HDFC BANK PARIVARTAN
A step towards progress

Making Schools Smart – Using Technology

Rajasthan, Jammu & Kashmir

An Impact Assessment Report

IMPACT
Partners in Social Development

Abbreviations

AV	Audio-Video
BLES	Building Learning Environment in Schools
BRB	Bal Raksha Bharat
CSR	Corporate Social Responsibility
ICT	Information Communication Technology
MI	Monitoring and Impact
MoU	Memorandum of Understanding
NCERT	National Council for Education Research and Training
NGO	Non-Government Organization
SDMC	School Development Management Committee
SMC	School Management Committee
SS	Smart Schools
SSA	Samagra Shiksha Abhiyan
STEM	Science Technology Engineering Mathematics
TLM	Teaching Learning Materials
WASH	Water Sanitation and Health

Contents

Executive Summary

Supported by HDFC Bank Parivartan, Save the Children India implemented a smart schools project in two states—Rajasthan and Jammu & Kashmir. The overall goal of the project was to strengthen the ICT enabled learning by creating joyful learning environment, build the capacities of teachers and strengthen school level structures. The project also aimed at improving the learning outcomes of students through access to quality education using ICT, as defined by (a) quality classroom interactions, (b) community engagement, and (c) professional development of teachers. Resources were provided to make these schools in making them ICT-enabled, contributing towards the learning of children.

The impact evaluation is designed with the following 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.

Sample Coverage

This impact assessment study was conducted in 20 schools covering 15 in Rajasthan in two districts and 5 in Jammu & Kashmir in two sectors. The physical verification process was administered to assess the current status of support in terms of availability, functionality, and current usage by the intended target groups (teachers and students).

Key Findings

Smart Class Intervention

- All 20 schools had functional smart classes and 19 had the functional STEM Labs.
- In each school, 2-3 teachers were provided with training on the operations of the interactive panel, its features and how teachers can use at the optimum level.
- The teachers were also provided with orientation on models and equipment provided in the STEM Labs.
- At the time of assessment, the interactive panels were being used in all the schools effectively
- The teachers demonstrated their satisfaction with the comprehensive support provided to them such as web cam, sound bar, different types of digital content and power backup.
- About 17 out of 20 schools (85%) had wall paintings in the smart class with HDFC Parivartan branding.
- Students informed that they are regularly receiving classes through smart class which helps them in enhanced learning that helps in securing good marks and grades. In 8 out of 15 schools, students were attending smart classes on a daily basis.
- Teachers of Science, Mathematics, English, and Social Studies (EVS) use the smart classrooms, and some have reported using for language subjects who use videos to illustrate communication skills and help students gain an understanding of the value of communication, pronunciation, and the power of communication.
- About 85% of teachers stated that after narrating the concepts and setting the context in the class, they show videos to the students that help them in understanding the content and learn the concepts in the effective way.

- About 85%-95% of teachers opined that through e-content videos students easily understand the topics in a very effective way and gets excited to discuss their doubts and seek clarifications.
- More than half the teachers (55%) had opinion that students became regular as they have interest in smart class and the teaching pedagogy.
- In all, 18 out of 20 Principals and 11 out of 15 SMC members were of the opinion that students learn faster after taking the lessons and watching the videos and presentations. The interactive panel has several features that generates a conducive environment for the students.
- About three-fourths of teachers and principals (75% both) that the school has gained a fame that teachers teach using smart classes and show the content which helps students in better comprehension and help students in choosing the science and mathematics in higher studies.

STEM Lab Intervention

- In all 19 schools, 16 (84%) were functional and were being used for the practical exercises for the students.
- In three schools (16%) the STEM Labs were not being used because of teachers did not see the opportunity of taking students to Lab as they have not covered the curriculum for the same.
- Almost all the teachers (95%) agreed that STEM Lab helps them in converting theoretical concepts into real learning through experiments.
- About three-fourths of teachers (75%) could specify that STEM Lab has given them opportunity to show and explain the concepts of science and demonstrate the body organs and their functions.
- 90% of the teachers expressed that practical exercises are interesting that generates interest among the students and show them how easy is to understand the concepts and principles.
- 85% of teachers felt that videos along with models and instruments generate integrated learning experience which motivates them to study Science and Mathematics.
- In 12 out of 15 schools (80%), students were happy in sharing that they are given demonstrations for all the topics for which models, diagrams, and charts, etc. are available.
- Students found the STEM Lab – a very effective process to visualize things in minds and see the practical in front of them and then undertake the similar experiment on their own.
- All the principals and SMC members felt that STEM Labs are the key resource for any school, and they are fortunate to have one.
- The impression of the principals and SMC members was that students interest get enhanced in the subjects due to STEM Labs, students participate more in the STEM Labs to conduct practical and engage in the topics-based discussion.

Other Support under the Project

Teaching Learning Materials (TLMs)

- All the teachers interacted during the assessment confirmed the receipt of TLMs and currently being used for the teaching. Assessment team observed their satisfaction with the TLMs that essentially assist them while delivering the lectures on various topics in Science, Social Studies, and Mathematics.

Sports Items

- All 20 schools confirmed that the schools received sports items so that students could receive support in developing their physical and motor skills, mental skills and enhance their capacity and capabilities to participate in school level competitions and win medals for their schools.
- In 6 out of 20 schools (30%), principals confirmed that the students participated in district and state level competitions.

Books and Textbooks

- Based on the needs and demands, the text books and other books published by eminent children book publishers like Ektara, Eklavya, Pratham, etc. were purchased and supplied to the schools.
- Principals and teachers reported that these books provide opportunities to develop reading skills as well as their comprehension in understanding the context, visualize the story and enjoy the characters and content.

Repair and Refurbishment of WASH Structures

- In all the targeted schools, the implementation partner conducted the scrutiny exercise to assess the needs for providing support for repairs and refurbishment of WASH structures within the schools including toilets and the type of work needs to be done in terms of sanitary work, pipes, and faucets, sinks and wash basins, etc.
- The principals expressed their satisfaction and acknowledged the support from HDFC Bank in making the schools ready for facing any challenge such as COVID-19.

Introduction

HDFC Bank CSR – Parivartan Program

HDFC Bank helps in transforming the lives of millions of Indians through various social initiatives. HDFC Bank has a comprehensive program named 'Parivartan' aiming to contribute towards economic and social development by sustainably empowering its communities. The Parivartan program has been a catalyst in making a difference in the lives of people through its interventions in the areas of rural development, education, skill development and livelihood enhancement, healthcare & hygiene, and financial literacy.

Under Parivartan, the bank has a flagship "***Holistic Rural Development Program*** (***HRDP***)" focused on Rural Development and caters to the needs of the rural communities in multiple focus areas. Another support program is the ***"Focused Development Program (FDP)"*** through which the Bank identifies an implementing partner with expertise in one of the focus areas and implements the intervention to improve the lives of the target groups with respect to the focus area. The progress of all the projects under these HRDP and FDPs are assessed through systematic routine monitoring and independent evaluations to assess the effectiveness of projects.

About Save the Children (Bal Raksha Bharat)

Bal Raksha Bharat[1] (formerly **Save the Children India**), is a non-profit organization working to improve the lives of marginalized children in India since 2008. Headquartered in Gurugram, and registered as Bal Raksha Bharat in India (under Societies Registration Act, 1861), the organization is a member of the international Save the Children Alliance. SC BRB has been working in India and it implements sustainable, community-driven projects across India from remote locations to urban areas. The goal of these projects is to provide children with quality education and healthcare, protection from harm and abuse, and life-saving aid during emergencies. Bal Raksha Bharat also works through Advocacy and Campaigning, liaising with government stakeholders and civil society in support of children's rights.

About the Smart Schools (SS) Project

HDFC Bank Parivartan supported Save the Children India to implement a smart schools project in two states of India viz. Rajasthan and J&K. The overall goal of the project titled "**Making Schools Smart – Using Technology to Build Forward Better Schools in Two States of India**" was to improve the learning environment, build the capacities of teachers and strengthen block and district-level education systems. The project was implemented for one year, from December 2021 to November 2022, and aimed at improving the learning outcomes of students through access to quality education, as defined by (a) quality classroom interactions, (b) community engagement, and (c) professional development of teachers. Resources were provided to make these schools ICT-enabled, contributing towards the learning of children.

[1] https://balrakshabharat.org

Specific Objectives of the SS Project

The specific objectives of the project were:

- To equip schools with learner friendly, ICT based resources and innovative and supportive teaching and learnings solutions.
- To build the capacity of school teachers on ICT enabled and child centric pedagogic practices and STEM approaches.
- To strengthen the existing school support structures and demonstrate learnings from the project for wider replication.
- To improve physical and learning environment in schools.

HDFC Bank Parivartan intended to conduct an impact assessment of the grant, to assess the extent to which the project objectives have been achieved.

Objectives of the Assessment

This impact evaluation is designed with the following 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.

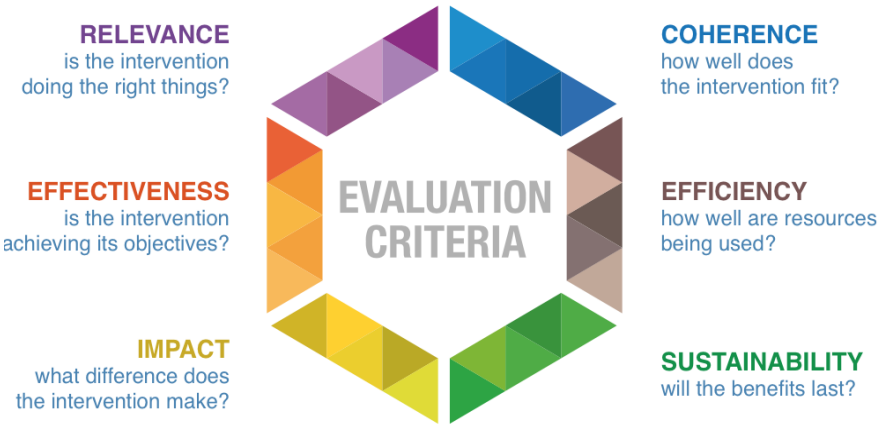
The forthcoming chapters provides the description of study methodology and findings of the study along with discussion on the basis of OECD criteria.

Methodology

The approach used for the impact assessment study has been discussed in this chapter, along with information on data management, implementation strategies, sample size, and research techniques. In the upcoming discussion, the specifics of many components have been covered.

Conceptual Framework

The standard OECD-DAC criteria[2] was used which is considered as one of the gold standards in evaluation. This framework recommends evaluating a program under six sub-heads as depicted in the illustration as follows:



Basis this framework, the indicators and tools were developed and data was analysed. To implement this framework, following research questions were assessed for each component of this framework. The research questions were discussed and finalized in consultation with the HDFC Parivartan MI team.

Evaluation Component	Research Questions
Relevance	What criteria were adopted to select the schools for intervention?
	Was Needs Assessment carried out before implementing the interventions?
Coherence	The extent to which students are able to access the ICT infrastructure provided through the intervention
	How do stakeholders (principals, teachers and SMC members) view the usefulness of the intervention
Efficiency	Number of students reached through the intervention
	Number of teachers trained to use ICT technology
	Number of peer learning groups formed
	Students independently using smart classes for learning purposes

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

Evaluation Component	Research Questions
Effectiveness	Students independently conducting experiments in STEM labs
Impact	Improvement in learning outcomes of students through teachers' perception
	Teachers teaching through experiments in STEM Lab
Sustainability	Schools with School Development Plan
	Schools with functional[3] SMC
	Schools with provisions of repair and maintenance of ICT and STEM lab equipment

The research questions are finalized for the quantitatively measurable indicators and used for developing the tools.

Research Methods

Methods-Mixed approach was followed wherein the quantitative survey was undertaken for the assessment of smart class and STEM Lab. Observations were made for the WASH facilities and Sports equipment and items were supplied. Additionally, in-depth interviews were undertaken with the multiple stakeholders such as principals, teachers and project implementation team under the qualitative research.

Geographical Coverage

A total of 50 schools each were covered in Rajasthan and J&K under the project, and we proposed to cover both these states.

Target Group

Since the target group under the project was aligned with the project activities, following target groups were included in the assessment:

- Students accessed digital classrooms or STEM labs.
- Teachers who have received training and using Smart Class
- Principals
- SMC members

Indicators for Assessment

Following indicators were focused for the assessment study:

Target Group	Level	Indicators
Teachers	Impact	• Percentage of teachers who are effectively using digital content for classroom teaching. • Percentage of teachers that are effectively conducting experiments using STEM lab equipment
	Outcome	• Percentage of teachers who believe that digital content / STEM lab is helping students improve their learning outcomes.
	Outputs	• Percentage of teachers who received training on using digital content. • Percentage of teachers who received training on using STEM lab

[3] Functional implies meeting at least once in three months, keeping minutes of the meetings and participating in the development, implementation and monitoring of School Development Plan

Target Group	Level	Indicators
Schools	Impact	• Percentage of schools where smart class created under the project is currently functional (used at least once in the last 3 days) • Percentage of schools where STEM lab created under the project is currently functional (used at least once in the last 3 days)
	Outcomes	• Percentage of schools with active internet connection • Percentage of schools with provisions of repair and maintenance of equipment of smart class and STEM lab • Percentage of schools with at least 50% of the SDP implemented
	Output	• Percentage of schools with SDP approved by the concerned authorities
Principals and SMC Members	Impact	• Percentage of Principals/ SMCs who believed that project support has helped the students in improving their learning outcomes • Percentage of Principals/ SMCs who reported that the enrolment has been increased due to the smart class support • Percentage of Principals/ SMCs who shared that the students became regular in attending the classes due to the use of smart class and STEM Labs
	Outcomes	• Percentage of Principals/ SMCs who believed that project support has helped the students in improving their learning outcomes
	Outputs	• Percentage of Principals and SMCs who have observed teachers using the smart classes and STEM Labs

Sample Size and Sampling Procedure

Out of 100 schools covered in both the states, we proposed to conduct the assessment in 20% of the schools and thus, 20 schools were covered. Of these, 15 were selected in Rajasthan across 2 districts and 5 in J&K (2 in Jammu division and 3 in Srinagar division). All the schools were selected using simple random sampling without replacement.

Sampling of Students and Stakeholders

In each selected schools, the associated teachers were selected for an interview and who have undergone the orientation on use of smart class methodology, specifically how to use the supplied equipment. The coverage of teachers received training from the implementation partner under the project were covered. Additionally, principals of the schools and SMC members were covered in the school to obtain their views on the experience and outcomes of the project.

Sample Coverage

Type	Coverage		
	Rajasthan	J&K	Total
Schools	15	5	20
Digital classroom checklist	15	5	20
STEM lab checklist	15	4	19
Principals	15	5	20
Teachers	15	5	20
SMC members	15	5	20
Students (15 FGDs)	15	-	155

* Students were not available in J&K schools

Development Tools for Data Collection

Based on the assessment objectives and the research questions framed, study tools were developed so that these are necessary and sufficient to estimate the indicators. The tools developed and implemented for data collection with schools are shown as follows:

Digital Classroom/STEM Lab Checklists

- Digital Classroom and STEM Lab Observation Checklists
- Interview Guide for Teachers, SMC Members and Parents

The purpose of these checklists was to undertake the physical verification of the equipment and supplies and secondly, it will help in understanding the effective utilization of these equipment and supplies to the schools.

In-depth Interviews with Stakeholders

Under the assessment, the principals, teachers, and SMC members were interviewed or interacted to assess their experience with an intervention and their perception on the usefulness and effectiveness of the support provided to the school. The structured tools were developed for the in-depth interviews.

Focus Group Discussion with Students

In Rajasthan, focus groups were conducted with the students who attended the smart classes at the schools were conducted. A separate discussion guide was developed for the students.

Training of Data Collection Team

A 1-day training of the data collection team was conducted at Jaipur on the orientation of tools and methodology to be adopted. All the team members were provided with all survey specifics including obtaining consent, the process of making physical visits, etc.

Survey Implementation

- SC BRB team coordinated with the schools for obtaining the permissions from the schools so that data collection teams could visit and undertake the assessment.
- A team of 2 field investigators (one male and one female) was formulated who collected data from each of the selected school in one day.
- Two such teams were formed in Rajasthan and one team in J&K who completed the data collection. The team members were the natives of the same states having experience of 2 years or more with understanding of local dialect.
- A team of two persons conducted the physical verification of the smart class and STEM Lab as well as conducted in-depth interviews with principals, teachers, and SMC members.
- State Coordinators were also deployed to provide supportive supervision to these teams.
- The coordinator visited the teams each day and conducted the accompanied checks to ensure the quality of data being collected by the team.
- In J&K, senior management visited the schools to collect the data and interact with the school level stakeholders as well as SC BRB team.

Data Analysis and Report Writing

Post-data collection, the collected data were processed at the IMPACT office in MS Excel and/or SPSS and frequency runs were obtained. Post-completion of tabulation and crosstabs, the interpretation of results was undertaken.

Challenges Faced

- Examinations were scheduled in the schools due to which principals provided the alternate dates of visits.
- In J&K, students were not available for the interaction due to the vacations, and only teachers and principals were covered.

Study Findings

This chapter provides the impact assessment findings synthesized from the data obtained from various targeted groups covered under the study. Additionally, the views and experiences of project stakeholders such as teachers and principals are also discussed.

Current Status of Support

Smart Classes

At the time of impact assessment study conducted in 20 schools covering 15 in Rajasthan in two districts and 5 in Jammu & Kashmir in two sectors. The physical verification process was administered to assess the current status of HDFC Bank support in terms of availability, functionality and current usage by the intended target groups (teachers and students). The results of the physical verification are discussed as follows:

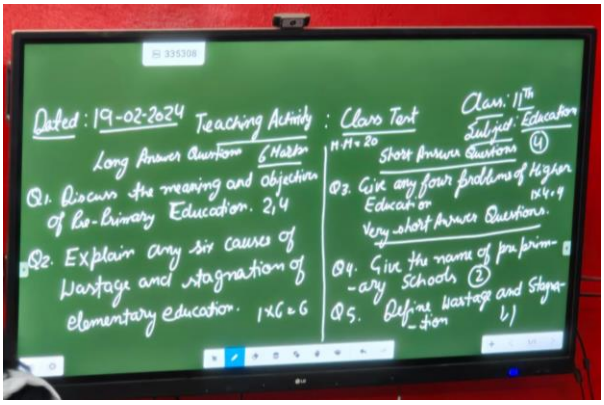
The smart classrooms were functioning and accessible for use by teachers in all 20 schools. A dedicated classroom equipped with all the necessary smart class assistance from HDFC Bank was set up so that subject teachers could conduct interactive lessons tailored to the grade level curriculum. Under the setup, a flat TV interactive panel along with a sound bar, Web Camera, E-content for Grades 6-10, Android based applications, one UPS and one inverter with battery for power backup fitted in the iron stand were provided. This makes the comprehensive support dealing with all the needs of the classroom teaching for the teachers.

A 65 inches Flat TV interactive panel from a leading commercial brand has multiple features that adds value to the technology support from HDFC Bank which includes the following:

- Android based Apps
- Internet connectivity
- Screen can be split into multiple screens
- Screen can be used as Green or White Board
- Google Features and apps such as YouTube
- Interactive board with Smart Pen option
- Storage with saving options for daily lectures
- Sharing the saved pages on WhatsApp groups for the students

All the interactive panels were functioning, and trained teachers in the school demonstrated the use of panels for the students which showcased that how the smart class technology is being used for the students.

During focus group discussions, all the students (N=155) reported attending smart classes on a regular basis. In 8 out of 15 schools, students were having smart classes on a daily basis using the interactive flat panel in Science and Mathematics and few students also informed that teachers also show physical education and yoga videos to share the benefits of exercise and sports. Students were also shown the recent achievement of ISRO where rover lander landed at south pole of moon surface.



With respect to internet connectivity, two schools in Rajasthan did not have internet connectivity but all remaining 18 schools had the internet connectivity, which plays a catalyst role in smart class. However, the two schools with no internet connectivity stated using mobile hotspots for the teaching.

Under the support, the schools were provided with wall paintings and drawings in the smart classes so that the smart class should provide an enabling environment to the students as well as teachers. The teachers were also discussed while wall paintings were made to finalize on what all they want on the classroom walls. In 17 out of 20 schools (85%) had interactive pictures on the walls and charts with HDFC Parivartan and Save the Children branding. Three schools in Rajasthan (15%) did not have any wall painting or charts available in the project supported smart class.

Of all 20 schools, 17 (85%) reported having equipment under warranty after the installation for the repair and maintenance and 11 (55%) could say that the schools have provisions for the funds under the repair and maintenance head for the future. Six schools in Rajasthan mentioned that there are no funds available for the repair or maintenance of the equipment of the smart class.

While discussion, it was observed that 14 schools (70%) are still in touch with Save the Children team for any remedy related to smart class or need any advice for the equipment, etc.

Teachers of Science, Mathematics, English, and Social Studies (EVS) use the smart classrooms, and some have reported using for language subjects who use videos to illustrate communication skills and help students gain an understanding of the value of communication, pronunciation, and the power of communication.

In summary, the assessment team feels that the smart class support has been one of the excellent support that caters to the needs of both subject teachers as well as the students. Teachers were competent in using the equipment for the teaching and students can easily relate the topics discussed in theory vis-à-vis audio-video digital content simultaneously on two parallel screens on the interactive panel. The teaching process involving interactive panel serves the purpose and offers a great learning experience for the students.

The support has played a catalyst role in strengthening the ICT-enabled learning in the government schools which is the key focus of the government.

STEM Labs

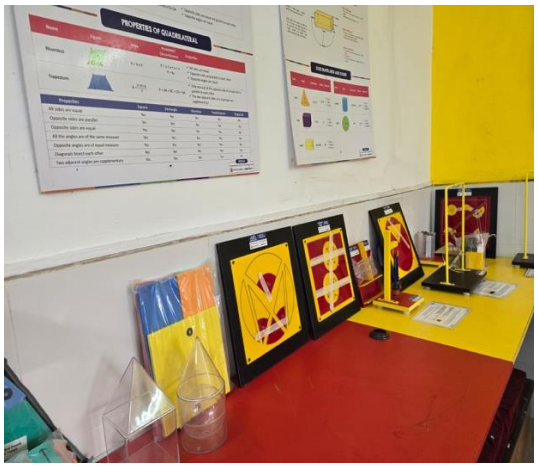
Under the Smart Schools Project, a dedicated STEM lab was established in the selected schools who did not have the one. The primary aim was to establish a STEM Lab with all necessary equipment, instruments, models, charts, and posters so that students can perform experiments and see how the concepts work. For human body parts, the students see the size and shapes of the organs and understand the need, functions and disorders related to heart, lungs, liver, eye, brain, etc. In STEM Labs, around 80 models / items were provided under the support.

Across 20 schools included in the assessment, 19 schools had STEM lab and one school in Jammu was not supported with a STEM lab. In all 19 schools, 16 (84%) were functional indicating that STEM Labs are being used for the teaching as well as practical exercises for the students. In three schools (16%) the STEM Labs were not being used because of teachers did not see the opportunity of taking students to Lab for the teaching or practical work based on the curriculum they have covered so far. These STEM Labs exist and currently functional that teachers can use in the future.

STEM Labs were provided with following items:

- Platforms/Tables
- Equipment (Instruments and Supplies)
- Working models
- Fixed models
- Do-It-Yourself (puzzles/models/jigsaw)
- Wall paintings and Posters
- Teaching Learning Materials
- Shapes/Size related items
- Items for measuring L x B x H and weight
- White board, Stationery, Support Books, etc.

In each of the schools, the similar support was provided to the STEM Lab set up in a dedicated room. A dedicated subject teacher was identified to take the charge of the STEM Lab and the support was handed over to him/her. The implementation partner assisted the school in making the STEM Lab as per the desired set up that included platforms and posters and wall paintings to be done at the Lab, etc. These wall paintings had the HDFC Bank and Save the Children logos. In all 16 out of 19 STEM Labs (84%) were functional and teachers were currently using STEM Labs for the teaching and practical in 14 out of 16 schools (88%). In other two schools, the teachers would start using soon based on the chapters being covered in the classes.



Usually, STEM Labs have models and other items related to Physics, Biology, Chemistry, Geography, but lesser number of mathematical objects and instruments. However, the team felt that the supplies were dependent on the type of topics and concepts included in the Grades.

The evaluation team believes that the STEM Lab support was amazing since it creates holistic learning relating to many topics and concepts and allows students to capture information and visualize it immediately. Compared to theoretical lessons and conversations, the students' ability to complete practical exercises, watch how different organs function, and engage in mental exercises facilitates a faster understanding.

Sports Items

All 20 schools confirmed that the schools received sports items so that students could receive support in developing their physical and motor skills, mental skills and enhance their capacity and capabilities to participate in school level competitions and win medals for their schools. In 6 out of 20 schools (30%), principals confirmed that the students participated in district and state level competitions. The implementation partner assessed the needs of the schools and based on their demands, the sports materials were provided to the schools such as Table Tennis (Tables), Volleyball, Basket Ball, Football, Cricket items, Chess board, etc.

The assessment team was pleased to hear from the school administration on the usefulness of the sports items which not only provide opportunities to cater students but also teachers can use for giving tough challenges to the students preparing for the contest.

The school administration shared information about the value of sports equipment with the assessment team, which was happy to hear. The equipment and items not only give teachers a way to challenge their students to perform well in the sports but also gives them good opportunity to practice for competitions.

Books and Text Books

Under the assessment, the team was informed that the implementation partner conducted the initial assessment on the library related needs with the schools. Based on the needs and demands, the text books and other books published by eminent children book publishers like Ektara, Eklavya, Pratham, etc. were purchased and supplied to the schools. These books provide opportunities to develop reading skills as well as their comprehension in understanding the context, visualize the story and enjoy

the characters and content. These children books provide fun to the students and are actually stress bursters as well as ensure happiness.

The school administration confirmed the receipt of support for books and students are currently using the library related activities in the schools.

Teaching Learning Materials (TLMs)

Under the project, teachers were considered as the key resources that play a pivotal role in the students' lives. Considering this fact, the teachers were provided with TLMs so that they can use them while teaching and explain how things work and show the size, shapes, flow diagram, etc. TLMs are very effective as these are shown in the classes while teachers are delivering their lectures that generates interest among the students and they initiate discussions and pose questions to rectify their doubts. The implementing partner checked with the teachers in all the schools and assessed the needs for variety of TLMs by subjects and supplied to them.

All the teachers interacted during the assessment confirmed the receipt of TLMs and currently being used for the teaching. Assessment team observed their satisfaction with the TLMs that essentially assist them while delivering the lectures on various topics in Science, Social Studies, and Mathematics. TLMs encourage the students and teachers both to engage and involve in discussion on the context or concept being taken up in the classroom. The environment becomes learning-friendly and joyful.

Repair and Refurbishment of WASH Structures

One of the key activities that was a part of the support was providing need-based assistance for the existing WASH infrastructure so that students could manage social distancing and enhance usage of hand washing platform and drinking water station. The objective of such a valuable support was to make schools prepared adequately for pandemics such as COVID-19 in future. In all the targeted schools, the implementation partner conducted the scrutiny exercise to assess the needs for providing support for repairs and refurbishment of WASH structures within the schools including toilets and the type of work needs to be done in terms of sanitary work, pipes, and faucets, sinks and wash basins, etc. There was no fixed or similar support designed for every school and it is difficult to assess the type of WASH support in each school.

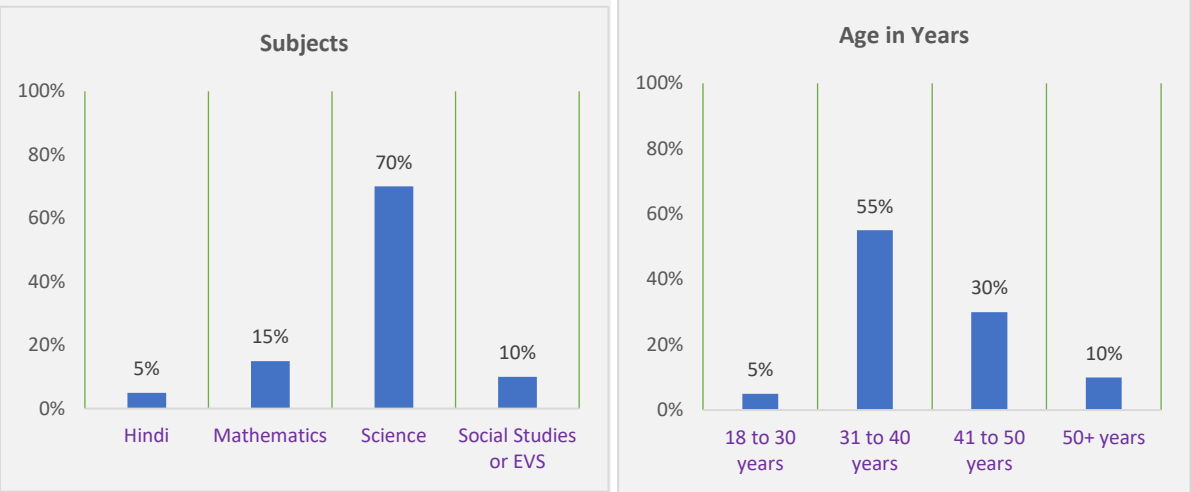
The assessment team was shown the type of support provided in each of the schools included in the impact assessment. Largely, the toilets and seats along with doors and latches, leaky pipes as well as wash basins and faucets were either repaired or refurbished or replaced. The school administration acknowledged the support that allowed students to benefit greatly. It was determined that physical verification of the support for WASH infrastructure was valuable and significant.

Findings from Stakeholders Interviews

Profile

A total of 20 teachers were included in the impact assessment and additional 1-3 teachers were also the part of discussion in about 15 out of 20 schools (75%). The information was captured jointly from the teachers on the impact of HDFC Parivartan support. Of these 20 teachers, 70% were teaching Science subject and majority of teachers (85%) were between 31 to 50 years. More than half (55%) were males and remaining were females. Following graph illustrates the subjects and age of the teachers.

Graph 1: Distribution of Teachers by Subjects and Age (N=20)



In majority of schools, Science teachers were given priority as science subjects need more practical work as well as smart class with e-content support so that students can comprehend the topics and enhance their skills. Moreover, smart classes and STEM Lab helps in generating more interest in Science, Mathematics and Technology related studies and more students come forwards to take up STEM as their career in future.

How the Project Support Reached to the Schools

All the teachers agreed that the implementation partner initially contacted the school administration which was endorsed by the principals. The implementation partner visited the schools to collect the baseline information so that the team can assess the ground situation at the schools and note down the demands and suggestions for the schools. This was undertaken to meet the essential demands and needs as different schools have multiple requirements. Interestingly, all the schools confirmed that the schools had ICT Labs with computers and printer supported by the state governments under the directives of Ministry of IT and Electronics scheme. The challenges were faced by the schools in using the ICT Labs for the teaching as the equipment were old and not updated with the time as well as there were a large number of peripherals were either faulty or non-functional. In such a case, these schools welcomed the HDFC Parivartan support with open heart. The implementation partner finally visited the government authorities at SSA and DEO to discuss the type of support HDFC Bank Parivartan intends to offer based on the situation in the schools. Post obtaining the due clearance and approvals from the authorities, the support was provided to the schools.

Training of Teachers

All the teachers confirmed that the orientation training of one day was provided to all the teachers in the school on how to operate a 65 inches Flat Interactive Panel (LED TV) which as all the storage and amazing features that would help them in the teaching as well as generating interest among the students. All the teachers (100%) expressed their satisfaction that the orientation covered all the aspects needful for understanding the flat panel operations and type of features it has. Further it was observed that 13 out of 20 teachers (65%) claimed that they had the knowledge on how to teach in a class using SMART CLASS support such as using smart projectors, desktop or laptop, digital content, etc. Largely, schools were provided with digital or e-content for the grades 6 to 10 for Science, Mathematics, Social Studies/EVS and English obtained from the government web portals as well as existing free downloadable digital content provided by the private sector organizations.

Perception on Benefits of Smart Class

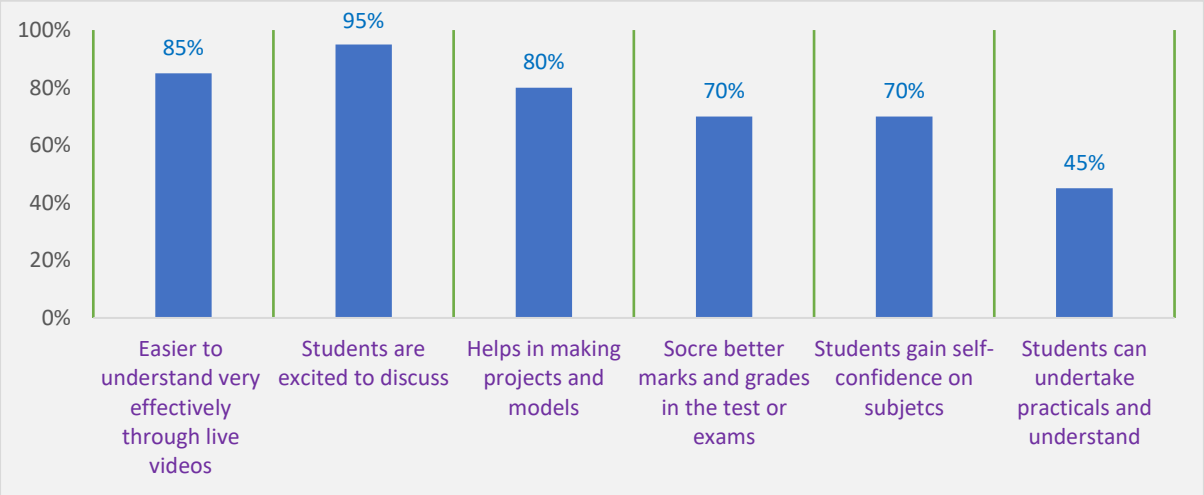
Information was gathered from the teachers on how the smart class helps them in their teaching pedagogy. Four out of five teachers (85%) stated that after narrating the concepts and setting the context while teaching, showing videos to the students help them in understanding the content and learn the concepts, which is a very effective way. This helps us in communicating the same thing that we intend to communicate to the students. Similar proportion of teachers (85%) agreed that using a smart class is very powerful way of explaining the methods and topics at length which enhances the engagement in discussion on the topic as well as environment becomes learning friendly for the students. Additionally, half the teachers expressed that smart class has helped them in planning their lessons appropriately and easily considering the students' level.

The students get charged when they understand the topics and concepts and eventually, they don't get afraid of Science and Mathematics subjects and show more inclination towards Science and Mathematics.

The teachers were found confident in saying that smart class is actually helpful because the support provided by HDFC Parivartan has all the smart features in the interactive panel (LED TV) which encourages them and has made the teaching pedagogy easier.

Next, the teachers were posed with a question that how the teaching pedagogy using the interactive flat panel in the classes benefits the students. Overwhelmingly higher proportion of teachers (85% to 95%) had thoughts that through e-content videos students easily understand the topics in a very effective way and gets excited to discuss their doubts and seek clarifications. Following graph illustrates the type of benefits for the students shared by teachers.

Graph 2: Possible Benefits of Smart Classes for the Students (N=20)



Overall, the smart class where teaching on green board, watching live videos, saving the discussion on panel storage to retrieve again for the discussion to remind the students that this was discussed during the last class, etc. is very helpful for the students that makes teachers and students at the same level. It probably indicates that the teachers are able to track the progress of their classes.

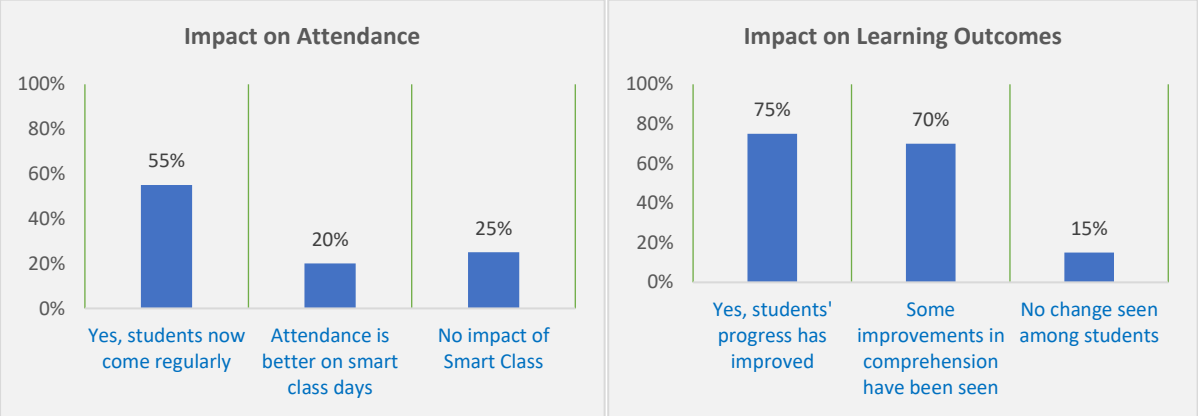
Students in focus groups clearly reported that they regularly attend smart class, and their teachers use the interactive flat panel as the green board for teaching and split windows to show the videos related to the topics taken up by the teachers.

When asked about the benefits of smart classes, students from 13 out of 15 schools (N=129) clearly stated that the visuals along with audio provides a different experience which is easier to understand the concepts and principles in science and motion videos helps in the better comprehending the mathematical formulae and methods. In 9 out of 15 schools (N=92), students had opinion that the benefit of smart class is that teachers provide better examples and show the videos to relate the topics being discussed. It increases the engagement of students in the class.

Students also claimed that use of interactive flat panel (LED TV) provides an opportunity where teachers initially write the discussion and provide the details, which remains on the board. Later, the teachers create another window to show the videos or digital content (such as PowerPoint presentation) and relate the matter written on the board and content shown in the video or presentation. This is the easiest method of understanding and learning and simple to memorize the definition and concepts.

Teachers were asked to specify whether there is any improvement in attendance and students' learning outcomes through Smart Class. Teachers expressed their perception on the impact of smart class in their schools on attendance and learning outcomes as shown in the following graph.

Graph 3: Impact on Students' Attendance and Learning Outcomes (N=20)



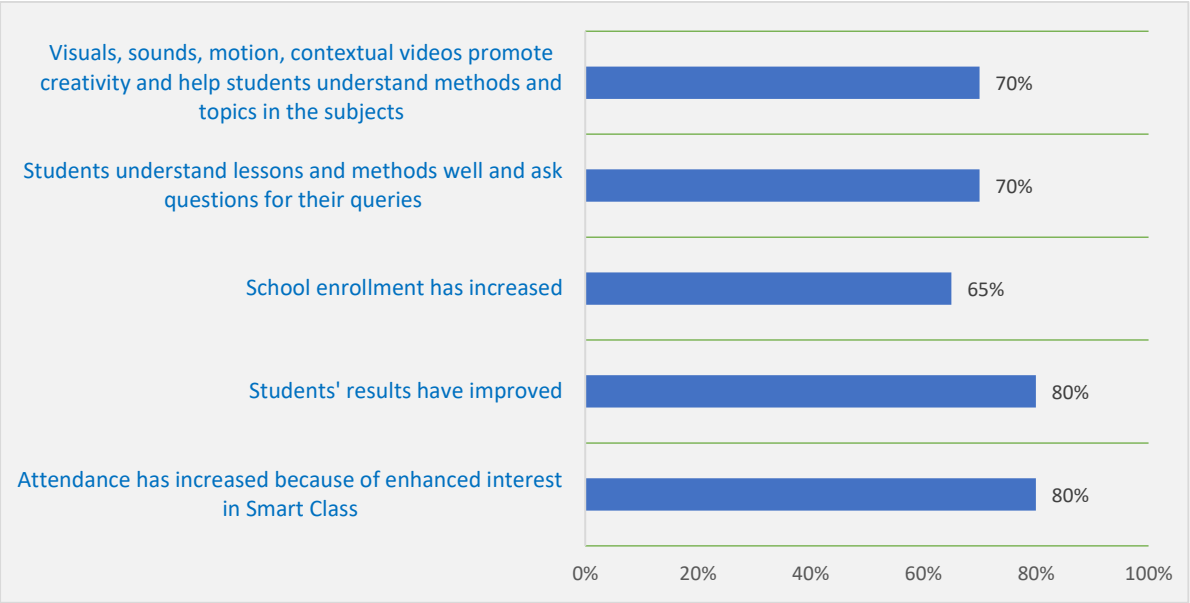
As evident from the graphs that 55% of the teachers had opinion that students became regular as they have interest in smart class and the teaching pedagogy where there are discussions on topics and teachers ask questions to assess the level of understanding among students vis-à-vis identify the students who face challenges in comprehension and showing discomfort. There were about a quarter of teachers (25%) who thought no impact was seen among them.

With respect to the learning outcomes, three out of four teachers (75%) felt that they could observe the progress in students' learning outcomes along with more than two-thirds (70%) who had a notion that they had seen improvements in the abilities of the students in comprehension during the classes in understanding the concepts and translate into their learnings.

Perceived Positive Impact of Smart Classes on Students

While discussing with teachers, information on sought on the type of positive impact on students they had seen in the past due to their teaching pedagogy where smart class has been used for delivering the topics. Out of all, two major positive impacts shared by 80% of teachers included (a) attendance got increased due to their enhanced interest in the smart class and discussions during the classes in the learning environment; and (b) improvements were seen in the students' learning outcomes as shown in the following graph.

Graph 4: Positive Impact of Smart Classes Among Students (N=20)



Other impacts included creativity among students had been increased due to better understanding of topics through visuals, audio and motions and increment in the proportion of students who participated more into the discussions (both 70%). Teachers demonstrated their great satisfaction with the smart class support that has made their work interesting and comprehensive in terms of impacts seen among the students.

Discussion with Principals and SMC members revealed that both the stakeholders were very convinced with the smart class provisioning provided to their schools. In all, 13 Principals and 11 SMC members were of the opinion that students learn faster after taking the lessons and watching the videos and presentations. The interactive panel has several features that generates a conducive environment for the students where students raise their voices to know more about the topics, discuss their queries and seek the redressal of their grievances, if any.

The principals also mentioned that the teaching through interactive panel has provided the opportunity to the teachers that they can easily identify the students who are proactive and those who could not understand the lesson or topic being discussed.

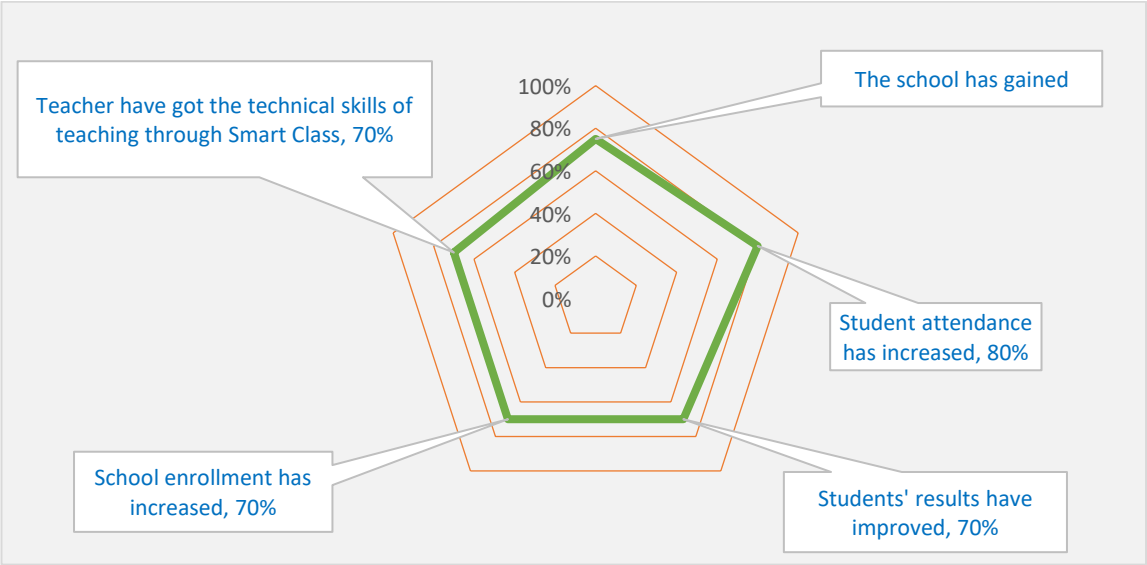
Interactive flat panel is very effective for the students shared by all the Principals and SMC members.

The principals and SMC members expressed their satisfaction with the type of support provided to their schools where the interactive panel is being optimally used for teaching. SMC Members claimed that they have seen the students operating the interactive panel in absence of teachers also for their classes. A few Principals also shared that the teachers use the interactive panels as boards during the class tests which they save it for the next use also.

Type of Benefits to School Due to Inclusion of Smart Class

One of the key benefits that was perceived by the teachers and principals (75% both) that the school has gained a fame that teachers teach using smart classes and show the content which helps students in better comprehension and help students in choosing the science and mathematics in higher studies. About 70% of teachers had opinion that the enrollment has got increased. Following graph portrays the type of benefits that school has got after the inclusion of smart classes.

Graph 5: Perceived Benefits for School Due to Smart Class (N=20)



STEM Labs

The purpose of STEM labs is to help students develop "thinking skills"—a set of abilities that enable them to learn and change fast. Through model experiments and project-based learning, STEM laboratories are instructional environments that promote problem solving and active learning. Students can participate in experiential learning in an immersive setting thanks to these designated areas. The specialised tools, resources, and technologies found in STEM labs, as opposed to traditional classrooms, allow students to apply theoretical knowledge in a real-world, practical setting.

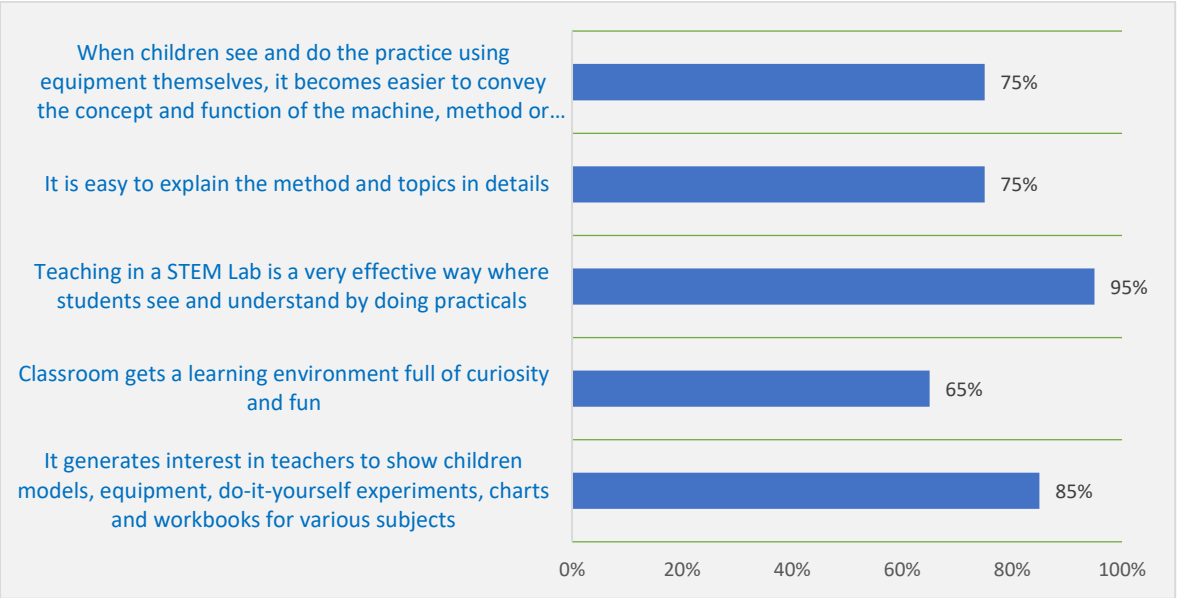
Not all the schools in the public sector have STEM Labs and the HDFC Bank Parivartan provided the STEM Lab in the project schools so that students can enjoy the experiential learning within their schools. Teachers were also provided with the models and equipment so that they use them for teaching and exposing their students to a world of learning Science, Technology and Mathematics.

Students from 10 out of 15 schools (N=98) reported attending the STEM Labs at the frequency of 1-2 times in a week and students in 5 schools mentions that it depends on the topics whether STEM Lab is needed, or not which teachers decide. In all the schools, students overwhelmingly told that teachers show the practical on using models and diagrams given in the posters and charts such as Gravitational Force, Magnetic Force, Human Anatomy includes various organs, etc.

Perception on How STEM Lab Helps Teachers

All the teachers were posed with a question to specify how the STEM Lab helps them in teaching. Almost all the teachers (95%) were in agreement that STEM Lab helps them in converting theoretical concepts into real learning through experiments. The teachers demonstrate to transform their theory into practical exercises which makes the students knowledgeable and clarify their doubts and sustain their learnings too. Later, students do the same practical for their hands-on experience. About 85% of teachers had a view that STEM Lab generates interest among them on what to teach and how to show things happen because of scientific principles and theory. About three-fourths of them (75%) could specify that STEM Lab has given them opportunity to show and explain the concepts of science and demonstrate the body organs and their functions. Students see at the table and contextualize the concepts which helps them in scoring good marks. Following graph shows the ways through which teachers get help in their teaching through STEM Lab.

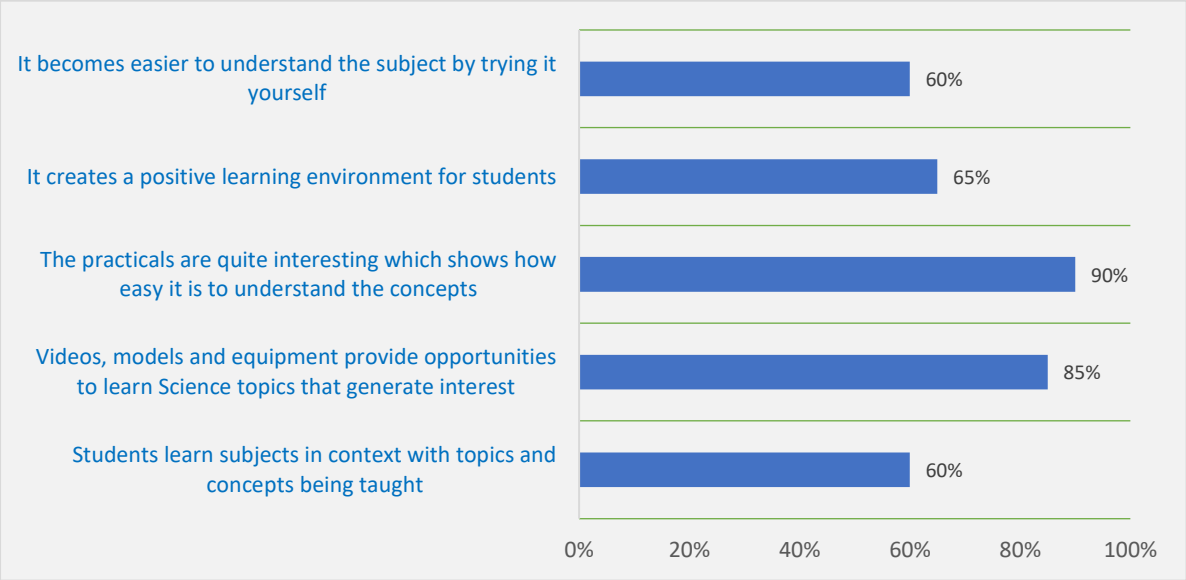
Graph 6: Perception on How STEM Lab Helps in Teaching (N=20)



All the teachers had the similar views that STEM Labs are the ideal way of teaching the students where students can see theoretical learning into practical by doing the exercises. Teachers acknowledged that the support has been very beneficial for them in their teaching practices.

Further, all the teachers were asked to give your opinion that how the STEM Labs generate interest among students. About 90% of the teachers expressed that practical exercises are interesting that generates interest among the students and show them how easy is to understand the concepts and principles. Moreover, 85% of teachers felt that videos along with models and instruments generate integrated learning experience which motivates them to study Science and Mathematics. Following graph portrays various perceptions on how the STEM Labs generate interest among students.

Graph 7: How STEM Lab Generates Interest among Students (N=20)



It was encouraging to note that teachers understand the importance of STEM Labs for them as well as for the students. The assessment team observed that teachers were using STEM Labs and value the

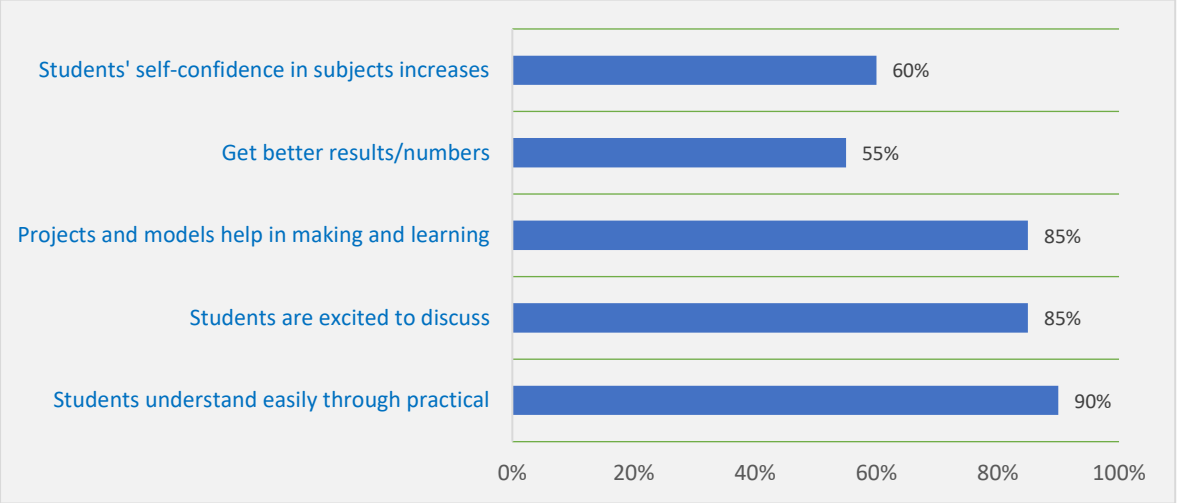
support received from the HDFC Bank Parivartan. In fact, some of the teachers demanded more support for the new models and equipment for the students.

In 12 out of 15 schools, students were happy in sharing that they are given demonstrations for all the topics for which models, diagrams, and charts, etc. are available. It is a very effective process as we visualize things in our minds and see the practical in front of us and then undertake the similar experiment on our own. Teachers provide us information one by one for every part or section of the instrument or organ in the model or diagram which gives us an opportunity to ask questions and get our doubts clarified. In 5 schools, students mentioned that the teachers initially take class and finish the topic and then expose us to audio-video presentation or videos.

Perceived Benefits of STEM Lab

Post obtaining the responses on how STEM Labs in teaching and generate interest among the students, teachers were asked to mention the benefits that they think that STEM Labs ensure. One of the key benefits shared by 90% of the teachers that practical work in STEM Labs makes the students comfortable in learning and understanding the concepts. About 85% had the opinion that after doing practical exercises related to theory lectures, students get encouragement to discuss more on the topics and ask questions to develop their insights. Following graph depicts the perceived benefits of the STEM Labs shared by the teachers.

Graph 8: Perceived Benefits of STEM Lab (N=20)



One of the potential benefit was students gain self-confidence on topics they learn and perform better in the exams and score better grades.

The key benefits shared by the students during the focus groups included STEM labs provide them an opportunity to learn by doing and relate the topics in the diagram and models. Learning gets enhanced multiple times when we learn and apply in doing practical at STEM Lab. Students clearly link the theoretical aspects with the practical processes on models or using mechanical instruments. Many students were keen to share that it gives an idea of making diversified projects related to the topics under the teachers' guidance.

All the principals and SMC members had the similar opinion that STEM Labs are the key resource for any school, and they are fortunate to have one. The impression of the principals and SMC members was that students interest get enhanced in the subjects due to STEM Labs, students participate more in the STEM Labs to conduct practical and engage in the topics-based discussion.

The principals also informed that the students of Grade 10th are provided with additional classes in the STEM Labs for their revisions and doubt clearance prior to the exams.

Challenges in Using Smart Classes and STEM Labs

The assessment team asked the target groups to share the various obstacles or challenges they encounter in STEM labs and smart classes. The discussion yielded the following challenges for both the components.

Smart Class

- Internet connectivity and power supply are the two key challenges shared by students in 4 schools.
- Students in two schools mentioned that their schools do not have adequate number of teachers who can take regular classes on the interactive panel.
- Principals of six schools informed about the issues with internet connectivity and 3 principals complained about the long power cuts which restricts the recharging of the inverter battery.

STEM Lab

- STEM Labs can be used in the presence of teachers only as shared by students in 2 schools.
- More models and instruments are required for the STEM Lab as per the curriculum, shared by the students of 4 schools.
- The principals in 2 schools mentioned that the models and supplied materials have got damaged due to regular use by the students because of inappropriate handling.
- Two principals feel that there should be a dedicated teacher for the STEM Labs, which is a bigger challenge.

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 Schools in Rajasthan and Jammu & Kashmir.

Relevance

The project was found relevant for the government schools covered in both the states. In order to strengthen the ICT-enabled learning in the government schools based in the rural and peri-urban areas, the project has the potential to provide adequate infrastructure in smart classes with advanced features. The schools were appropriately selected in discussion with the government department after conducting the baseline study based on the information captured from the schools as well as mapping with the project objectives. Largely, the schools were selected in discussion with the government officials at the Education department based on their suggestions. School principals were also consulted prior to the selection for identifying their needs and current status of ICT-enabled learning. **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 baseline study through physical verification.**	5

Coherence

Under the project, the students were given sufficient and adequate access to the smart class for all the subjects where teachers felt the need for the interactive sessions on the topics. The students were also provided with the general knowledge and current affairs related information so that they are exposed to the world events and happenings. All the principals, teachers and SMC members were found in sync with the usefulness of the HDFC Parivartan support which is very effective and efficient. The project not only provided the smart class and STEM Labs but also provided the access to sports and library facilities that enhances the development of reading skills and overall personality. **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 ICT-enabled learning through e-content and interactive panel.**	5

Efficiency

HDFC Bank project support to the government schools in two states was efficient in terms of reach of the intervention. All the schools covered under the intervention provided access to all the students of Grades 6 to 10 to the smart classes and STEM Labs. Almost 2 teachers in each school got trained for using the smart class and its operations. Principals and SMC members endorsed the usefulness of the interventions for both smart class and STEM Labs as they could see the benefits among the students in terms of better grades and marks as well as practical exercises that provided the easy understanding of the topics. **The intervention was identified as efficient appropriately for the students as well as teachers.**	5

Effectiveness

As expected the project interventions provided the opportunity to reach out to the large number of students through their involvement and engagement in discussions at Smart Class and STEM Labs. Teachers have done their tasks effectively but still students have a limited access to operate the smart class and use the interactive flat panel and STEM Labs. The reason being school administration restricts them to use both in absence of teachers. In case, teachers are not available then other teachers provide the opportunity to use the resources under strict guidance and for a specified time. This is done to protect the resources and students do not have independent access to the resources. **HDFC Bank support has been found effective to an extent where guidance is available through teachers.**	3.5

Impact

The great impact was seen in Jammu sector in J&K states where the district administration included the government schools in the Smart City project and provided 85 inches interactive panels to all the government schools for the Grades 6 to 10. This was done after the implementation partner informed about their smart class intervention in Jammu and seeking their approvals. The assessment team observed that the schools were provided with the interactive panels bigger than the project supported flat panel, with proper wall stands. In terms of Impact, the HDFC Bank support has demonstrated its impact to a great extent as confirmed by the teachers and principals. Both the stakeholders shared that they have observed improvements in the students learning outcomes as they felt that students learn easily and faster through theory and audio-video content that engages them in fruitful discussions. Not all schools, but majority of schools are using STEM Labs for the practical only and classes are conducted before visiting the STEM Labs. This means that the students are provided with lectures in the smart class and then taken to the STEM Labs for the practical and exposure to the models and mechanical activities in the Lab. All the principals and teachers were of the opinion that attendance and enrolment have got increased and learning outcomes are also improved. **The HDFC Bank support has demonstrated the satisfactory IMPACT on the students.**	4

Sustainability

All the schools had school development plan and active SMC members who regularly meet on a monthly interval. There were many schools who have the equipment under warranty and almost all have some provisions of school level repair and maintenance provisions. Though not dedicated funds for ICT related expenditures but available for overall school level repair and maintenance.	5

Overall score – 4.6 out of 5

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