1 Assessment Framework

For undertaking the impact assessment studies, the following assessment framework was proposed as the standard OECD-DAC criteria[1] which is considered as one of the gold standards in evaluation. This framework recommends adapting this framework, wherever feasible and applicable:

Using this framework, the following questions/indicators were suggested to assess each program, using the six parameters stated above.

	Indicators/Questions
Relevance	• What criteria were adopted for identifying the schools for support • How was the need assessment undertaken for the support • To what extent did the supprot meet the identified needs
Coherence	• What challenges were faced by schools due to non-availability of Smart class or Digital Classroom and other Infrastructure support (WASH, Library and other) • How the type of equipment, digital content and other essentials were finalized for the Digital Classroom • How did the Digital Classroom and infrastructure supported the school in achieving the expected results • How the library, WASH and other infrastructures provided under the project helped schools fulfilling the needs of the students • Options available with the school for repair and maintenance services of Digital Classroom and maintenance and upkeep of constructed/refurbished infrastructure

[1] https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm

	Indicators/Questions
Efficiency	• What proportion of students were regularly attending smart class/digital classroom • What proportion of teachers could receive the benefits and type of benefits achieved • What subjects are being taught using the Digital Classroom • How many students could get benefits of Classrooms academically, socially and health-wise • What proportion of students were regularly attending the library
Effectiveness	• The extent to which Digital Classroom contributed in improving the retention and regularlity of students in classes • To what extent WASH support helped girls and boys students

Impact	• Proportion of teachers and students stated the type of benefits and achievements
	• Proportion of teachers/principal reported:
	  ○ Increase in attendance or participation of students
	  ○ Improvement in learning outcomes of students
	  ○ Improvement in critical thinking and analytical skills of students

Sustainability	• Teachers and Principal have the understanding on how Digital Classroom and library must be used to support students and in achieving the desired and improved results/learning outcomes. • Mechanism in place for regular maintenance and repairing, availability of vendors' contacts and allocation of funds for smooth functioning of Digital Classroom and upkeep of infrastructure

2.2 Research Methods

A mixed method approach was adopted for the impact assessment study wherein face-to-face interviews were conducted under the quantitative research and check-lists were filled up in each school. Under the qualitative component, focus groups were conducted with the students who participated in the smart classes and their experience related to project-related support in the schools.

2.3 Geographic Coverage

The project was implemented in 25 schools in 5 districts of Tamil Nadu, including Kanikal (4 schools), Cheydapatti (5 schools), Cuddalore (5 schools), Tenkasi (1 school), and Dindigul (5 schools). Five schools from Puducherry were also included in the project.

2.4 Target Groups

The following target group was included in the impact assessment study:
(a) Principal
(b) Teachers
(c) Students

2.5 Sample and Sampling Procedure

Of the **25 schools** included in the FDP, **8 schools (more than 30%)** were randomly selected from four locations (2 schools each) excluding Tenkasi, as it has only 1 school. A total of **20 students, 3 teachers, 2 SMC members and one Principal** from each school. For covering students, 4 FGDs were conducted in each school, with 5 students in each FGD (including 2 FGDs with boys and 2 FGDs with girls).

2.6 Sample Coverage

The following sample was covered under the assessment:

Target Group	Tamil Nadu	Puducherry	Total
Schools	6	2	**8**
Checklists	6	2	**8**
Students	24 FGDs	8 FGDs	**32 FGDs**
	184 students (Boys = 100; Girls = 84)		
Teachers	18	6	**20**
Principals	6	2	**8**

2.7 Study Tools

The following tools were developed for collecting data:

- Observation and Verification Checklist for assessment of Smart Classrooms and Infrastructure provided through the project
- Semi-structured tool for the teachers
- FGD Discussion Guide for Students
- In-depth interview discussion guides Principals

All the developed tools were shared for review and were finalised in association with the HDFC MI team. The tools were duly translated into Hindi for the data collection.

2.8 Training of Data Collection Teams

The training of the data collection team was organised and facilitated by the senior management of IMPACT. During the training, the team members were provided with an overview of the project and the type of infrastructure support provided by HDFC Bank. The team members were guided through the data collection process and briefing on the data collection tools.

2.9 Survey Implementation

The data collection process followed by the teams is described as follows:

- For the assessment, a team of two trained investigators was deployed to visit the selected schools.
- The team reached to the selected school with prior appointments coordinated by the implementing partner officials.
- Both team members completed the data collection, which included qualitative and quantitative interviews and physical verification of the infrastructure support, in one day.
- Initially, the principals were contacted and informed about the purpose of the survey and informed consent was obtained from them.

- Principals were interviewed, and then teachers who were associated with smart class teaching were interviewed.
- Later, physical verification was undertaken which was facilitated by the teachers and/or principals to give the details of the features and status of the support.
- In the end, the teachers were requested to allow and interact with the students who had undergone sessions in the smart class, and information was gathered in mini-groups without disturbing the classes.
- Before the return, the principals and teachers were duly acknowledged for their coordination and support offered for the impact assessment study.

2.10 Data Analysis and Report Writing

Post-data collection, all the collected data were processed at the IMPACT office including data cleaning and scrutiny. All the data analysis was undertaken in MS Excel and/or SPSS and frequency runs were obtained. For the qualitative data, a thorough content analysis was done to obtain the results based on the components of the projects. Post-completion of tabulation and crosstabs, the interpretation of results was undertaken. The report writing was undertaken by the senior researchers.

2.11 Challenges Faced

No specific challenge was faced during the data collection.

Current Status of the Equipment and Supplies Provided through the Support

The following section presents the assessment results of the physical inspection conducted to verify the support provided as part of the smart school infrastructure development project in a sample of 8 schools located in Tamil Nadu and Puducherry. The findings encompass the current status of smart classrooms, restroom facilities, access to potable water, library resources, sports apparatus, and STEM laboratories.

3.1 Smart Class

Under the HDFC Bank Project, all 8 schools assessed confirmed the receipt of smart class setups. Seven schools had functional Smart LED TVs, and one school in Dindigul had a projector. Only 2 schools had access to digital content. Two schools had operational computers with printers kept with the headmaster/principal. Furniture such as desks, benches, chairs, and tables was available in 5 schools, providing adequate workspace for students.

All 8 schools were equipped with smart classrooms featuring LED TVs and projectors. Six of the 8 schools had operational LED TVs, and four had functioning projectors. These advanced teaching tools were utilized in various ways across the schools. For instance, in a school in Karaikal, the combination of an LED TV, projector, and digital content was effectively employed for educational purposes.

Despite the widespread availability of technology, certain schools encountered challenges with managing disorganized digital content. Inexperienced teachers often depended on interactive LED screens to generate presentations, PDFs, and educational materials sourced from the Internet to teach different subjects.

Few schools reported having operational computers and printers kept in the principal/headmaster's office, which is crucial for administrative tasks. This smart class infrastructure was connected to UPS power backups (available and operational in two schools only). The majority of the schools reported having the necessary furniture in place, allowing students and teachers to focus on educational activities without physical discomfort.

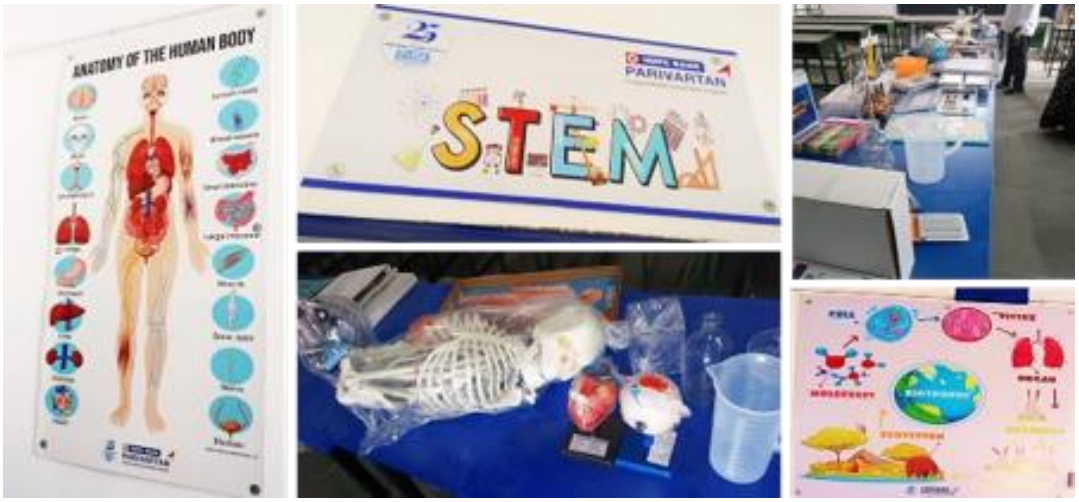
One of the major concerns highlighted during the assessment is the inadequate maintenance provisions observed in various educational institutions. For example, the smart class equipment at one of the Govt. High Sec. Schools have been non-operational for 1 year, and there are no established procedures in place to address this issue. This indicates a larger problem of missing warranty cards for electronic equipment across multiple schools, leading to complications in the repair and maintenance processes.

In certain instances, the Smart Class configuration remained inactive for teaching purposes due to an absence of digital content and inadequately trained teachers. It was determined that internet connectivity and comprehensive teacher training are imperative requirements to enhance the effectiveness of the smart class setups.

The assessment of equipment functionality across eight schools in Tamil Nadu and Puducherry reveals that the majority of the technology and infrastructure provided under the HDFC Bank Project are operational and in use, with a few exceptions requiring attention. Providing teacher training and digital content, and ensuring access to warranty cards are critical steps needed to ensure the sustainability and optimal use of smart classes.

3.2 STEM Lab

Under the project, Out of the eight (8) schools assessed, six (6) schools reported having operational STEM Labs, equipped with various science models, charts, posters, and other materials. These schools benefit from a variety of learning aids that are integral to enhancing students' hands-on learning experience in science.



An interesting finding revealed that certain schools have STEM Labs equipped with rudimentary resources, such as posters and models tailored for younger students (up to class 9 or 10). However, for senior secondary students (11 and 12), there is a pressing need for more advanced equipment and educational materials that align with their academic requirements.

For schools with fully operational STEM Labs, the equipment is regularly used to support practical science education. For instance, at Chengalpattu, one of the Government's girls' higher secondary schools, STEM equipment are regularly used, enabling students to engage with practical science learning. These resources are instrumental in providing students with hands-on experiences that complement theoretical learning, particularly for junior classes.

During observation, some of the schools have had non-operational equipment for months without repair or maintenance plans. Additionally, in two other schools, worn-out and neglected STEM models and posters further limit lab effectiveness, highlighting the broader issue of resource sustainability and the need for replenishment and upkeep. Some of the pictures depict the worn-out status of STEM equipment in the schools are as follows.

Teachers have requested advanced-level STEM equipment, materials, and models suitable for grade 11 and 12 students. They also emphasized the need to replace worn-out equipment to ensure smooth, hands-on STEM education with effective demonstrations and experiments.

3.3 Library Support

A library-related intervention was carried out in four out of eight schools in Tamil Nadu and Puducherry, with varied levels of support. During the verification, all four (4) schools had books ranging from 2,500 to 6,500 units, all of which are currently in use. In Karaikal, a library was newly established, though it received only basic updates such as painting and two book racks, with no new books or educational materials. One school in Cuddalore has broken racks and damaged locks, making the library appear neglected.

Library painting and whitewashing were completed in two schools, enhancing the visual appeal. While libraries in most schools are functional, maintenance issues like broken racks and incomplete updates hinder their full potential in supporting students' learning needs.

In one of the schools in Chengalpattu, the librarian maintained a register to track book issuance, highlighting the effective use of library resources both at school and at home. This enhances accessibility to educational materials and potentially improves learning outcomes.

Library gaps include broken racks, outdated books, minimal replenishment, and inadequate maintenance. Some schools lack essential materials, while damaged infrastructure and poor upkeep hinder effective functionality and student use.

3.4 Drinking Water Facilities

The primary support provided to schools under HDFC Bank's intervention was the installation of water purifiers using Reverse Osmosis (RO) systems. An assessment of drinking water support in eight schools across Tamil Nadu and Puducherry revealed a few gaps in the functionality and operational efficiency of the provided Reverse Osmosis (RO) systems.

Out of the seven RO systems distributed, only four were found to be operational, while three were non-functional. One school each in Nallur and Puducherry has had its RO system out of operation for one year and six months, respectively, with no arrangements made for repairs.

Additionally, one school Odapasoy has a water cooler that has never been installed, further complicating water access. One school each in Dindigul and Chengapattu had not installed the RO system yet. The lack of maintenance and repair mechanisms is a critical gap in ensuring safe drinking water in these schools.

In one school in Chengapattu, only a tap of the drinking water stations was fixed as seen in the left picture given below.

While the four functional RO systems are serving schools, they are grossly insufficient to meet the needs of the student population.

Immediate action is necessary to repair and install the RO systems, along with improved communication between schools and support providers, to ensure that students have consistent access to clean drinking water. Addressing these issues is vital for the students' health and academic success.

3.5 Repairs and Renovation of Toilets

The assessment of toilet facilities across eight schools in Tamil Nadu and Puducherry reveals a mix of operational challenges and recent improvements. While seven out of the eight schools reported operational toilets, significant issues remain about operation and management.

While four schools had newly constructed toilets, three schools renovated their existing toilet blocks. For example, in one of the schools in Chengapattu, HDFC's repairs to 20 toilet and urinal units, including the installation of elevated walls, hand showers, and taps, have improved conditions, but a water tank remains essential for proper functionality.

For the past six months, a school in Nallur has been experiencing problems with its washroom doors. The locks and latches on the toilets are missing, making them unusable. This persistent issue highlights the difficulties related to budget allocation and washroom upkeep at the school level.



In contrast, the Chengalpattu school had recently constructed a new toilet block, but principals raised concerns about the design and construction faults, specifically stagnant water accumulating at the toilet, raising issues of durability and potential seepage.

Overall, while some progress has been made, the persistent issues with repairs and maintenance, combined with insufficient staffing for cleanliness, indicate a pressing need for sustainable solutions to enhance the toilet facilities in these schools.

HDFC Bank support has provided toilets with repairs and renovated structures which was very useful for the students. Of course, the quality of the work was not deemed good by the school officials which may create issues with the usage if not properly maintained.

Study Findings

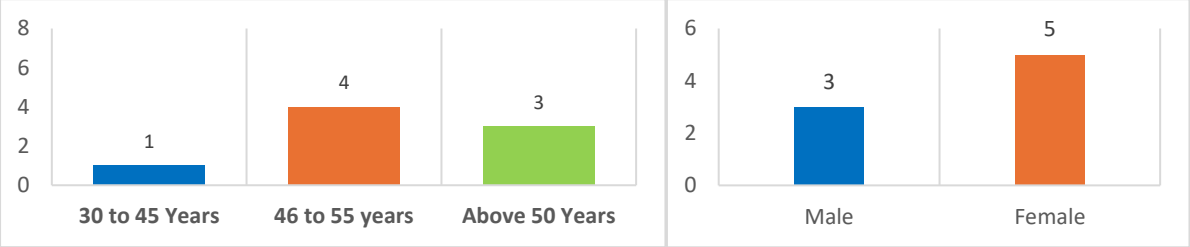
This chapter presents the findings based on the discussions with principals, teachers, and students across the project schools. The results provide insights towards the HDFC Bank's support in various areas, including smart classes, STEM labs, toilets, drinking water facilities, library resources, and other educational interventions. Through analysis of the collected data, this chapter highlights key benefits, challenges, and areas for improvement as reported by the respondents.

The findings are based on the opinions, perceptions, and beliefs of the principals, teachers, and students regarding HDFC Bank's support to the schools in response to the assessment team's inquiries. These findings may differ from the results of the physical verification of the support provided at the schools.

4.1 Profile of the Respondents

Eight principals were contacted, and information was collected about the infrastructure support received for the schools. The following graphs show the age distribution and gender of the principals.

Graph 1: Distribution of Principals by Age and Gender (N=8)



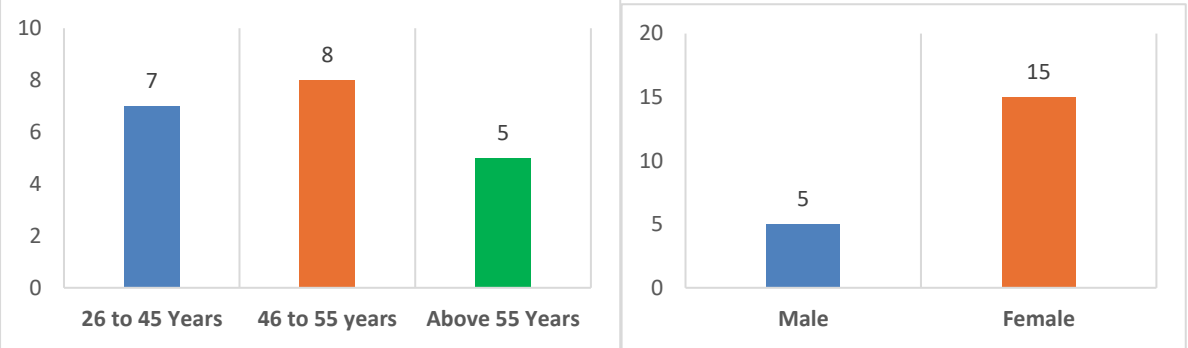
The majority (50%) of the principals were found to be experienced and in the 46-55 age range. Three out of eight principals were male, and five were female.

Seven out of eight principals have more than 20 years of teaching experience, while one has between 11 to 20 years of experience. Additionally, most principals (7 out of 8) have been working at their current school for 1 to 10 years, with only one principal having worked for 11 to 20 years.

Given their extensive teaching experience, coupled with a significant number being relatively new to their current schools, the principals have a strong foundation for contributing effectively to school development and ensuring informed leadership and decision-making.

In each school, a minimum of two teachers were interviewed, as most schools had at least two teachers responsible for managing smart class operations alongside the principals. The sections on Smart Classes, STEM Labs, and Libraries were each addressed by distinct teachers. Specifically, eight teachers were involved with Smart Classes and eight with STEM Labs. Additionally, four librarians were interviewed to account for the unique nature of their roles. The following graphs illustrate the age distribution and gender of the 20 teachers who participated in the study.

Graph 2: Distribution of Teachers by Age and Gender (N=20)



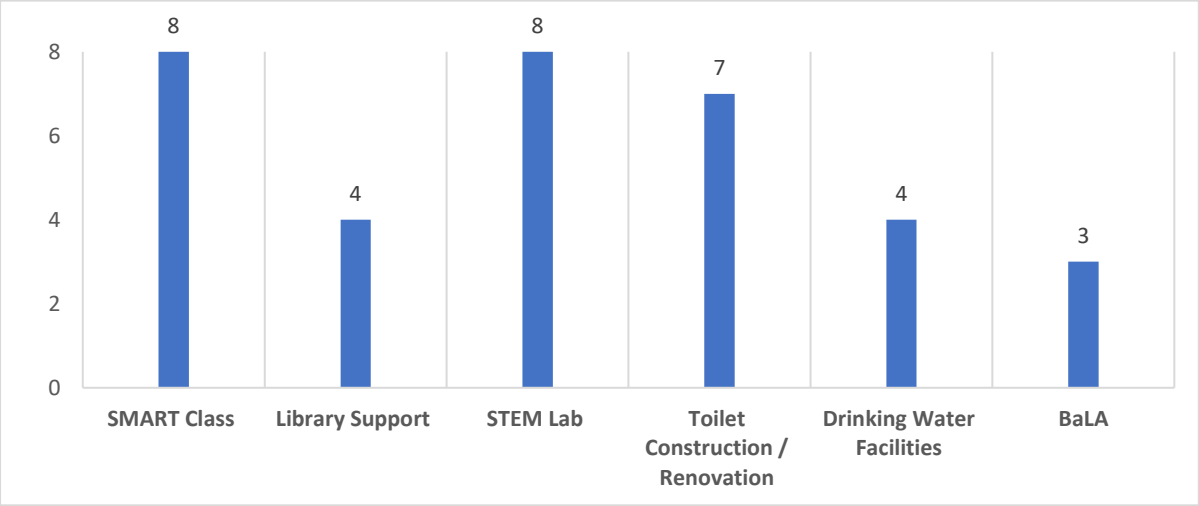
A total of 20 teachers participated in the study. The age distribution of the teachers shows that 7 are between 26 and 45 years, 8 are between 46 and 55 years, and 5 are above 55 years. In terms of gender, 15 of the teachers are female, while 5 are male.

Regarding their teaching experience, 5 teachers have up to 10 years of experience, 11 have between 11 to 20 years, and 4 have over 20 years of teaching experience. When looking at how long they have been working at their current school, 11 teachers have been there for 1 to 10 years, while 9 have been working in the same school for 11 to 20 years. None of the teachers have been at their current school for more than 20 years."

4.2 Information on Infrastructure Support

Under the project, different types of infrastructure support were provided to the targeted 50 schools incorporating the needful components. As the name of the project implies smart schools development project, smart classrooms were the common support that was given to all the schools. The following graph portrays the type of infrastructure support offered to schools.

Graph 3: Infrastructure Support Received through HDFC Bank Grant (N=8)



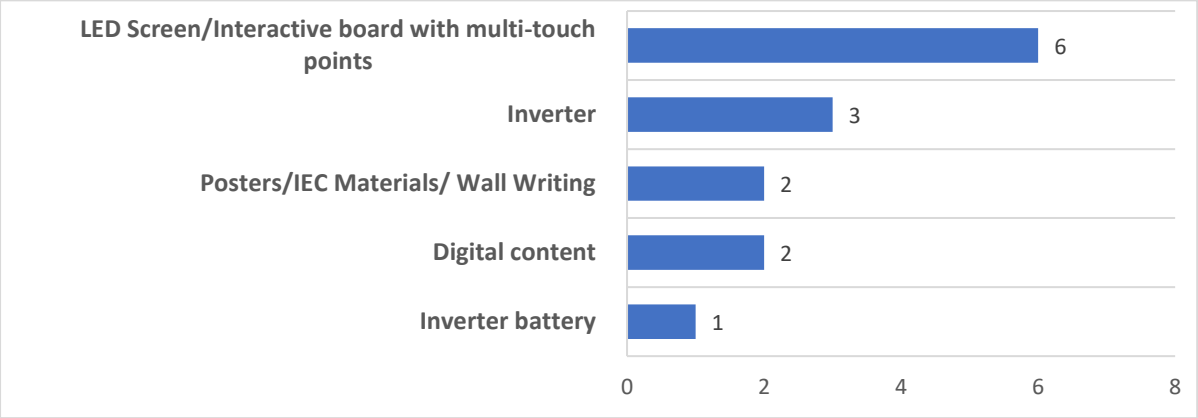
As the HDFC Grant focused on digital learning, all 8 schools (100%) received a SMART Class setup. In addition to this, half of the schools (4 out of 8) received library support, while none of the schools were provided with sports equipment. All schools (100%) were equipped with STEM labs to promote hands-on learning in STEM related subjects. In terms of other infrastructure support, 7 schools received toilet construction or renovation, 4 schools benefited from improved drinking water facilities, and 3 schools implemented BaLA (Building as Learning Aid) initiatives.

It can be seen that HDFC Bank provided all sorts of support for equipping the schools with smart classrooms and other needed infrastructure so that students could get adequate facilities to make learning easier and ensure their regularity in the schools.

4.2.1 SMART CLASS

As stated earlier, all eight schools reported receiving smart class setups. The following graph portrays the type of support received by the schools.

Graph 4: Support Received for Smart Class (N=8)

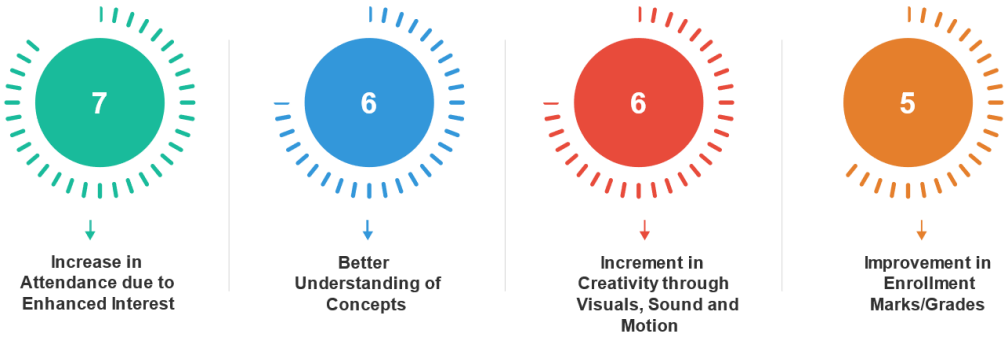


Various components were provided to the schools as part of the SMART Class setup support. All 8 schools reported receiving essential equipment, including KYAN projectors, keyboards, computer mice, and power backup inverters. Six schools (75%) received LED screens or interactive boards with multi-touch points.

Additionally, digital content and posters/IEC materials/wall writing were provided to 2 schools. Only 1 school reported receiving an inverter battery as part of the setup."

The supplier/vendor primarily handled the **installation** of the SMART class equipment in all schools. Overall, the implementation partner outsourced the smart class set-up to the supplier vendor identified for the installation.

Graph 5: Observed Improvements Among Students – After Initiation of Smart Class (N=8)



To capture the observations of teachers, a query was made regarding the improvements noted among students since the initiation of the SMART Class. Teachers reported several positive changes. Seven out of eight teachers (88%) observed an increase in student attendance, attributing this to heightened

interest in the subject matter due to the new teaching methods. Additionally, six teachers (75%) noted that students were better able to understand concepts and ask questions. Furthermore, five teachers (63%) indicated improvements in enrollment and learning outcomes. Lastly, six teachers (75%) observed that the use of visuals, sound, and motion has fostered creativity and enhanced learning in various subjects.

During the discussion, students expressed their satisfaction with the help provided by smart classes. They mentioned several benefits, including a better understanding of the subject matter and the ability to understand experiments, which improved their visual retention. Almost all students said that learning happened instantly as they could observe practical demonstrations involving motion with sound, leading to immediate clarification of doubts. Some students also noted an improvement in their overall knowledge due to the digital content.

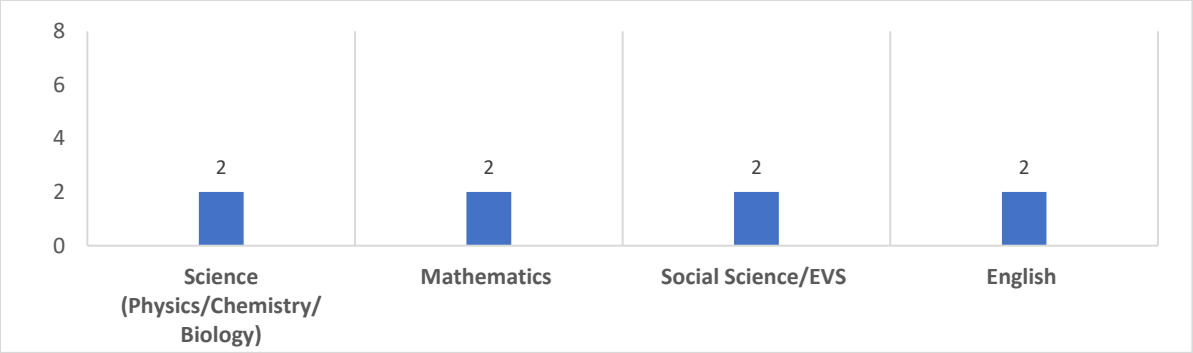
Training Receipt for Operation of Equipment

Training on operating the equipment and utilizing digital content was essential for effectively running the smart class. When asked, 6 teachers (75%; N=8) reported receiving training and demonstrations, notably from the government, while none received support from the company that installed the setup. Additionally, there was no capacity-building support from NGOs.

All 6 teachers (100%) found the training valuable in preparing for digital content-based education. Out of 6 teachers who considered the training valuable, 4 considered it very useful, and 2 considered it useful.

Only 2 teachers (N=8)—1 each from Puducherry and Tamil Nadu—confirmed receiving digital content along with the LED smart TV. The digital content covered various subjects, including Science, Mathematics, English, and Social Science/EVS, as seen in the following graph.

Graph 6: Subject-wise Receipt of Digital Content (N=2)

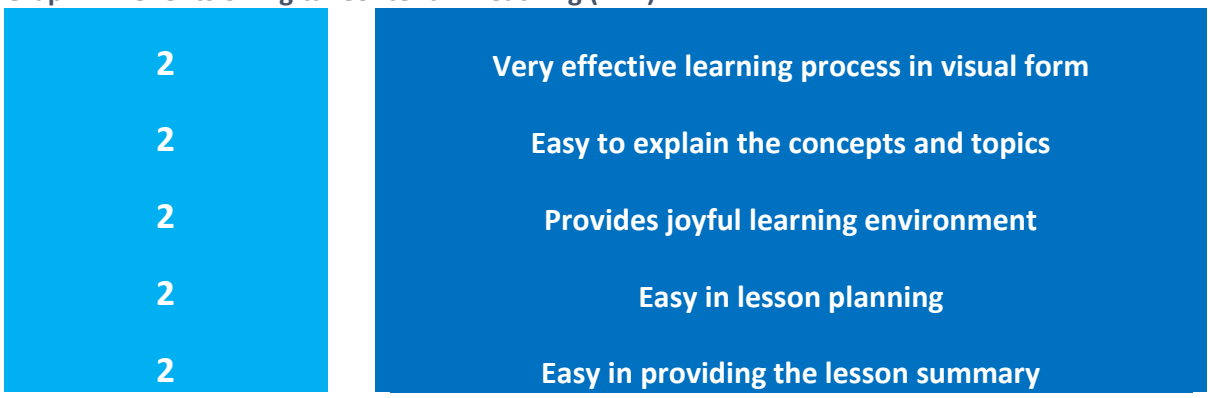


Both teachers reported having received digital content and expressed comfort in delivering lessons using it. They attributed their comfort level to their years of experience, with one teacher also crediting the training received in teaching with digital methods.

Perceived Benefits of Digital Content in Teaching

Both the teachers received content voiced that digital content is very effective in the learning process due to visuals and sounds. A similar proportion of teachers also thought that the use of digital content generates a joyful learning environment in the class as students demonstrate their anxiety about seeing newer videos, animation and audio for the topics. The following illustration shows the benefits of digital content in teaching.

Graph 7: Benefits of Digital Content in Teaching (N=2)

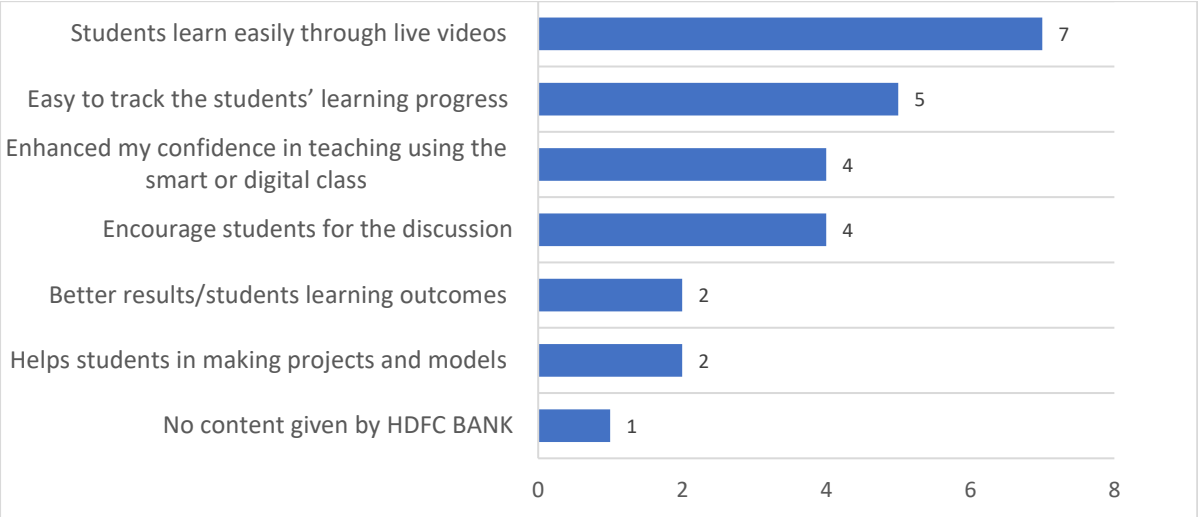


Teachers believe that digital content enhances teaching by providing multiple benefits including digital content making the concepts easier to explain (67%) and aiding them in lesson planning (73%). Interestingly, more than half also mentioned that it helps in preparing the extra classes to provide more substance to the students for their better learning.

Advantages of Using Digital Content

Teachers were also asked about the key advantages of using digital content. All the teachers unanimously agreed that students learn concepts and principles through live videos, which is one of the prime advantages. The other advantages are shown in the following graph.

Graph 8: Advantages of Using Smart Class (N=8)



When asked about the advantages of using the smart or digital class, 7 out of 8 teachers (88%) highlighted that students learn more easily through live videos. Five teachers (63%) mentioned that it becomes easier to track students' learning progress, while 4 teachers (50%) said that it encourages students to engage in discussions and boosts their confidence in teaching with digital tools. Additionally, 2 teachers (25%) observed better learning outcomes and results, and the same number reported that it helps students in making projects and models.

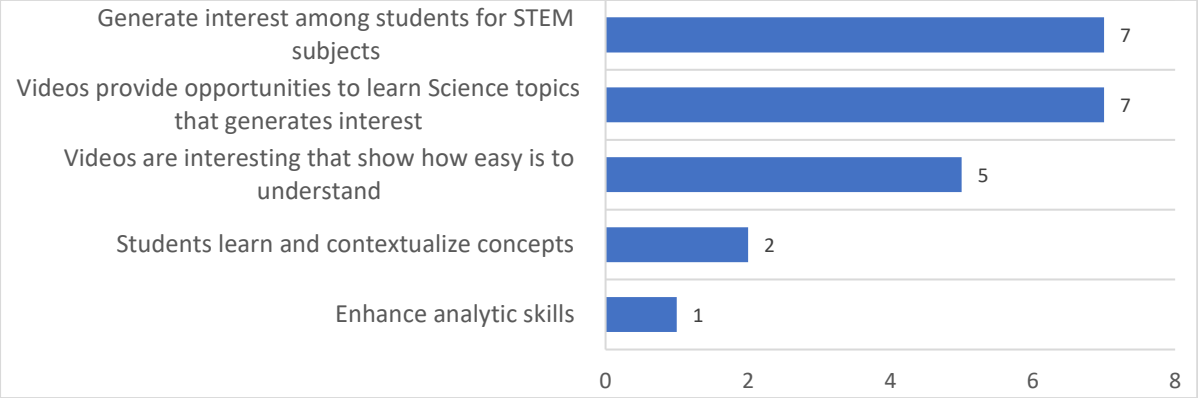
During the in-depth discussion with students from various grades, it became evident that an overwhelming majority, comprising students from diverse grades and disciplines, expressed a strong preference for the implementation of smart classes across all subjects. They emphasized that live demonstrations in smart classes greatly aided in grasping complex topics and concepts, providing real-time visual and interactive explanations that significantly enhanced their understanding. Many

students highlighted the value of smart classes in facilitating project-based learning, stating that it allowed them to seamlessly integrate theoretical knowledge with practical application, thereby aligning with the curriculum's emphasis on holistic learning experiences.

The majority of teachers (7 out of 8) believe digital content sparks interest in STEM subjects, making science and mathematics more approachable for students. Videos were particularly noted for simplifying complex concepts and generating interest in science topics. Some teachers also observed that digital content helps students contextualize concepts and enhances their analytic skills.

The following graph illustrates the ways in which digital content generates interest in these subjects.

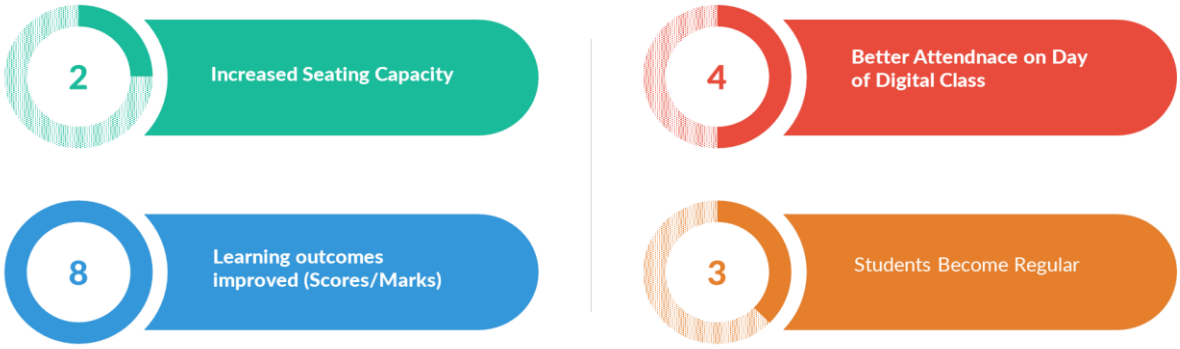
Graph 9: How Digital Content Boosts Interest in Subjects (N=8)



Upon asking, six out of eight teachers expressed that techno-pedagogy is very effective, while the remaining 2 considered it as effective.

Teachers were also asked if the HDFC's support in setting up smart classes and promoting digital education through techno-pedagogy has demonstrated a varied level of impact. The responses are illustrated in the given graph.

Graph 10: Impact of Smart Class on Student's Regularity and Learning Outcomes (N=8)



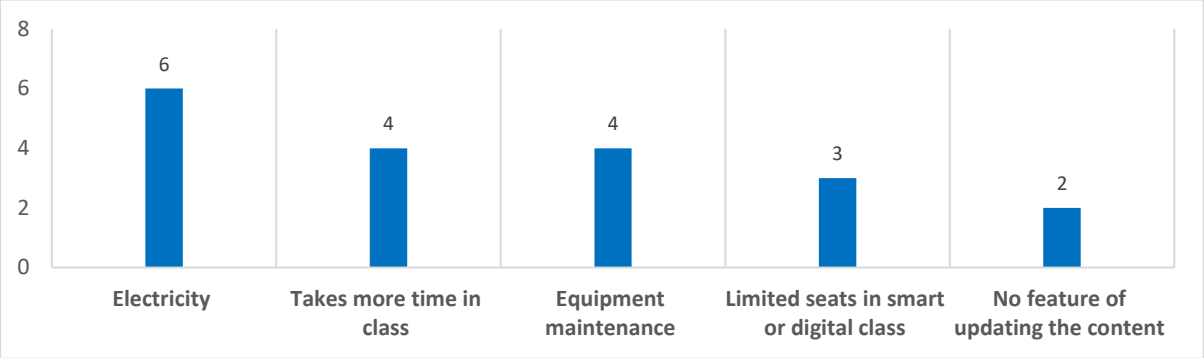
HDFC's support in setting up smart classes and promoting techno-pedagogy has had a significant impact on the students' learning outcomes, as reported by all 8 teachers (100%). The use of smart classes has led to increased engagement, improved understanding of complex concepts, and enhanced information retention among students. Additionally, it has positively affected attendance, with noticeable improvements on the days when digital classes are conducted. The implementation of technology in the classroom has truly revolutionized the learning experience for both students and teachers.

Overall, HDFC's support has significantly advanced educational practices by integrating digital tools, leading to better student attendance, increased engagement, and improved learning outcomes.

Type of Challenges for Smart Class

An effort was made to understand teachers' challenges while using smart classes. The most significant issue reported by the majority of teachers (6 out of 8) was frequent power cuts, which prevent the inverter battery from charging and disrupt ongoing classes. The following graph shows other challenges.

Graph 11: Challenges in Smart Classes (N=8)



These challenges can lead to disruptions in teaching due to power outages, reduced teaching efficiency as more time is spent on setup, limited student participation due to seating constraints, and outdated content affecting student engagement and learning outcomes. Additionally, equipment maintenance issues may result in frequent technical difficulties, further hindering the learning process.

The students expressed their deep concerns about the frequent electricity outages in their schools. These power cuts have significantly reduced the number of instructional sessions, impacting the quality of education. Teachers have been addressing this issue by discussing it with the students and highlighting the importance of finding a solution to ensure an uninterrupted power supply for a conducive learning environment.

Teachers were asked how these challenges could be addressed. The most common solutions included providing more smart classes (5 out of 8), ensuring power backup through generators or inverters (5), regular equipment maintenance (3), increasing seating capacity in smart classes (2), and timely updates and delivery of digital content (1).

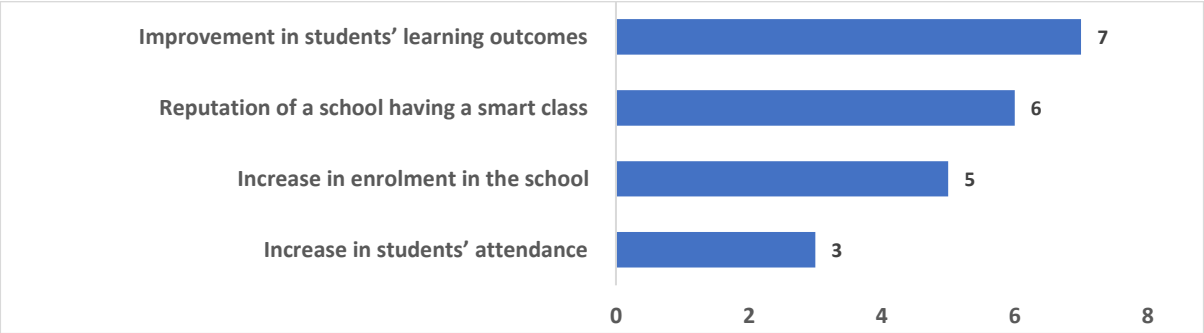
Most teachers (7 out of 8) reported positive feedback from parents, noting that smart classes helped children achieve better marks as responded by 50%.

The majority (75%) of teachers (6 out of 8) expressed “high satisfaction” with digital content-based education in the smart classes.

When asked about the reasons for their satisfaction, all 8 teachers (100%) found teaching easier and more helpful with digital content. Six teachers noted that students enjoy the content and show improved learning outcomes. Four teachers found lesson planning easier, while 3 were motivated to search for more content online. However, none of the teachers mentioned gaining skills in using digital content, and only 2 reported increased confidence.

Teachers were asked whether the HDFC support had brought any advantages to their schools, and their responses are illustrated in the following graph.

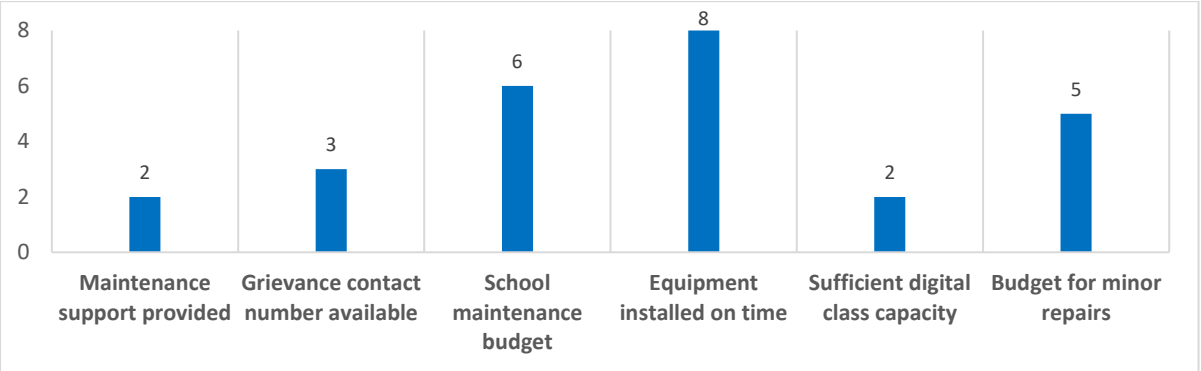
Graph 12: Advantages to Schools from HDFC Bank Support for Smart Class Set up (N=8)



The HDFC Bank support has led to several notable advantages for schools. The majority of teachers (7 out of 8; 88%) reported significant improvement in students' learning outcomes due to the HDFC Bank support. Additionally, 6 out of 8 teachers (75%) observed an enhanced reputation for the school from having a smart class, and 5 out of 8 teachers (63%) noted an increase in enrollment. Furthermore, 3 out of 8 teachers reported an increase in student attendance, highlighting the overall positive impact of the initiative on both the school's standing and student engagement.

Discussion was also undertaken on other aspects related to smart classes, such as the availability of maintenance mechanisms, grievance redressals, and a budget for repairs. The following graph illustrates the status of the aspects crucial for the smooth functioning of smart classes.

Graph 13: Needs for Smooth Functioning of Smart Class (N=8)



A concise summary based on the responses of the smart class teachers as seen in the graph has been presented as follows:

- ***Maintenance Support:*** A concerning 6 out of 8 schools (75%) did not receive any maintenance support, indicating an urgent need for regular upkeep to ensure functionality and sustainability.
- ***Contact for Grievance Redressal:*** While 3 out of 8 schools (38%) reported having a grievance contact, the majority (62%) lacked this critical support, leaving schools vulnerable to prolonged issues without clear resolution channels.
- ***Maintenance Budget:*** Though 6 out of 8 schools (75%) reported having a school maintenance budget, this leaves 2 schools without any financial provision, for maintenance.
- ***Installation Timeliness:*** All schools (100%) confirmed timely installation of the equipment, but without proper maintenance, this advantage may diminish over time.

Feedback on the equipment quality is largely positive, with 62.5% of schools rating it as excellent and 37.5% as satisfactory. However, the absence of poor ratings signals a need for continuous evaluation and support to ensure that all equipment effectively meets educational needs.

- ***Equipment Quality*:** Two-thirds of schools (5 out of 8) rated the quality of equipment supplied for the smart class as **Satisfactory**, and 3 rated it as **Excellent**.
- ***Seating Capacity In-sufficiency:*** Worryingly, 6 out of 8 schools (75%) stated that the seating capacity in the smart class is insufficient, underscoring the need for urgent expansion.
- ***Budget for Minor Repairs:*** Although 5 out of 8 schools (63%) have a budget for minor repairs, the 3 schools (37%) without this support may face equipment failures, disrupting teaching.

While installation and initial quality are generally satisfactory, ongoing support and maintenance remain significant challenges. Many schools lack the necessary resources and budget for effective upkeep, which impacts the sustained effectiveness of digital classrooms.

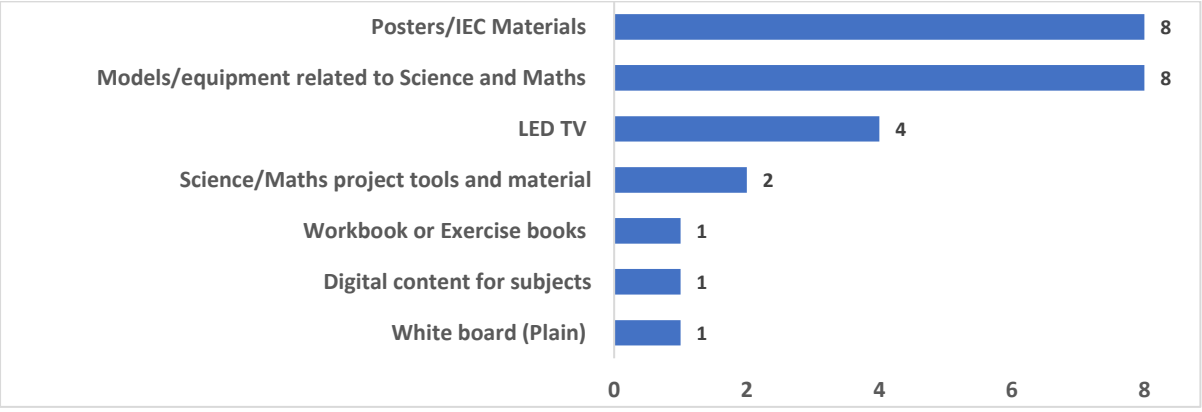
4.2.2 STEM or MINI-SCIENCE LAB

Government schools in Tamil Nadu and Puducherry face challenges with science teachers effectively explaining experiments and concepts using functional models, charts, and other teaching aids. Research shows that students engage more when they can observe live experiments and practical applications of their learning. Recognizing this need, HDFC Bank has prioritized the establishment of Science or STEM labs as part of their school development initiatives.

Before the HDFC Grant, five out of eight schools did not have a STEM lab, while three had usable labs. All eight schools received support to establish or upgrade a STEM lab.

Among the 8 schools, a quarter of the STEM teachers were females, and 2 were males. All the STEM teachers confirmed receiving the STEM lab support in which models for the Science subjects were provided. The type of support received by schools is shown as follows:

Graph 14: Type of Support Received for STEM Lab (N=8)



The STEM Lab setup provided schools with a range of resources, including models and equipment related to Science and Maths (100%), posters and IEC materials (100%), and LED TVs (50%). Only a few schools also reported receipt of workbooks or exercise books, digital content for subjects and project tools and materials for STEM subjects.

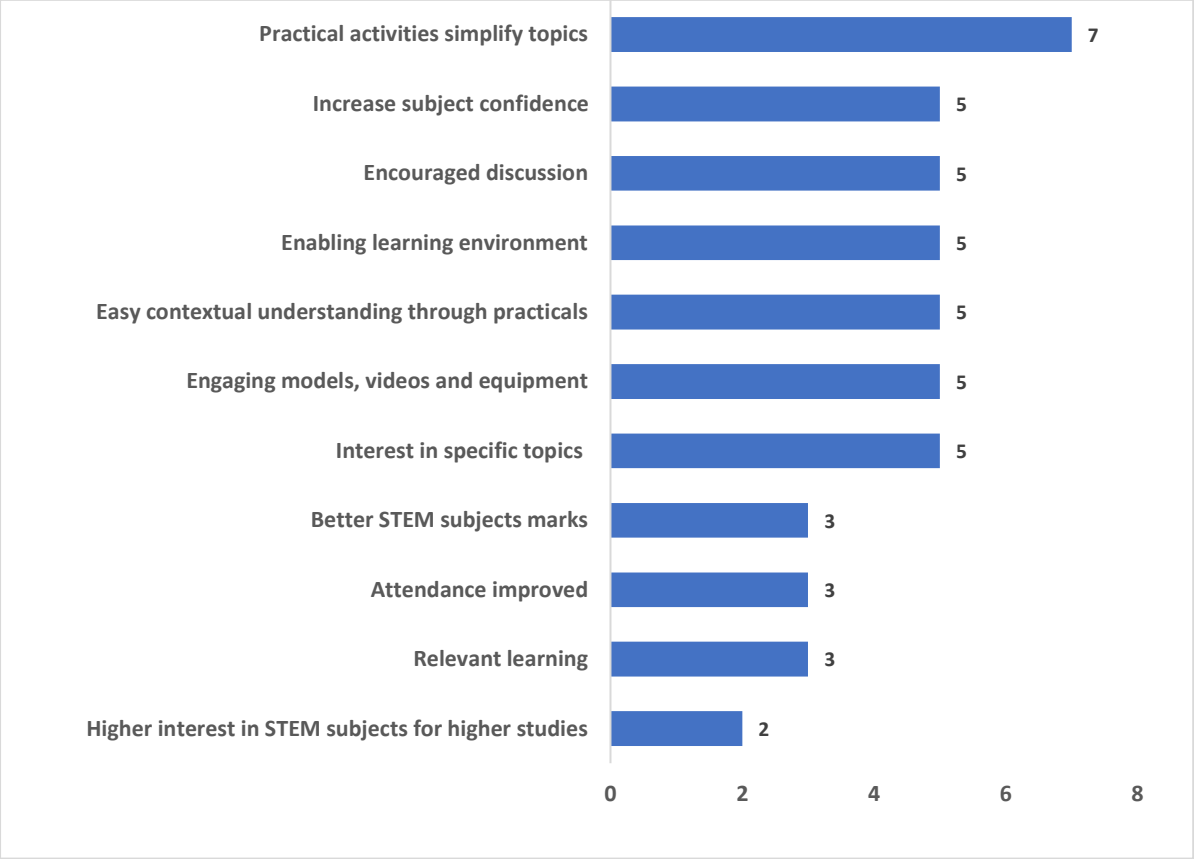
This comprehensive support likely improved the quality and effectiveness of STEM education in these schools to be verified in coming sections. Six out of 8 schools (75%) reported that installation was

managed by the supplier company, with assistance from the implementation partner, which is a desirable practice.

Upon inquiry, the usage of materials supplied for the STEM or science lab revealed that 7 out of 8 schools (88%) indicated that students in Grades 7 and 8 utilize these resources. Additionally, 5 out of 8 schools (63%) reported that students in Grade 6 or below also make use of the STEM lab materials.

During the discussion, all teachers (100%) reported improvements due to the use of the STEM lab engagement. Teachers reported notable improvements among students due to the STEM lab's use. A significant 88% of teachers (N=7) observed that practical activities simplify topics, enhancing students' understanding. Additionally, 63% of teachers (N=5) noted increased interest in specific topics, engaging models, videos, equipment, and easy contextual understanding through practical demonstrations, all contributing to a more engaging learning environment. The same percentage (63%) indicated that the STEM lab encouraged discussions and boosted students' confidence in the subject. Few teachers also reported improvements in attendance and better marks in STEM subjects, leading to heightened interest in STEM subjects for higher studies.

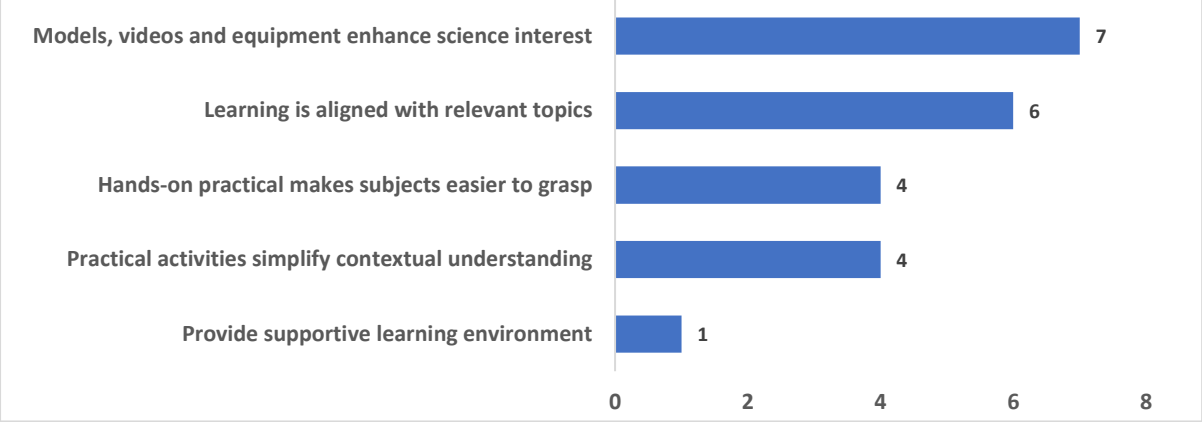
Graph 15: Improvements Observed Among Students Due to STEM Lab Usage (N=8)



This indicates that the STEM lab has effectively sparked interest and enhanced comprehension, despite impacting attendance, but overall confidence remains moderate.

Information on how STEM labs generate interest in specific topics, 88% of teachers (7 out of 8) from STEM labs confirmed that students get more interested in Science subjects after they are engaged in using models and equipment, ¾ quarter of the teachers cited that practicals simplify the contextual understanding of the topics making the learning relevant and easier to grasp.

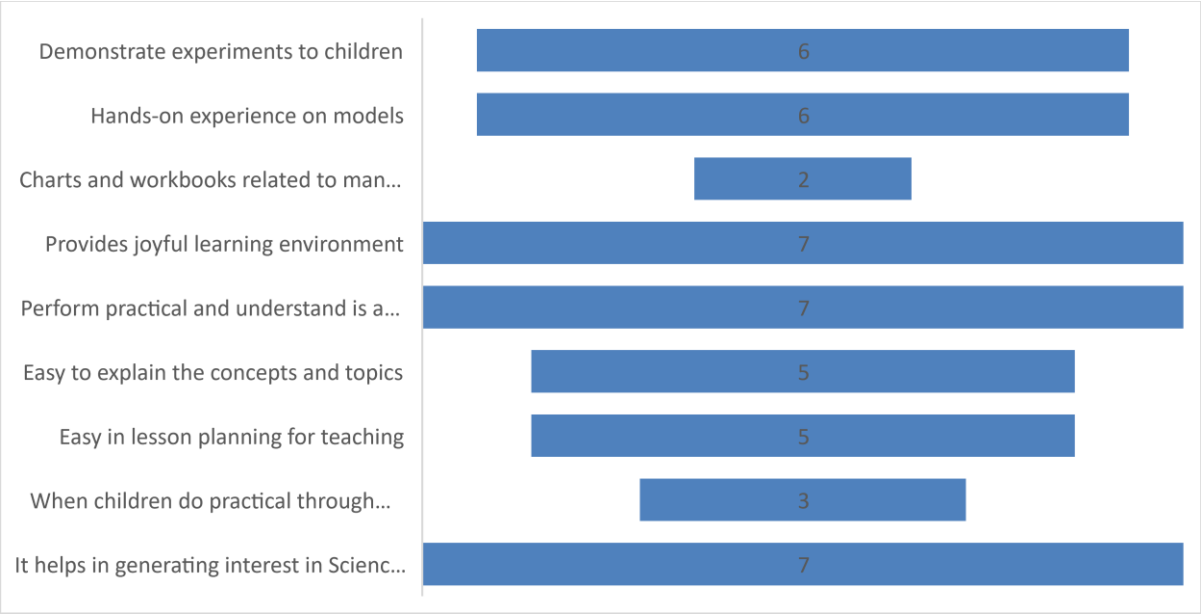
Graph 16: Ways in which STEM Labs Generate Interest in Specific Topics (N=8)



Based on interactions with students, it is evident that they found the STEM Lab models and charts to be engaging and informative, enhancing their understanding of science subjects. The consensus among the students was that these science models contributed significantly to their hands-on learning experiences.

Further, all the teachers using the STEM lab for teaching were asked how the STEM lab support is helpful for them in teaching subjects. A significant 88% of teachers (7 out of 8) noted that the STEM lab fosters a joyful learning environment through practical experiments, which they find to be an effective teaching method. Other ways in which STEM labs are helpful are depicted in the following graph.

Graph 17: STEM Lab Helpful in Teaching (N=8)



The data indicates that the STEM lab significantly enhances teaching effectiveness, with 75% of teachers (6 out of 8) valuing hands-on experiences and demonstrations. Moreover, the majority of the teachers (7 out of 8) noted the lab creates a joyful learning environment, highlighting its role in engaging students and facilitating practical understanding of complex concepts through interactive learning methods.

When asked about their comfort levels using STEM labs for teaching and demonstrations, two-thirds (67%) of teachers expressed that they are very comfortable using the STEM lab for teaching. Thirty-three per cent were found comfortable, indicating great ease in using the STEM lab.

Functionality of the STEM Lab

- ***STEM Lab Status:*** Six out of eight schools (75%) reported having a functional STEM Lab, with all schools confirming that the installation was completed on time.
- ***Installation Timeliness:*** All schools (100%) confirmed that the STEM Lab was installed within the agency's committed timeline.
- ***Material Quality:*** Three schools (38%) rated the materials as excellent, while five schools (63%) found them satisfactory.
- ***Sufficiency for Students:*** A significant majority, seven out of eight schools (88%), believe the STEM Lab is insufficient for their student enrollment.

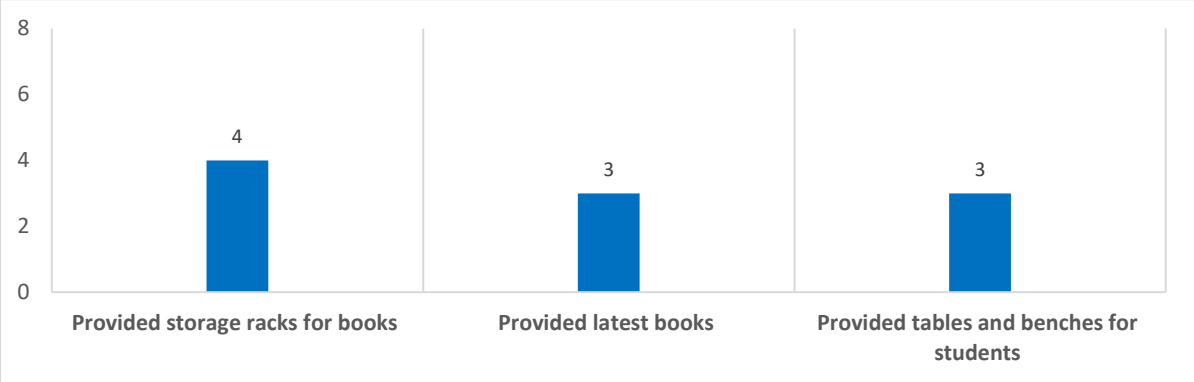
Overall, the STEM Labs are operational and were installed punctually, but many schools feel the resources are inadequate for their student population.

4.2.3 LIBRARY SUPPORT

HDFC Bank considered providing library support under the schools' infrastructure development project. It was envisaged that the library support would be fruitful in developing reading habits among the students of rural areas. Moreover, schools will have upgraded facilities or support to improve the current infrastructure of the library.

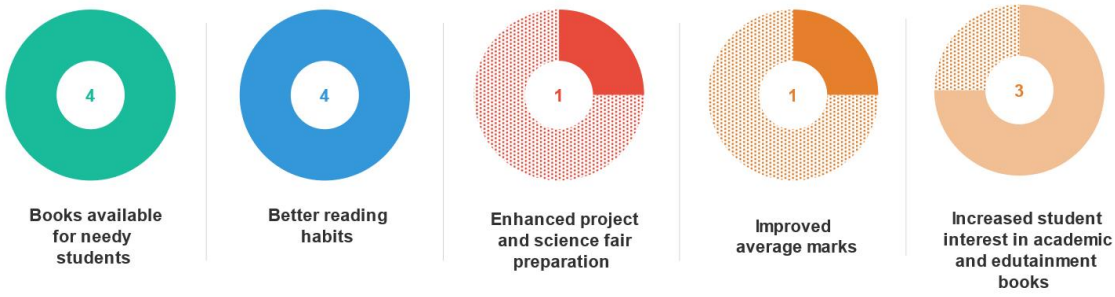
Out of 4 schools surveyed, 2 had a good library with adequate books and furniture for student use, while another 2 had a dedicated library room but either lacked sufficient books or the space was not in usable condition.
The following graph depicts the type of library support received by the schools.

Graph 18: Type of Library Support Received (N=4)



All 4 (100%) schools received library support from the HDFC Grant. This included the provision of storage racks for books (N=4) and the latest books (N=3). In 3 schools, seating provisions were also provided for students. The library support enriches educational content and enhances students' access to diverse learning materials. HDFC also whitewashed and painted library buildings, contributing to a neat, clean, and vibrant library experience. All 4 schools (100%) have a library period scheduled for all grades.

Graph 19: Ways Students Benefitted from Library Support (N=4)



Library renovation has significantly benefited students, with all 4 teachers noting improved reading habits and access for needy students. Additionally, 3 observed an increase in students' interest in using the library for academics and edutainment. However, only 1 teacher reported improvements in project and science fair participation and average marks.

During our recent discussions, the majority of students expressed their genuine enjoyment of their library periods, emphasizing their love for reading books and stories. Many students revealed that they view books as true companions and cherish the experience of storytelling with their families. A good proportion of students (more than half) mentioned that they frequently borrow books from the library to read at home, highlighting the value they place on reading outside of school hours.

It was derived that students enjoyed reading library books and engaging in storytelling activities with their peers at school and in their homes. The students demonstrated their overwhelming enthusiasm during the conversations about their experiences with libraries.

Information on the functionality of the library and other related aspects has been summarized:

- ***Functional Status:*** All 4 supported libraries are currently functional as mentioned by the teachers.
- ***Timeliness of Provision:*** Under the project, all schools received books and materials within the committed time provided by the implementation partner.
- ***Quality of Materials:*** Two teachers rated the quality of books and materials as excellent and 'satisfactory'.
- ***Sufficiency for Student Strength:*** ¾ quarter of the teachers feel the library resources are insufficient for the student population.

While the library refurbishment and materials have been timely and generally well-received with high satisfaction levels, most schools feel that the resources are inadequate for current students.

4.2.4 INFRASTRUCTURE SUPPORT – DRINKING WATER

Under the HDFC Bank support, schools were asked to specify the source of drinking water and other drinking water-related facilities available in the schools. Upon receiving the information, a physical verification was undertaken, and different support was provided for the students. Out of 8 schools covered under the study, 4 schools (50%) reported receiving support related to drinking water, whereas the implementation partner claimed that they furnished their support to all targeted schools under the project.

Of all 4 schools that accepted that they received the support, all 4 had received Aqua Guard UV filters.

Graph 20: Type of Support Received – Drinking Water (N=4)

Only 4 schools received "Installation of Aqua Guard UV purifiers" as part of the HDFC Bank support. Principals acknowledged the HDFC Bank support provided essential drinking water resources that improved students' access to safe drinking water. Out of 4 schools, 1 reported that students now enjoy clean drinking water, leading to a decrease in illnesses and the prevention of waterborne diseases. Additionally, 1 school noted that students no longer need to bring water bottles from home. I am running a few minutes late; my previous meeting is running over.

While the support is acknowledged, the effectiveness is limited by two non-operational reverse osmosis (RO) systems.

Teachers expressed mixed emotions about the quality and sufficiency of the reverse osmosis (RO) systems, indicating that schools have higher expectations for drinking water support.

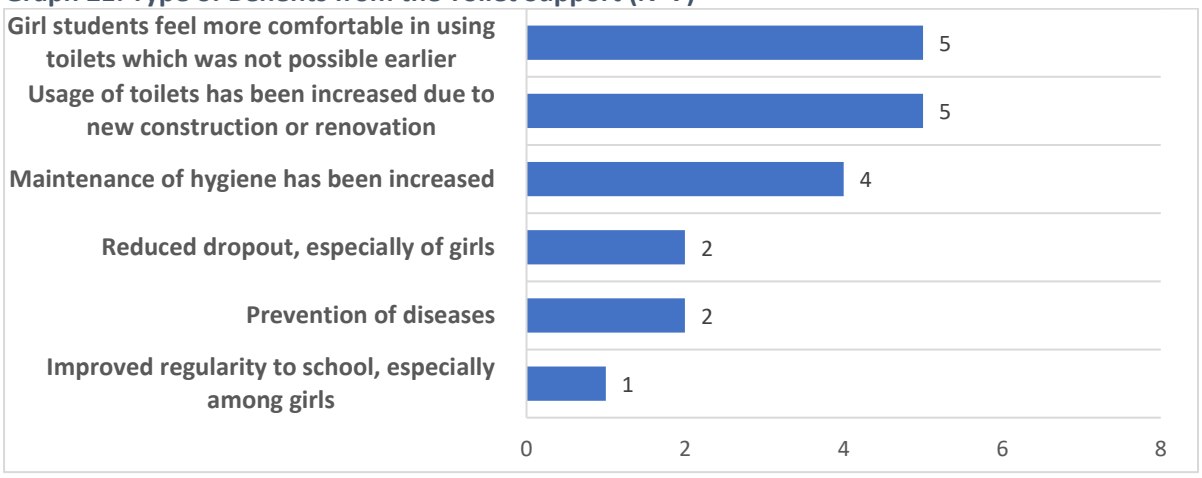
4.2.5 SUPPORT FOR REPAIRS & RENOVATION OF TOILETS

HDFC Bank provided support for repairing and renovating school toilets and associated facilities to ensure students can utilize them. Out of 8 schools, 7 confirmed that toilet-related support was provided. 4 schools reported new toilet construction, while the remaining 3 had repairs. Before HDFC support, only 4 schools had usable toilets with broken infrastructure and doors. Two schools did not have water, hinting at the dilapidating condition of the toilet facilities in surveyed schools.

The newly constructed toilets at one of the schools exhibit a flawed design, leading to water accumulation on the ceiling and roof. This design flaw renders the toilets vulnerable to moisture and leakage.

Information on how the HDFC Bank's support for toilets helped the students revealed that the usage of toilets increased among the students, and girls feel comfortable using toilets. How students benefited from the support is shown in the following graph.

Graph 21: Type of Benefits from the Toilet Support (N=7)



The support had a notably positive impact on students, leading to increased hygiene (N=4), improved toilet usage (N=5), and enhanced comfort for female students (N=5). Additionally, it contributed to disease prevention (N=2) and reduced dropout rates, particularly among girls (N=2). Overall, the new construction and renovation of toilets significantly improved school attendance and comfort, especially for girls.

The evaluation of the toilet support revealed that all 7 schools (100%) got their toilets constructed or renovated within the committed timeline. However, a majority (71%) **of the schools felt that toilets were sufficient for the current student strength in the schools.**

Only three out of seven schools had a dedicated budget allocation for cleaning and minor repairs for the toilets. Inadequate maintenance could lead to toilets becoming less usable over time. This situation can particularly impact students' regularity, especially girls, who may face increased difficulties in accessing clean and functional facilities, potentially affecting their school attendance and overall comfort.

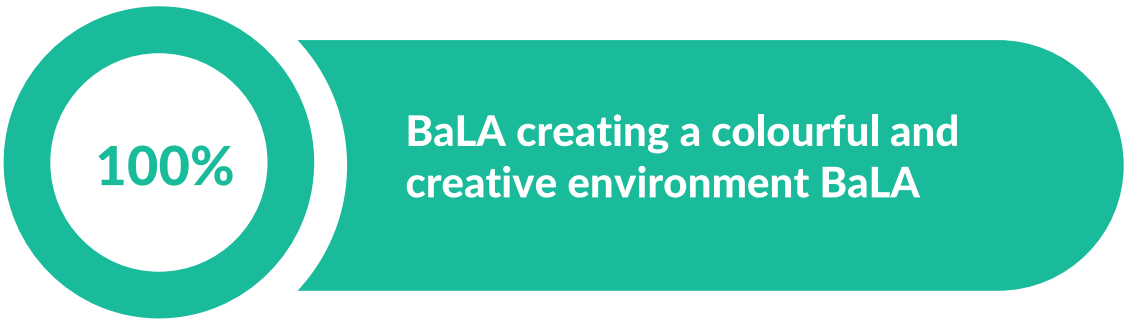
Principals suggested that the quality of the constructed or renovated toilets could be improved, as evidenced by their varied responses regarding the quality of the work. Only 1 principal rated it as excellent, while 4 schools found it satisfactory, and 2 considered it not good.

Only 11 schools received support for the construction of toilets, indicating a high demand for such improvements. The HDFC grant addressed this by repairing existing toilets and constructing new ones, but feedback on the quality remains mixed. Despite the support, principals feel that the toilets are inadequate for the current number of students, and the limited school funds for maintenance could result in them becoming unusable over time. This issue needs to be addressed at the school level.

4.2.6 INFRASTRUCTURE SUPPORT – BaLA (Building as Learning Aid)

HDFC Bank incorporated the BaLA component in the support to make the school environment joyful and learning-friendly. Findings revealed that only 3 schools received support for BaLA, where school walls were painted with colourful artwork.

Graph 22: Type of BaLA Support Received by Schools (N=25)



All the schools that received BaLA (Building as Learning Aid) support benefited from a more colourful and creative environment.

The BaLA support has substantially enriched the learning environment by enhancing creativity and playfulness, significantly improving student engagement through colourful, creative spaces and well-equipped sports facilities.

Conclusion and Recommendation

Based on our comprehensive analysis of the study results, we have carefully evaluated the assistance provided to the schools and have formulated a series of well-researched and data-driven suggestions. The upcoming section will provide a detailed outline of the outcomes of our in-depth conversations with the school principals, teachers, and students. Additionally, it will offer thorough recommendations for future initiatives based on the valuable insights gathered from these discussions.

4.1 CONCLUSION

Eight principals were interviewed to gather insights about the infrastructure support received by their schools. All principals were quite experienced, with half of them having more than 20 years of teaching experience, but they were relatively new to their current schools.

Alongside the principals, the assessment involved 20 teachers, comprising 8 smart class teachers, 8 STEM lab/science teachers, and 4 librarians, with a higher representation of females (15 females and 5 males). The teaching staff demonstrated considerable experience, with 11 teachers having between 11 and 20 years in the field of education.

Under the HDFC Grant, all 8 schools received SMART Class and STEM Lab setups, highlighting a strong commitment to digital and STEM-based learning. Additionally, 7 schools benefited from toilet renovations, while 4 improved their drinking water facilities. Furthermore, 4 schools received library support, and only 3 schools implemented BaLA initiatives. While there was an expectation for teacher training and SMC training, none were provided under the grant. Instead, two schools offered health and hygiene sessions for students, indicating a focus on overall well-being. **Overall, the assessment reflects a positive trajectory in infrastructure development, although there remains room for improvement in capacity-building initiatives for teachers and management.**

Smart Classes

HDFC's support for the implementation of SMART Class setups has notably transformed the educational landscape across the eight schools involved. All schools received essential equipment, such as LED smart TVs (75% of schools), along with some receiving projectors, laptops, printers, keyboards, and inverters, resulting in significant improvements in teaching and learning experiences.

Teachers reported positive changes since the introduction of SMART Classes, with 88% observing an increase in student attendance attributed to heightened interest in the subject matter. Additionally, 75% noted improved student comprehension and engagement, while 63% identified enhancements in enrollment and learning outcomes. The integration of digital content has made complex concepts

more accessible, with teachers emphasizing its role in fostering creativity and sparking interest in STEM subjects.

Training on operating the SMART Class equipment was beneficial, with 75% of teachers finding it valuable for delivering digital content effectively. However, challenges remain, particularly with frequent power cuts affecting class continuity, a lack of maintenance support, and limited seating capacity in classrooms. While 75% of teachers expressed high satisfaction with digital content-based education, 75% of schools reported inadequate maintenance provisions, which could jeopardize the long-term sustainability of the initiative.

Overall, HDFC's investment in SMART Class setups has positively impacted student engagement and learning outcomes, demonstrating the potential of digital tools in education. However, addressing ongoing maintenance challenges and resource constraints is essential to ensure the lasting success of this initiative.

STEM Lab

HDFC's initiative to establish STEM labs in Tamil Nadu and Puducherry has provided significant support to enhance science education across eight government schools. Before this initiative, five schools lacked any STEM lab facilities, while three had usable labs. The support provided included a wide range of resources, such as science and math models, posters, and tools for projects, which have been instrumental in improving the quality of STEM education.

Teachers reported notable benefits from the STEM labs, with 88% observing that practical activities simplify complex topics, enhancing students' understanding. Furthermore, 63% noted increased student interest in science subjects and greater engagement through the use of models, videos, and hands-on experiments. The labs have created a joyful learning environment, as confirmed by 88% of teachers, fostering a more effective teaching atmosphere.

Challenges persist while the STEM labs are operational and installations are completed on time. A significant majority (88%) of schools indicated that the lab resources are inadequate for their student enrollment, and 93% lack a budget for regular maintenance.

Library

HDFC Bank's library initiative has benefited four (4) surveyed schools by fostering reading habits and improving access to educational materials. All 4 schools received storage racks, new books, and some received stools, with renovations creating a vibrant library environment. Teachers noted improved reading habits, with three (3) reporting increased student interest in the library. However, three-quarters of the teachers feel resources are insufficient for the student population.

While the project enhanced libraries, further investment is needed to expand materials and sustain the positive impact on student engagement and learning.

Toilet Facilities

HDFC Bank's support for toilet repairs and renovations significantly improved facilities in 7 out of 8 schools, with four receiving new constructions and three undergoing repairs. Before this, only four schools had usable toilets, many in poor condition, and two lacked a water supply.

Despite design flaws in one newly built toilet causing water accumulation, HDFC's support led to increased toilet usage, especially among girls, improved hygiene in four schools (50%), and greater comfort in five (67%). The initiative also contributed to disease prevention and reduced dropout rates, particularly for female students.

The evaluation showed that all seven (7) schools got toilet support on time, with 71% finding the toilet facilities adequate for current student needs. However, only three (3) schools had a budget for cleaning and repairs, raising concerns about long-term maintenance. Principals highlighted the need for better quality construction, with only one (1) rating it as excellent, four (4) as satisfactory, and two (2) as unsatisfactory, emphasizing the importance of ongoing attention to ensure the lasting benefits of these improvements.

Drinking Water Facilities

HDFC Bank's support for drinking water facilities reached 4 of the 8 schools surveyed, providing Aqua Guard UV filters to improve access to safe drinking water. While the initiative helped reduce illnesses and eliminated the need for students to bring water from home, the presence of two non-operational RO systems and mixed feedback from teachers highlight the need for better maintenance and improvements to meet school expectations fully. Furthermore, all schools stated that the current RO system is insufficient for the student strength.

Menstrual Hygiene Management (MHM)

Health and hygiene sessions are vital for equipping students with essential skills for their lifelong well-being. Prior to receiving the HDFC Grant, 71% of the surveyed schools (5 out of 8) were already conducting monthly sessions on health and hygiene, according to reports from the principals. The feedback from schools highlights several key benefits from these sessions, including improved hygiene knowledge, increased toilet usage, consistent handwashing, and greater participation in hygiene activities.

However, only two (2) schools had vending machines, and three (3) had incinerators. All principals confirmed timely installation of incinerators, though one school found a single incinerator insufficient. Feedback on the quality of the equipment varied: one teacher rated it excellent, while two found it satisfactory, suggesting room for improvement.

BaLA Initiatives

HDFC Bank integrated the BaLA (Building as Learning Aid) component into its support initiatives to enhance the school environment and make it more joyful and conducive to learning. Only three schools received this support, which included vibrant and colourful artwork painted on the school walls.

The schools that benefited from BaLA reported an improvement in their learning environment, citing that the colourful and creative surroundings fostered a more engaging and stimulating atmosphere for students. This enhancement not only brightened the school setting but also encouraged a positive attitude towards learning among students, making the educational experience more enjoyable and interactive.

4.2 RECOMMENDATIONS

Here is one critical recommendation for each thematic area:

- ***Smart Class:*** Strengthen technical support and provide ongoing training for teachers to ensure effective use and maintenance of smart class equipment, addressing challenges related to equipment functionality and content updates.
- ***STEM Lab:*** Extend the availability of STEM labs to senior students and provide regular, comprehensive training for teachers on effectively using STEM lab resources to maximize educational benefits.

- ***Library:*** Increase Library resources, hours and accessibility for all students, including those in senior grades.
- ***Drinking Water:*** Invest in improving and maintaining water filtration and distribution systems to provide a reliable and safe drinking water supply for all students, as current facilities are insufficient for the number of students.
- ***Toilet:*** Establish a regular cleaning and maintenance schedule for toilets to ensure they remain functional and sanitary. Many schools report insufficient budgets for upkeep.

Findings on the OECD Criteria

This chapter provides the impact assessment findings considering the OECD research framework or criteria to oversee the overall impact of the HDFC Bank-supported project on smart school development.

Relevance

The project was deemed highly relevant for the government schools in Tamil Nadu and Puducherry, spanning four districts. Focused on enhancing digital learning in rural and peri-urban areas, it has the potential to equip schools with adequate infrastructure and advanced smart classroom features. The schools were selected in coordination with government departments following a rapid needs assessment, ensuring the support was well-targeted. **Under this component, HDFC Bank support has been found profoundly RELEVANT. This informs that the needs were identified, and schools were selected based on the information received from the needs assessment.**	5

Coherence

The coherence of the project is evident in its holistic approach, providing students with integrated access to smart classes across all subjects, supplemented by general knowledge and current affairs content. In addition to digital learning, the project extended support to areas such as library facilities, sports equipment, WASH (Water, Sanitation, and Hygiene) resources, and BaLA paintings, creating an engaging and conducive learning environment. Students were also introduced to STEM labs, allowing for practical learning experiences. All key stakeholders—principals and teachers—recognized the value of HDFC Bank's comprehensive support and its alignment with the educational goals of beneficiaries and stakeholders. Furthermore, some of the surveyed schools were designated as "Schools of Excellence" by the state governments, aiming to provide high-quality education to a large student body. HDFC Bank's support aligns with and contributes to this mission and the specific needs of these schools. **The HDFC Bank's support has been labelled as COHERENT. The support provided equal opportunity for the students as well as teachers in accessing the support for strengthening the digital class and digital content based learning.**	5

Effectiveness

The HDFC Bank project effectively achieved its objectives in enhancing educational infrastructure across government schools in Tamil Nadu and Puducherry. By providing essential resources such as smart classes, STEM labs, and WASH facilities, the initiative significantly improved learning environments. Feedback from students, teachers, and principals indicated increased student engagement, better hygiene practices, and enhanced comfort, particularly for female students. Notably, schools designated as "Schools of Excellence" benefited from tailored support that aligned with their specific needs. While the project demonstrated considerable effectiveness, disparities in overall project delivery and resource availability highlighted the need for ongoing monitoring and targeted interventions for diverse student populations.	4

Efficiency

The project's implementation reflected a moderate to high level of efficiency, as resources were utilized effectively and benefitted the intended beneficiaries that is the students. All targeted schools reported improvements in infrastructure, including the installation of smart classes and improved WASH facilities. The comprehensive approach, which included Smart Class, Library and STEM lab, maximized the utility of funds while addressing multiple aspects of education. There were certain group of students such as senior students who were not benfitted by STEM equipment as all STEM material was deemed and appropriate fofr studens up to grade 9. Similarly libraries were largely used by children up to middle school level. However, the long-term efficiency of the benefits may be jeopardized by insufficient maintenance budgets, highlighting the necessity for continuous investment to sustain project outcomes, particularly regarding WASH facilities, menstrual hygiene management (MHM) machines, such as sanitary vending machines and incinerators, as well as reverse osmosis (RO) systems. **The intervention was identified as moderately efficient for the students as well as teachers.**	3.5

Impact

The HDFC Bank project generated significant positive impacts, fundamentally transforming the educational landscape for students in rural and peri-urban areas. Increased access to clean drinking water and functional sanitation facilities led to improved health and hygiene among students, resulting in reduced absenteeism and enhanced learning experiences. The introduction of smart classes and STEM labs fostered interactive learning, igniting greater interest in academics and extracurricular activities. Furthermore, the focus on menstrual hygiene management contributed to improved confidence and participation among female students. Overall, the project catalyzed broader social changes, promoting not only educational attainment but also student well-being and empowerment.	3.5

The HDFC Bank support has demonstrated the moderate IMPACT on the students and teachers and principals endorsed the improvements in students learning outcomes.	

Sustainability

While the HDFC Bank project provided significant benefits, sustainability is a key concern. Many schools reported inadequate budgets for maintaining newly established facilities, risking the long-term usability of toilets, drinking water systems, and educational resources. Although principals and teachers are satisfied with the improvements, ongoing investment and support are essential to maintain these gains. Ensuring that schools have resources for regular cleaning and operational systems will be critical to preserving positive outcomes. Future strategies should focus on improving funding mechanisms and resource management for lasting impact.	3

Overall Average Score – 4 out of 5

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