



Impact Assessment of Digital Classroom Project in Government Schools of Rajasthan, Madhya Pradesh & Maharashtra

A Study Report



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Abbreviations

HM	Headmaster
CSR	Corporate Social Responsibility
IDI	In-depth Interviews
FGD	Focus Group Discussion
ICT	Information and Computer Technology

Chapter 1

Introduction

1.1 HDFC Bank CSR – Parivartan Program

HDFC Bank helps in transforming lives of millions of Indians through various social initiatives. HDFC Bank has a comprehensive program named as 'Parivartan' aiming to contribute towards the 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 social initiatives are delivered through various types of support provided by the bank, such as financial support provided for projects conducted by non-profit organizations across the country, funding educational and similar institutions through scholarships, grants, and promoting giving by employees by matching their contribution to social causes.

1.2 About YUVA Unstoppable

Yuva Unstoppable is a non-profit organization that works in the development sector and has provided benefits to over 2000 schools and 1 million underprivileged children across 41 cities of India. Yuva has been in the sector working on multiple thematic areas covering children education, nutrition, health, etc. Yuva partnered with HDFC Bank and supported 74 government schools in Rajasthan (29 schools), Madhya Pradesh (30 schools), and Maharashtra (15 schools). The schools were provided with a smart classroom set-up along with digital content.

1.3 About Smart Classroom Project

Across India, state governments are supporting their schools with smart classrooms by providing them infrastructure considering their budget provisions in the phased manner. Such requirement for educational infrastructure support for setting up the smart classrooms was identified in Rajasthan, Madhya Pradesh and Maharashtra. Yuva in discussion with HDFC Bank CSR sought support for setting up Smart Classrooms in the government schools in all three states. HDFC Bank provided funding to Yuva since HDFC Parivartan Program has a mandate to provide support to create better learning environment in schools that helps in the increase in enrolment, class attendance, and interest among students through digitisation of classrooms in schools. Yuva was funded to identify 74 schools and set-up smart classrooms and furnish all the digital classrooms with smart projector, posters (IEC materials) and classroom infrastructure that could provide joyful learning environment through paintings and drawings, colourful benches, white boards, etc. The aim was to provide a joyful learning environment to the students to enhance their learnings through graphical and animated digital content for building their skills and generate interest in Science and Mathematics subjects for future.

1.4 Objectives of the Project

The key objectives for the project included:

- To establish and facilitate the environment to promote the usage of ICT in Government Schools. Critical factors of such an enabling environment include widespread availability of access devices, connectivity to the Internet and promotion of ICT literacy.
- To enable every student to become "Digitally Literate".
- To enhance the learning opportunity for students and to make the process of learning interesting and effective.
- To increase the level of engagement of students to promote critical thinking and analytical skills by developing self-learning.
- Personalize learning as per learning level and pace of students.
- To train school-teachers in effective delivery of education by using IT tools for teaching with latest methodologies & aids
- To create peer learning environment in the classroom.

HDFC Bank intended to conduct the impact assessment to evaluate effectiveness and efficiency of the programs on following parameters:

- How smart classrooms affects the learning environment, education and how it proliferates learning process?
- How the digital learning tools in smart classrooms helped to increase student's engagement in studies, improving attendance and regularity, motivation and facilitation for self-learning and improved learning levels of students.

IMPACT PSD was entrusted to carry out the impact assessment and the ensuing chapters provide the description on study methodology as well as salient findings.

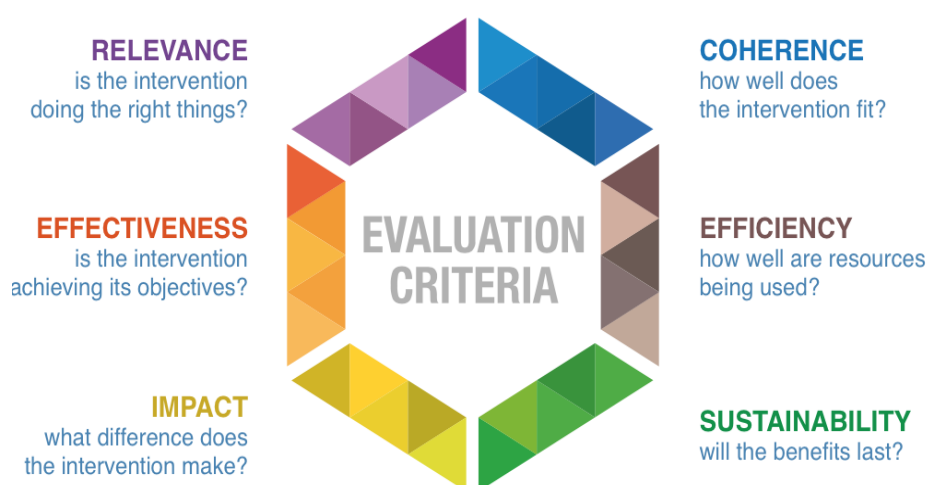
Chapter 2

Study Methodology

This chapter describes the detailed study methodology adopted for the impact assessment study including research methods used, sample size, sampling procedure and process of survey implementation.

2.1 Assessment Framework

The standard OECD-DAC criteria¹ which is considered as one of the gold standards in evaluation has been used. This framework recommends adapting this framework, wherever feasible and applicable:



Using this framework, following questions/indicators were adopted to assess the project using the six parameters stated above in the picture. These questions were finalized in discussion with the HDFC team.

	Indicators/Questions
Relevance	<ul style="list-style-type: none"> • What criteria were adopted by the NGO to grant support to the schools through Government Education Department? • Did the school administration also feel the need for digitization?
Coherence	<ul style="list-style-type: none"> • What challenges were faced by the school in setting up the smart class infrastructure? • Options for the availability of repair and maintenance services
Efficiency	<ul style="list-style-type: none"> • What proportion of students could get the benefits of the support? • Which grades and how many subjects were covered. • What proportion of teachers received training in instructing the class
Effectiveness	<ul style="list-style-type: none"> • The extent to which the investment achieved the intended objectives/outcomes of HDFC Bank CSR
Impact	<ul style="list-style-type: none"> • Proportion of students that demonstrated higher students learning outcomes. • Proportion of teachers who gained proficiency in taking smart classes
Sustainability	<ul style="list-style-type: none"> • Contribution to the school and technical and financial capacity of school administration to manage smart class gadgets/ equipment

¹ <https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>

2.2 Research Methodology

A method-mix approach was adopted for the impact assessment study incorporating physical verification using quantitative checklist and in-depth interviews with teachers and headmasters were conducted. In addition, focus group discussions were conducted with students to capture their views and experience with digital classroom.

2.3 Sample Coverage

Under the study, 25% of the total schools (N=74) that were supported under the smart classroom project were covered. In all, 18 schools were physically visited, and impact assessment was undertaken. Following table shows the overall sample coverage across three states.

State	Schools	Observation Checklist	Principal/HM	Teachers	Students
Madhya Pradesh	6	6	6 IDIs (Male = 3, Female = 3)	6 IDIs (Male = 4, Female = 2)	5 FGDs (Boys = 21, Girls = 28)
Maharashtra	6	6	6 IDIs (Male = 5, Female = 1)	6 IDIs (Male = 5, Female = 1)	6 FGDs (Boys = 34, Girls = 31)
Rajasthan	6	6	6 IDIs (Male = 3, Female = 3)	6 IDIs (Male = 4, Female = 2)	6 FGDs (Boys = 21, Girls = 21)

2.4 Development of Tools

Physical verification was done with a checklist developed to capture the availability and functionality of equipment and infrastructure. In order to capture the views of Headmasters and experience of teachers with smart classes, two in-depth discussion guides were developed. Additionally, students were covered through focus group discussion using a separate discussion guide. Hence, one quantitative checklist, 2 in-depth discussion guides and one FGD discussion guide were developed and finalized in consultation with HDFC Bank CSR MI team. All the tools were translated into Hindi through in-house capacity of translations of the tools at IMPACT PSD.

2.5 Team Deployment

A team of 2 Coordinators was deputed for each state to cover the sample of 6 schools in 3 days (@ 2 schools per day). All the team members selected for the data collection were from the same states. The data collection was completed in 10 days.

2.6 Training of Data Collection Teams

IMPACT PSD conducted a 1-day training of the data collection team who were oriented in detail to methodology, study requirements, contents, and survey specifics. All the team members were informed about the sensitivity of work and kind of precautions they need to adhere to.

2.7 Survey Implementation

- Initially, Yuva in association with their PoC (point of contact) contacted the schools and permissions were obtained for the data collection and date on which the team could visit the schools. We sincerely acknowledge their support received from Yuva in completing the work.
- One team member in a selected school contacted the school headmaster and teachers who were associated with the smart classroom. Post obtaining the informed consent, the team member visited the smart classroom.
- In the smart classroom, the team member captured the details using the checklist and ensure all the desired information and points were captured.

- Post verification of smart classroom, the team member conducted the in-depth interviews with teachers who had conducted the sessions using smart classroom and digital content provided by Yuva.
- Lastly, the team member conducted the focus group discussion with the students using the discussion guide to capture the experiences of students and understand how the digital classroom helped them in developing their understanding on the concepts, principles, etc.

2.8 Data Analysis and Report Writing

All the collected information was collated, and content analysis was undertaken. Finally, report has been prepared by senior researcher illustrating the salient findings.

Chapter 3

Findings

This chapter presents the salient findings of the study undertaken for the impact assessment of Smart Classroom Project of HDFC Bank. The collected information has been discussed at length to provide an overview on various components of the research indicating the impact of smart classrooms on students in three states. Following discussion provides the status of the project in the covered schools.

3.1 Smart Classroom Observations

Under the smart class project, Yuva with HDFC Bank support provided a smart projector with interactive digital board support as well as multi-media speakers and storage for digital content for teachers to use while delivering the topics. Additionally, schools were provided with digital content for Grades 6 to 10 in a built-in storage available with smart projector. In addition to the equipment and digital content, Yuva provided the logistical support such as transforming a classroom into interactive smart classroom with coloured walls and charts & posters, colourful benches for the students and flooring (as per the requirement). The key objective was to make the smart classroom with a joyful learning environment for the students as well as teachers. As per Yuva, the teachers were provided with a hands-on training on how to use digital content through smart projector and use of digital board writing feature of the smart projector.

In the assessment, physical verification of HDFC Bank support was undertaken as well as information on other equipment and materials available was gathered. The 18 government schools were visited in three states to assess the current status of implementation of smart classes. Following table provides the status of smart classrooms along with the available infrastructure.

Table 1: Smart Class and Available Infrastructure

Equipment	Madhya Pradesh (N=6)		Maharashtra (N=6)		Rajasthan (N=6)	
	Available	Functional	Available	Functional	Available	Functional
Total smart digital classes	6	6	6	6	6	6
Smart Projector	6	6	6	6	6	6
White Board	5	5	6	6	6	6
Smart Class Flooring	0	0	0	0	6	6
Classroom painting	2	2	0	0	6	6
Benches for the students	6	6	6	6	6	6
Digital Content Grade 6	2	2	6	5	6	6
Digital Content for Grade 7	2	2	6	5	6	6
Digital Content for Grade 8	3	3	6	6	6	6
Digital Content for Grade 9	0	0	6	6	5	5
Digital Content for Grade 10	0	0	6	6	5	5
Power backup for smart class	1	1	0	0	1	1
Posters/IEC materials	5	5	6	6	6	6

* School-wise Checklist has been annexed for reference

Assessment revealed that all 18 schools had smart classes with smart projectors and all were functional. Computers were available and working in all 6 schools of Rajasthan but Maharashtra had only 1 school where computer was available and functional. None of the schools in MP had computer. Similarly, 17 out of 18 schools had white board available at the time of visit. Probably, the white board was being used in some other class but not found in place at the smart classroom during the visit.

Seven out of 18 schools covered in all three states had desktop computer at the school level. However, flooring in the smart classroom was available in 6 schools of Rajasthan only. Strikingly, only 8 schools (44%) had

classroom paintings (6 schools in Rajasthan and 2 in Madhya Pradesh) which was one of the key features of the project to ensure joyful learning within the smart class. Maharashtra had no school with painted smart class.

All 18 schools with smart classes from 3 states had benches for the students as proposed in the project but not all the schools with smart classes had digital content for all the grades from 6 to 10 for the teachers to use while taking the classes. Another expectation was the availability of posters or IEC materials within the smart class and 17 schools had IEC materials available and displayed on the walls.

To assess how teachers take their classes during the power cuts, information on power backups was collected. Only 2 out of 18 schools had power backups such as inverter/solar panel for the smart classes.

In all the schools, smart class was used as per the topics and context that teachers decide as per their preference.

Overall, all 18 schools had smart class, projectors and benches available in the schools, only 1 school did not have white board. However, the concerning finding is that only 8 schools were having walls decorated with the painting to create a joyful and learning environment and only 6 schools had flooring in the smart class.

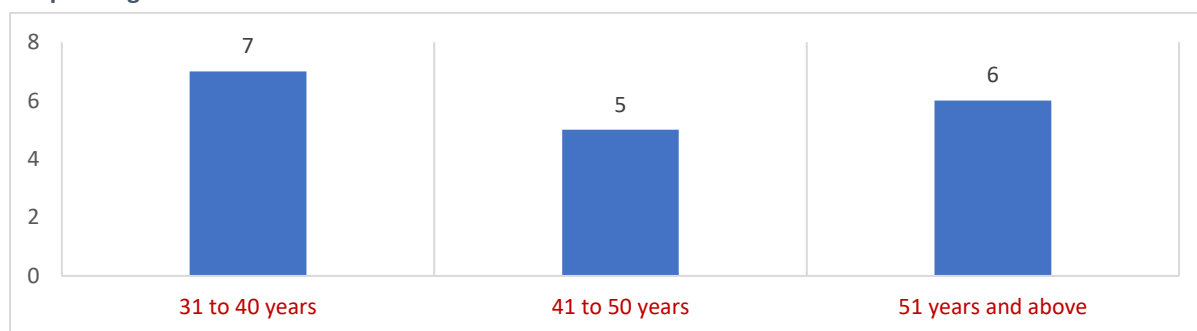
3.2 Discussion with Teachers

The Smart Class project was focused on two key pillars—(a) availability of smart class with infrastructure and digital content and (b) training of teachers who would deliver their subject-wise topics using the digital content and smart projector. Following discussion presents the views and opinions of the teachers shared by them along with their experience.

3.2.1 Profile

Across 18 schools, one teacher associated with the smart class was interviewed to assess their experience and views on the utility of smart class and how useful were the digital content supplied under the project. In the assessment, association with smart class was operationalized as any teacher who has at any point of time taught the students using smart projector in the smart class supported by HDFC Bank. In all, 18 teachers comprising of 13 males and 5 females were interviewed from three states MP, Maharashtra and Rajasthan 6 from each state respectively. The average age across all 18 schools was computed to be 44.6 and median age 45.5 across all three states. While state-wise, it was 51.8 Average and 51.5 median age in MP, 42 years average age and 42 years median age in Maharashtra and 40 years of average age and 39 years median age in Rajasthan. Graph 1 shows the age distribution of teachers as follows:

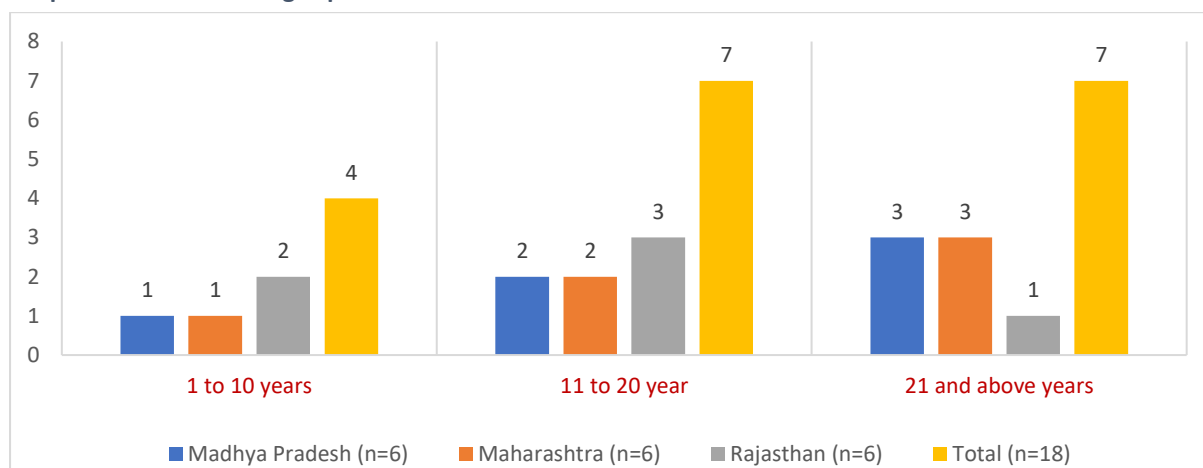
Graph 1: Age Distribution of Teachers



As seen from the graph that, 7 teachers (39%) each were in the age bracket of 31-40 years have taught in the smart classes. This reflects that a large proportion of teachers were young who were using smart classes in the schools. There were slightly more than one-third of teachers in the age range of 41-50 years who reported using the smart class for the students. Average of total teaching experience from all 3 states is 17.7 years.

3.2.2 Teaching Experience

The information on teaching experience revealed that similar proportion of teachers (7; 39%) each had more than 11 to 20 years and above 21 years of teaching experience respectively. Following graph 2 presents the status of teaching experience.

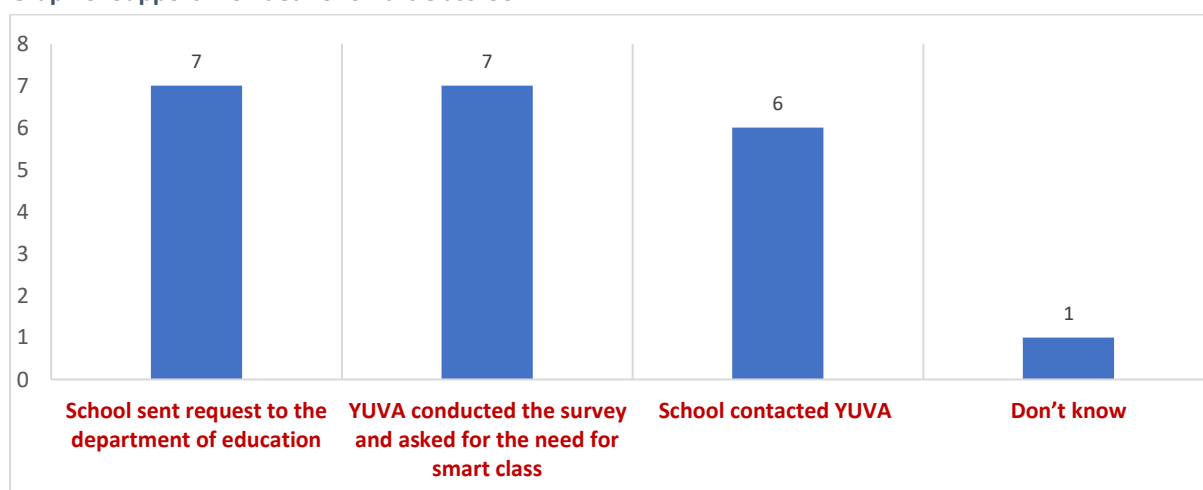
Graph 2: Overall Teaching Experience of Teachers

Out of total, seven teachers (39%) each had teaching experience between 11 to 20 years and above 21 years of experience respectively. Like age, overall teaching experience also suggests that high proportion of teachers were young who participated in the assessment.

3.2.3 Smart Classroom Setup in School

Further these teachers were asked to specify in which year the current smart class set-up was undertaken in their school. Largely, these smart class set up was undertaken during the years 2020 to 2021. All the 18 schools confirmed receiving Posters/IEC materials, 89% each received projectors, white boards, and digital content respectively.

An enquiry was made on how this HDFC Bank support was received by the school. In response to the query, teachers from 6 schools (33%) have said school sent request for this support to the department of education and teachers from 11 schools (61%) have said YUVA conducted the survey and asked for the need for smart class or School contacted YUVA organisation, there were 6% teachers who did not had any idea about this. The below graph presents the proportion of responses based on states. The following Graph 3 presents the proportion of teachers with their perception on receipt of HDFC Bank support.

Graph 3: Support Provided for Smart Classroom

3.2.4 Receipt of Training on Operation of Smart Projector

Under the project, one of the key tasks that Yuva was assigned was training of teachers on how to use smart projectors and the provided digital content using the smart projector. This was done to ensure the acceptance of support among teachers as well as making them accountable for using the smart class and digital content. Hence, the teachers were asked whether they received any training on operating the smart projector. Among the all 18 schools from 3 states, 16 said 'yes' for receiving a training but teachers from 2 schools had not received any training for operating digital classroom. All the teachers from Maharashtra and Rajasthan had received this training, but in MP 2 teachers had not received except 4.

"The training provided by Yuva was very useful as we were not aware that how these smart projectors work. Moreover, we had no idea on how to use digital content on smart projector."

Mostly, 56% teachers have reported that duration of received training was 1 day but 22% of teachers have also received training of 3 days, 6% teachers from only Maharashtra received 4 days training.

The training for operating the digital classroom was provided by different institutions as reported by teachers, 67% confirmed that YUVA staff/official have provided the training while 22% said Company that installed the setup, 17% had no idea and out of 18, teachers from only 1 school reported that government officials have provided this training.

It can be seen that teachers were very happy with the type of support they received not only in terms of set-up but also for the training provided by Yuva. Further, teachers were asked who had developed the digital-content provided by Yuva. In response to this query, 10 teachers responded YUVA Unstoppable organisation developed or compiled the digital content, while 6 had opinion that these were developed by private sector companies.

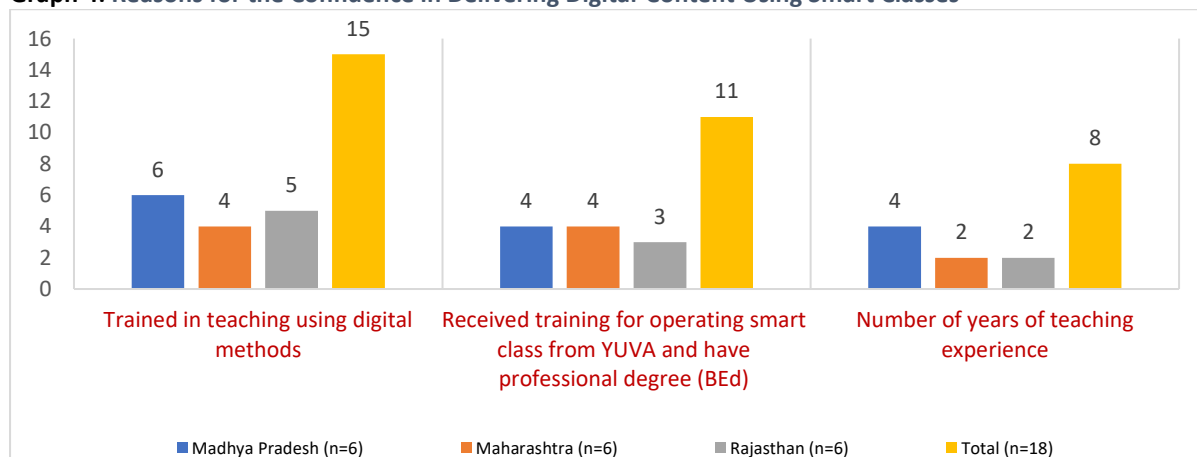
"Yuva officials also mentioned that the digital content was provided to these schools considering the type of digital content available in the state either through the government portals or private sector vendors."

3.2.5 Comfort in Delivery Using Smart Class

To assess the level of comfort among teachers on use of smart class for the delivery of their topics, they were asked for their opinion on the use of smart class. As many as 16 out of 18 school teachers responded that they felt very comfortable in delivering topics using digital-content while 2 felt only 'comfortable' but they also do not face any challenge. To get more clarity, the teachers were asked to specify the reasons behind this confidence. Following Graph 4 depicts the reasons for their confidence in delivery of topics using smart classes.

Encouragingly, all the teachers were found to be comfortable in delivering the topics using the digital content and smart class. This indicates that these teachers are satisfied by the quality of training received by them.

Graph 4: Reasons for the Confidence in Delivering Digital-Content Using Smart Classes



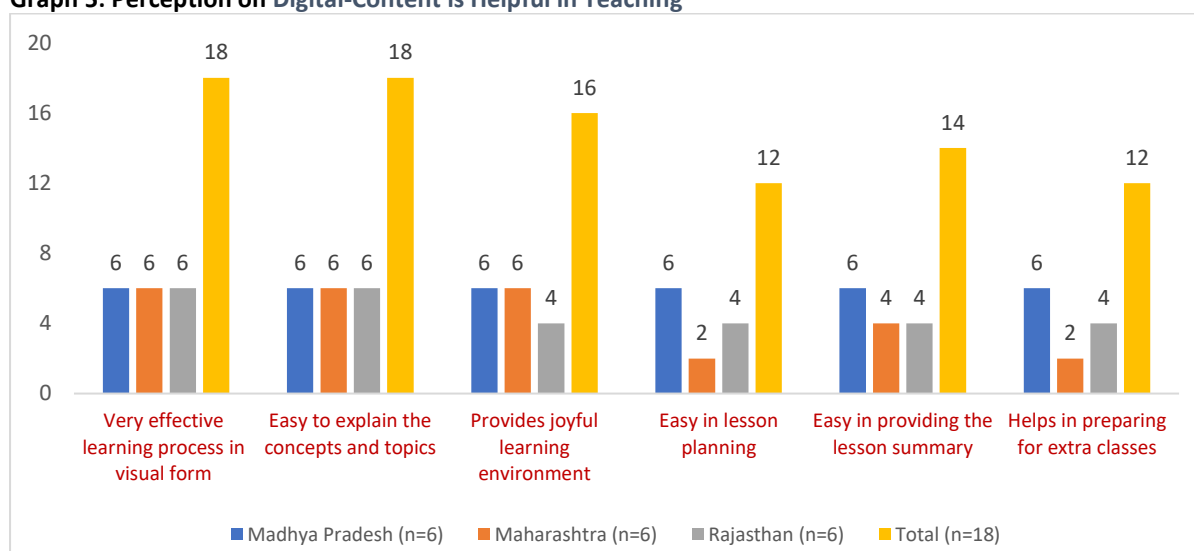
Findings from the above graph suggests that teachers had received training for using digital content in all the schools 100% in MP, 4 (67%) in Maharashtra and 6 (83%) in Rajasthan. Also, they possess professional degree in education (B.Ed.) and had teaching experience. All these factors are enough to make them confident to use digital content and smart projector.

In continuation, these teachers were discussed on how the digital content provided to them through HDFC Bank to be used through the smart class is helping them. In response, all 18 teachers responded that teaching through audio-visuals promotes very effective learning, which is why they feel that digital content helped them outstandingly. About 16 teachers had a view that digital classroom provides joyful learning environment and generates interest among students. All 18 teachers perceived that it is easy to explain any concept or topic in the smart classroom as students learn fast by doing and looking at something that is happening practically. However, 12 teachers each mentioned that it makes it easy for their lesson planning and also easy in providing lesson summary to the students post class or during the class. The following Graph 5 presents the proportion.

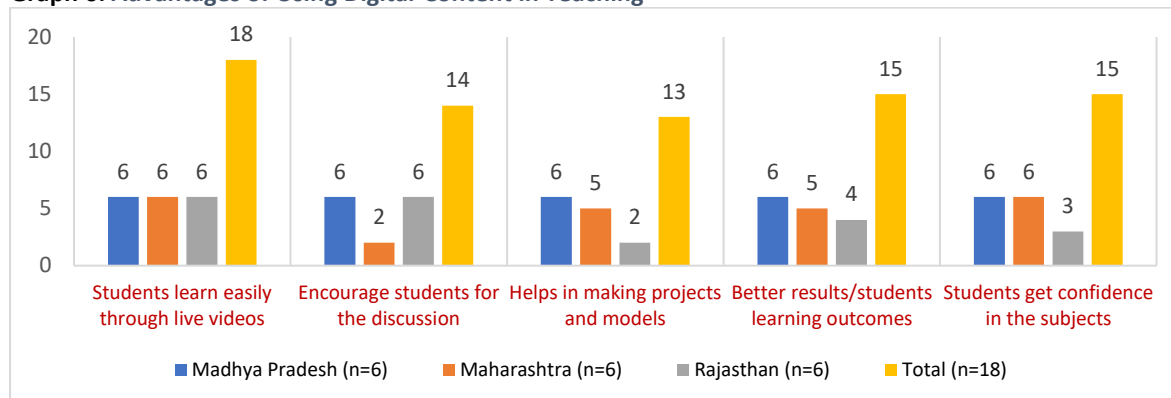
“Digital content has animated graphical content in audio-video format which makes the topic interesting, and students pay their attention towards the subject. They listen, pose questions, and seek answer to their queries.”

“As teacher, I prepare my lesson plans covering topics and decide the type of digital content to be used. All the topics and concepts are not available. Digital content helps in teaching along with discussion and question-answer sessions. This process helps me in identifying the topics that need to be revised and whether students have understood or not.”

Graph 5: Perception on Digital-Content is Helpful in Teaching



Further, the teachers were asked to specify the advantages of using digital content in the smart classroom. In response, 14 teachers thought that it encourages the students to get into discussion and clarify doubts. Other 18 teachers from all three states, claimed that students learn easily through live videos where they see animation and graphics, and they remember what they learnt for a longer period of time. Another 15 responded that using digital content in teaching results in better students learning outcomes. The advantages of using digital content in their teaching have been shown in the following Graph 6.

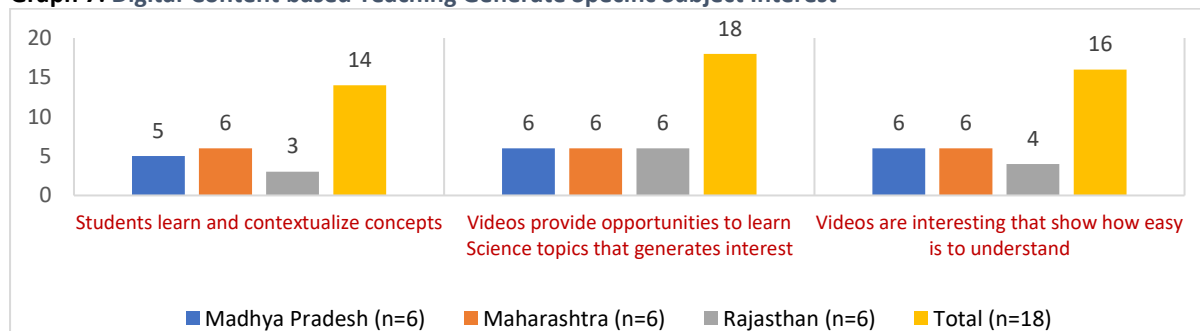
Graph 6: Advantages of Using Digital-Content in Teaching

It is promising to observe that all the teachers reported that students adore teaching through digital content in smart classes. This supports the vision of HDFC Bank of creating enabling learning environment for the students to understand the principles, concepts and mathematical concepts in a video form (graphics and animation). This generates interest among the students to opt Science subject in their higher studies. Earlier they had a fear in their minds.

3.2.6 Perception on Teaching Pedagogy

When posed a query, teachers perceived that teaching pedagogy wherein they use hybrid method such as smart class using digital content and activity-based teaching both are effective. All the 18 teachers found the current pedagogy where digital content is used through smart projector is very effective or effective. According to them, this pedagogy has remarkable impact on the performance of the students in all aspects. To explore further on aspects, teachers opined that student(s) became more regular, active and curious in learning the concepts and attending schools.

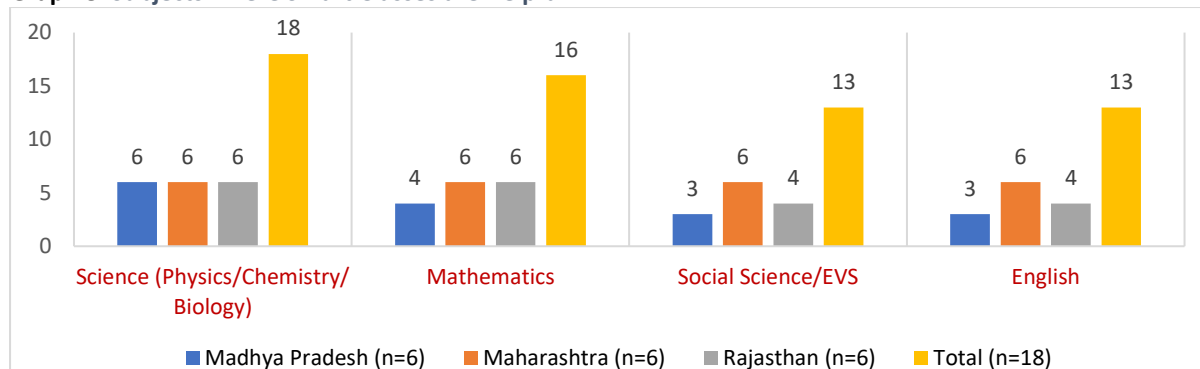
All the teachers had opinion that the digital content-based teaching through smart classes had a huge impact on students and it has generated subject-specific interest among the students. Moreover, smart classes are very effective as compared to traditional classes. A large impact has been that the students are regularly attending schools after introduction of smart class teaching approach. Almost all the teachers thought that they have observed that students are performing better and scoring good marks and grades. A few teachers stated that students respond to the queries during the classroom discussion on the topics.

Graph 7: Digital-Content based Teaching Generate Specific Subject Interest

Graph 7 shows that 14 out of 18 (5 from MP, 6 from Maharashtra and 3 from Rajasthan) teachers shared that students learn and contextualize the concepts after going through the smart class wherein they see the live practical on videos. All teachers (18) clearly stated that when students look at the videos demonstrating the Science topics and practical based on the topics, they learn and understand the Science behind the phenomenon and concepts, how machines operate, comparing the two objects, machines, etc. A total of 16 teachers (all teachers from MP and Maharashtra and 4 from Rajasthan) perceived that videos generate interest among students, and they easily understand the process such as universe, planets, how day and night reciprocate, etc.

Teachers were asked about the subjects in which smart classes are helpful in generating better understanding. All the teachers reported that Science subject was easy to explain with the smart technology, and 16 teachers claimed the same about Mathematics, (except 2 teachers from MP), and that students also grasp easily with the help of digital content using smart classes. Graph 8 shows the subjects in which smart classes are helpful.

Graph 8: Subjects where Smart Classes are Helpful

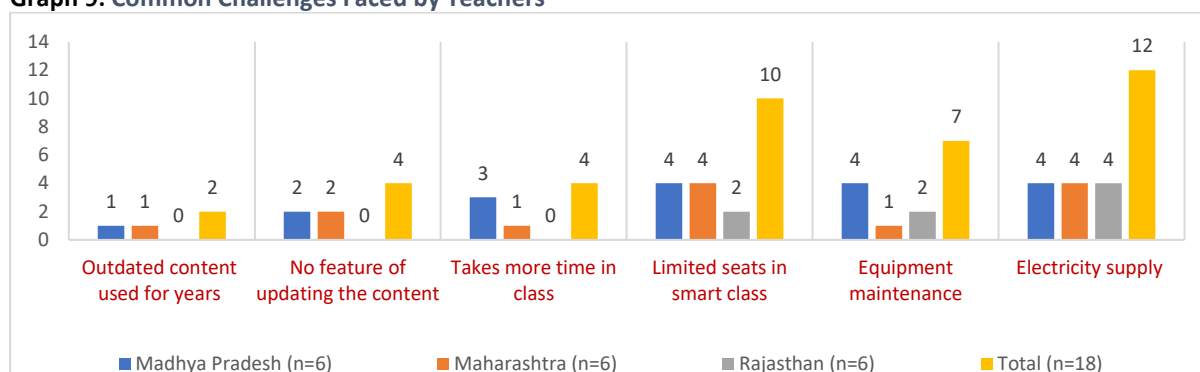


The digital content-based learning has increased the level of interest among the students regarding education and exclusively towards Science and Mathematics subjects. The teachers shared that students' learning outcomes have improved which is a positive aspect. They have been able to generate interest towards the Science and Mathematics among students through smart classes.

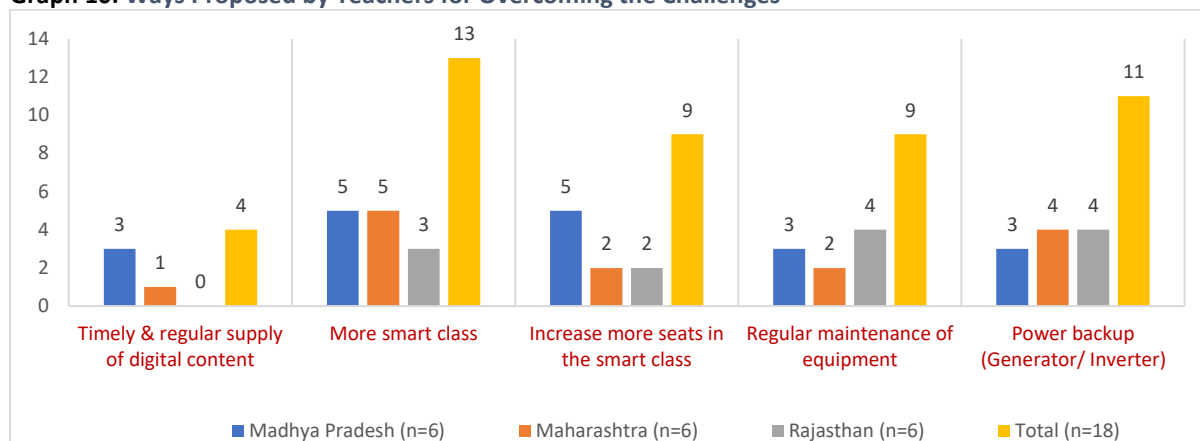
3.2.7 Common Challenges Faced by Teachers

Though smart classes have impacted the students' performance and generated interest in students, teachers also have certain challenges in performing their duties. An attempt was made to see the type of challenges these teachers face while delivering their topics through smart classes. About 12 out of 18 teachers responded that fluctuating electricity supply in their schools was one of the major challenges for using smart classroom for teaching, mainly Science and Mathematics subjects. Majority of the schools are located in the remote areas where schools get interrupted power supply (electricity). Majority of schools do not have power backups which hinders smooth running of smart classes. 4 teachers perceived that smart class takes more time in comparison to traditional classes as it takes more time in discussion and setting up the digital content also takes time. Graph 9 depicts the type of challenges faced by the teachers while using smart classes.

Graph 9: Common Challenges Faced by Teachers



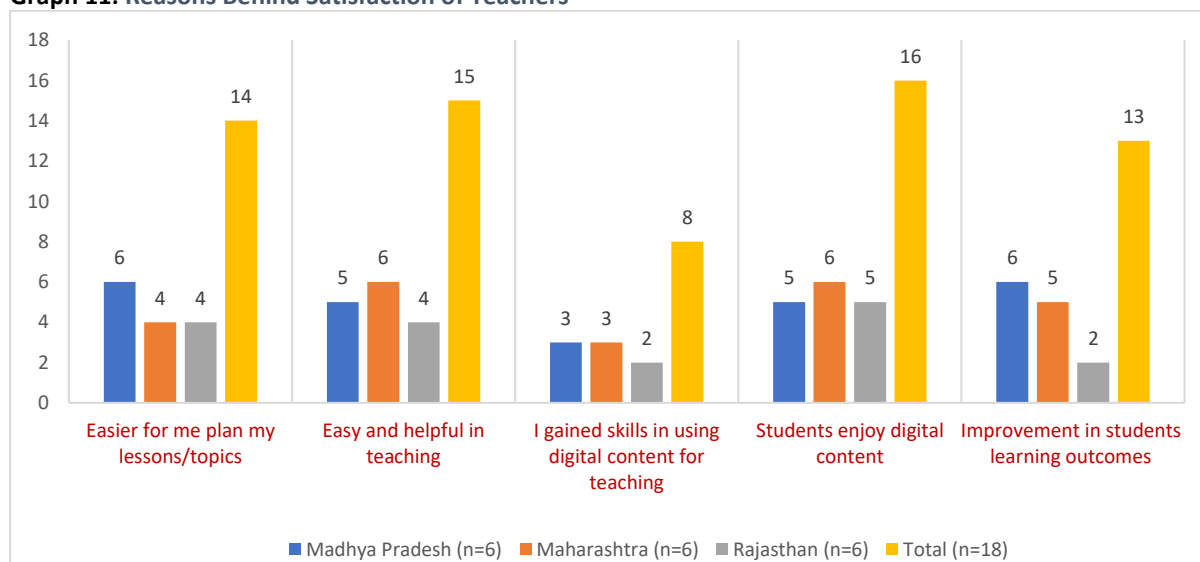
To address the challenges, teachers proposed some solutions to overcome these situations. About 11 out of 18 teachers mentioned that power backup system (solar power panels or inverters) should be provided in the school for the better and smooth functioning of smart classrooms. Four teachers thought that digital content should be updated on a regular basis which would incorporate newer visualization and presentation as well as updates will be timely in the current context. Also 13 teachers (including 5 from MP, 5 from Maharashtra and 3 from Rajasthan) mentioned that number of classrooms against students are less, more smart classes setups are required. Following Graph 10 shows the suggested ways to address the challenges faced by them.

Graph 10: Ways Proposed by Teachers for Overcoming the Challenges

3.2.8 Parents Perception on Smart Class and Teachers' Satisfaction Level

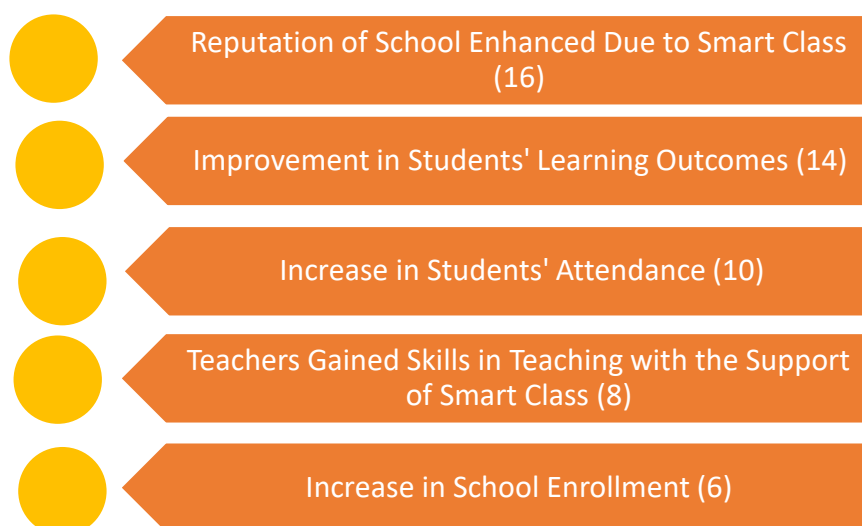
An attempt was made to ascertain the parents' perception towards the smart class. As teachers interact with parents on regular basis through PTMs and SMC meetings, they were asked to inform. About 10 out of 18 teachers responded that parents like the use of smart class and teaching method and feel happy about their children. They consider this upgradation as a modern way of teaching which they did not have. Six teachers (out of 18) shared that a few parents acknowledged that smart class support has been instrumental in securing good marks for their children.

Further, the teachers were asked about their own satisfaction in using digital content and delivering the topics through smart classes. All 18 teachers demonstrated their full satisfaction with this new pedagogy that includes technology. The reasons for the satisfaction included 'students enjoy digital content' (16) and 'learn easily and fast as this is helpful in teaching' (15). Following Graph 11 presents the reasons for the satisfaction of teachers.

Graph 11: Reasons Behind Satisfaction of Teachers

3.2.9 Changes Observed After Introduction of Smart Classes

According to the teachers, they have observed a lot of changes due to smart classes provided by HDFC bank. Following illustration shows the type of changes these teachers could observe.



As evident, 16 in 18 teachers reported that the reputation has been increased because people are aware that school has the smart classroom, 14 reported that learning outcomes has improved after introduction of smart classes. Ten teachers could mention that attendance of the students has been increased. Eight teachers mentioned that they have gained skills for using digital-content. Six teachers mentioned that they have gained skills for using digital-content.

Support from Yuva

On asking, it was found that YUVA Unstoppable has been providing support to all the schools whenever required for the maintenance of equipment. According to the teachers, Yuva has also provided a contact number to the schools for any grievance redressal or for any equipment related support. These services are being availed by schools free of cost for servicing or repair and maintenance of equipment, which are under warranty.

As such, none of the schools had any maintenance provisions available with them.

3.3 Students' Assessment

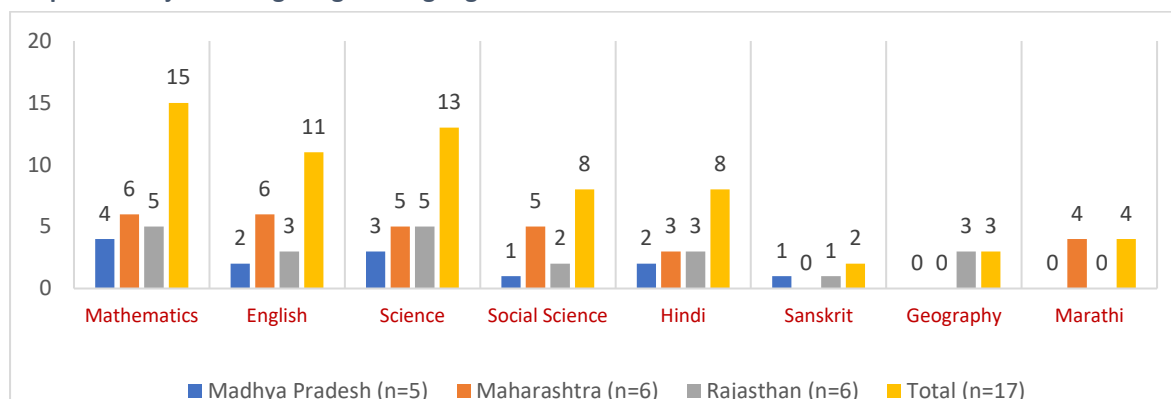
Under the assessment, 18 focus group discussions were conducted with students to understand their experience with smart classes and changes observed by them. In all 17 groups, a total of 156 students (49 from MP, 65 from Maharashtra and 42 from Rajasthan) were involved who shared their opinion, perception and changes observed due to inclusion of smart classes in their schools.

All the students participated in the focus groups were those who have had participated in the smart class organized by their teachers. Hence, the students were informed about the purpose of the study and other details on what points would be discussed. It was found that all the students were willing to share their views and all of them gave consent for the discussion.

3.3.1 Teaching Through Smart Classes

When discussed about the subjects taught by the teachers through smart classes, students of all 15 schools reported Mathematics as the prime subject followed by 13 schools, where Science is taught. Following Graph 12 shows the subjects taught by their teachers using smart classes.

Graph 12: Subjects Being Taught Using Digital Content in Smart Class



It can be seen that digital content related to Hindi and Sanskrit are also being used in 8 and 2 schools respectively. Encouragingly, students from 4 school of Maharashtra also shared that their teachers also use digital content for Marathi. In fact, all the students expressed that their teachers take decision on what topics, language, concepts are to be taught through smart classes.

“Mainly, digital content related to Mathematics, Science and English is being used by teachers in the smart classes.”

All the students (N=156; 100%) from these 17 schools expressed that digital content is helpful in learning and understanding any topic. As per their understanding, they can see things happening, how it works, what principle works, how science practical is performed, information about culture, country, people, etc. Moreover, while demonstrating the concepts using digital content, teachers also clarified doubts and responded to their queries.

Further, students in all schools reported that their subject teachers teach using smart projector on white board which works as digital board. The teachers undertake discussion with students on the ongoing topic.

The discussion revealed that learning and understanding through digital content in a smart classroom followed by discussion makes all the doubts clear among the students. This also provides them opportunity to share their views on a particular topic, students also get to learn various skills such as presentation skills, listening skills, debate on issues, critical thinking, communication skills and interpersonal skills.

Almost half the students (47%) were of the opinion that it is easy to learn and understand the topics by seeing and listening on a smart projector board. This was found earlier in the EdCIL (India)² study also that explains about the importance of digital or smart classrooms as it empowers teachers and students using modern ICT tools and develop future skills such as critical thinking, creativity and communication and creating a unique platform for Teachers to think out of the box and built concept development skills.

3.3.2 Teaching Learning Process

All the students have reported that their interest has increased in topics and concepts related to Science and Mathematics. They collectively mentioned that they are interestingly taking part in smart classroom where they get learning and better understanding on the topics in a joyful learning environment.

Thus, students outspokenly stated that they are learning with joy as their interest has increased due to new teaching learning method wherein we see things and understand.

² <https://www.edcilindia.co.in/Home/VS/10043>

During the focus groups, all the students confirmed their participation in the smart classes. The students opined that the mode of teaching has changed now as compared to the conventional traditional classroom-teacher interaction. The digital classroom helps in improving their involvement and retaining the concepts for longer duration as well as discussions on topics make things clearer. About 4 in 5 students (85%) reported feeling more confident after attending smart classes. When asked on how such a learning helps you, all these students overwhelmingly mentioned that finally their results have improved and they secured good marks. With respect to the changes in learning process before and after attending smart classes, students from 15 out of 18 schools responded that digital learning mode is better compare to traditional classes, probably students get a lot of opportunities to see and learn. Thus, digital classroom was preferred by the students as perceived by the state governments who are attempting to make all the schools equipped with digital content and teachers trained in delivering the topics.

Students' Views

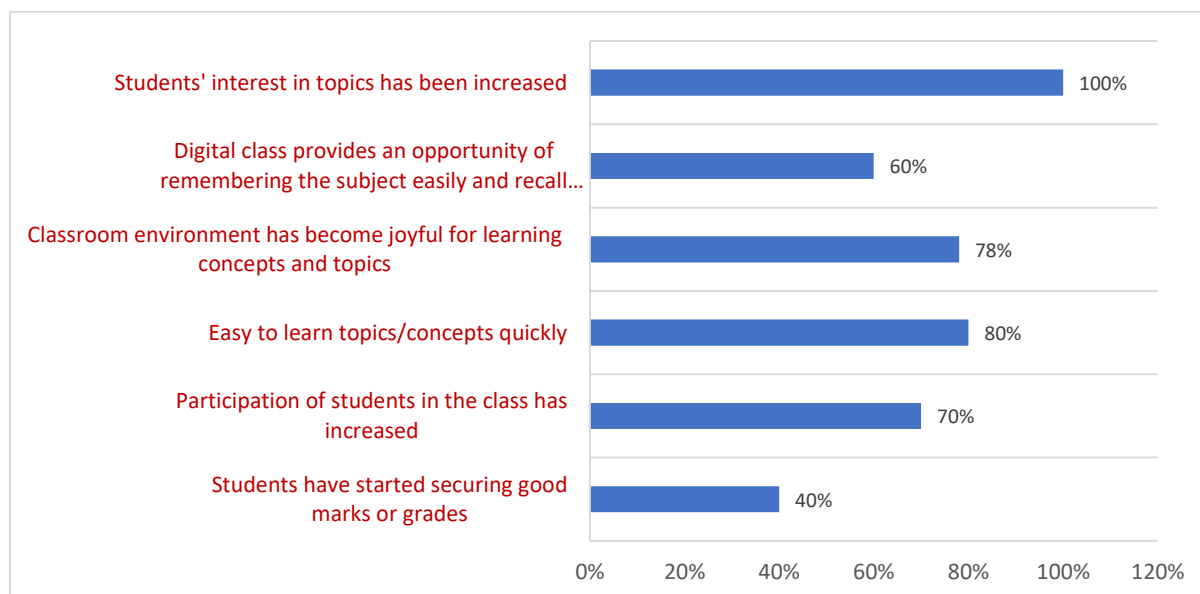
"Smart classes are very interesting as we can understand Mathematics and Science topics very easily and clearly. We quickly see and learn the concepts through audio and videos."

"Digital contents are very useful for Science practical and Mathematics problems."

"Teachers also take interest in clarifying the doubts and give examples to make us understand and this learning stays in our minds."

Following Graph 13 portrays the perception of students on changes they see among the students after teachers started using digital content.

Graph 13: Students Perception on Changes due to Smart Class



Evidently, students interest has been increased and they enjoy the joyful classroom environment that helps in learning topics easily and faster. Though half the students perceived that they have started securing better grades, it is a positive aspect and majority students would achieve good marks and better grades in future. It has been just two academic sessions when teachers have used smart class for their teaching using the digital content.

3.3.3 Perception on Teachers' Comfort in Using Digital Content

During the discussion, information on teachers' comfort level was assessed through students. Students from thirteen schools said teachers were comfortable in delivering the concepts using digital content but four

reported that teachers were not comfortable. On further exploration, it was observed that the teachers who were relatively older and those having lack of interest or preference for technology, they faced some challenges.

All students across all the schools found that learning through a digital content is a creative way of learning, easy and fast also at the same time. It has increased the interest among students which results in high attendance of students to attend classes and become regular.

3.3.4 Face Any Challenges and Student's Satisfaction

During the discussion, students from 8 out of 17 focus groups said that they do not face challenges during the class when teacher uses computer/digital content for teaching. Students in two schools said there is shortage of classrooms in comparison to the number of students and hence, more digital classrooms are required. Students from Rajasthan schools cited that they face network issues in smooth functioning of smart class, 1 reported that face problem in login the App and user ID was not accepting, students from 2 schools also said that there was audio problem in digital classroom as speakers were not working properly, and 2 schools reported that unavailability of electricity also there is no power backup, and this problem hinders smooth functioning of classes.

All 156 students from 17 schools claimed that they are fully satisfied with the use of digital content-based teaching in the schools using smart classes.

Further to assess the awareness on who supported for the smart class setup, students were asked to mention the name of the organization supported for smart classroom. Students from all 17 schools have claimed that they are fully satisfied with the use of digital content-based teaching in the schools. All students reported that smart classroom was supported by government with support from HDFC bank YUVA Unstoppable.

3.4 Interaction with Headmasters (HMs)

To obtain the views from the Headmasters and Principals of the schools covered under the impact assessment study, in-depth interviews were conducted with all 18 School Headmasters (6 each from MP, Maharashtra and Rajasthan). The forthcoming discussion provides the findings obtained from them.

Among all 18 HMs, 7 were females and 11 were males. Of these 18, 17 HMs were more than 40 years of age and only 1 was in 30-40 years age range. The average age of HMs was found to be 50.5 years while median age was 47 years. State-wise, average age was 51 years and median age was 47 years in MP, 52 years and 56 years in Maharashtra and 48 years and 47 years in Rajasthan respectively.

All the HMs informed that the smart class support from HDFC Bank was received during 2020 to 2022 phase. On enquiry, 16 out of 18 HMs informed that they had one smart class in their school but the difference was that their projectors were simple/non-smart ones and not as provided by HDFC Bank.

On the discussion regarding training of teachers for operating the digital-content, 10 HMs reported having up to 5 teachers in their schools who received the training, while 5 HMs had 6-10 teachers who received such training and 2 HM had more than 11 teachers in their schools who have received training for operating the digital-content and conduct smart classes.

3.4.1 Perception on Use of Digital-Content for Teaching

To understand the impact of smart classroom in the schools, the responses from headmasters were also taken into consideration. A set of questions as administered to understand benefits of digital-content, comfort level of teachers in delivering the topics and satisfaction level of students, etc.

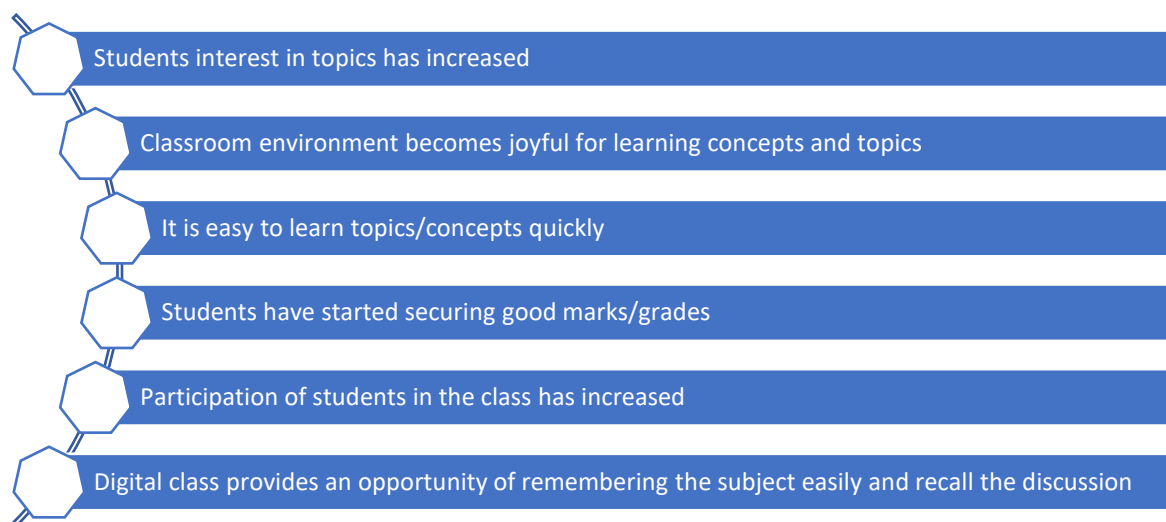
Findings show that 8 HMs from 18 schools had opinion that with the help digital content, students learn and understand the concepts and topics easily as compared to the traditional method. Another 8 HMs perceived that teaching through digital-content is interactive, better concentration and teachers can easily teach and explain topics to the students. One HM reported that teaching through digital content increases interest among

the students that results in high attendance in classrooms, while another HM reported that use of digital content reduces teachers' effort in the delivery.

On enquiring about the comfort level of teachers in delivering digital-content, 17 out of 18 HMs (94%) responded positively that all the teachers were very comfortable in teaching using digital content, while from 1 HM had a view that teachers were not comfortable, probably due to a higher age.

When asked about the acceptance among the students related to teaching through digital content in the smart class, 8 HMs affirmed that students liked the teaching very much through smart class using digital content. Three HMs expressed that the students got to learn in a new creative way where classroom environment was joyful as well. Seven HMs each mentioned that use of digital content and smart class resulted in the better understanding of the concepts as learn by seeing and listening (Audio-Visuals) provide better explanation, as more students are regular for smart classes.

Following illustration presents the changes observed by 18 HMs after learning through smart classroom.



3.4.2 Challenges and Satisfaction Related to Smart Classes

Eight out of 18 HMs (44%) claimed that the subject teachers did not face any challenges while teaching through digital content. However, 7 HMs reported that unavailability of basic facilities like, benches, tables and internet hinders smooth functioning of the digital classroom, 2 HMs were of the opinion that they faced an issue of power supply cuts which hinders learning of students and required a power backup for smooth functioning of digital classroom. One HM reported that computer sets were not available in smart classroom.

Encouragingly, all 18 HMs expressed their great satisfaction with the support provided to them in terms of digital content and smart class set-up. According to them, this digital content pedagogy has a good impact on the performance of students as well as teachers.

All 18 HMs reported have participated in the smart class in their schools to see the effectiveness of teachers delivering the topics as well as how students are engaged in the discussion. All 18 HMs have reported that this use of digital content approach and delivery through a smart projector is an outstanding support received from HDFC Bank. According to them, now the marginalised students also got the access to modern approach as well as their learning levels would enhance.

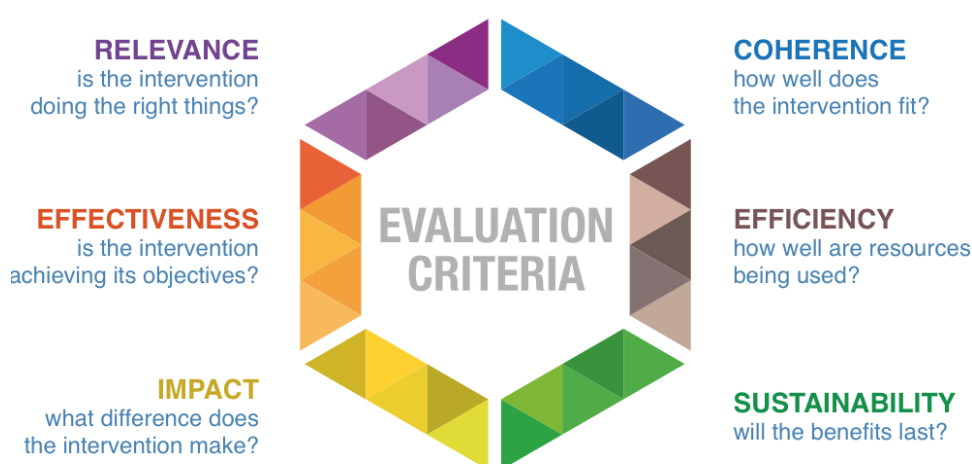
Chapter 4

Conclusion and Recommendation

On the basis of the findings of the study, the valid conclusion has been drawn and recommendations have been made. The details are described below:

4.1 Conclusion

The conclusion derived from the findings have been discussed on the basis of OECD-DAC criteria:



Relevance

Findings have outrightly confirmed that the HDFC Bank support for setting up the Smart Class with Digital Content for all the Grades from 6 to 10 has been relevant to the current technology backed development in education. The process of identification of schools for the technical support was purely scientific. Initially, all the schools were surveyed for the availability of technical infrastructure, school enrolment, willingness of teachers and classroom available for the transformation into smart classroom. Under the process, all the key aspects were scrutinized and willingness to receipt of support was envisaged. In this process, the local district education administration was also taken on board by Yuva Unstoppable.

Coherence

Discussion with students clearly indicates that the smart class intervention has generated interest among the students to learn new topics and perform Science practical, solve mathematical problems to understand the concepts, etc. The teaching through smart class has supported not only students with interest and learning but also teachers take interest in delivering the topics. The smart class support from HDFC Bank has been the most successful intervention for teachers and students both. Discussion with headmasters and teachers revealed that there were no challenges in setting up the smart class within the schools with respect to infrastructure.

For effective and smooth implementation of smart class, Yuva has already made provisions with the local vendor or supplier to attend all the grievances related to the setup raised by the schools. All the schools have been provided with a local contact number for registering their complaints and get the resolution done. This was confirmed by the teachers and headmasters covered under the study.

Efficiency

While discussing with students on the advantages of the smart class and use of digital content, all the students covered across 17 schools demonstrated their satisfaction that they enjoyed the smart class as well as digital content. The delivery from teachers was rated as excellent by the students. Students also informed that easy comprehension of the topics, understand the concepts and internalize through visualization are some of the key features that helped them. Teachers in their discussion also shared the same advantages that proves that the smart class set-up along with digital content has been exemplary for these schools.

The assessment team verified and confirmed the availability of digital content for all the subjects and grades. Teachers confirmed the use of digital content as per the grades and subjects they take.

Across all the covered schools, 5 to 10+ teachers were found received training for operating the smart projector and use of digital content. The hands-on training received by the teachers was outstanding as they all felt comfortable with the equipment and process.

The smart classroom setup has been found suitable for joyful learning as well as students also confirmed the same.

Impact

With respect to impact, the project has been able to achieve its objective. All the students could quote the fact that digital content and smart class setup has made their learning easy and joyful. The students reported that the graphical and animated videos provide them opportunity to understand the concepts and principles comprehensively with ease that enrich their experience. In addition, teachers' engagement in leading the discussion on the topic also provides an opportunity to get more clarity as well as seek responses to the query.

The teachers gratefully acknowledged that they have gained expertise of using digital content with smart projector which exclusively help them in guiding their students as well as preparing the lesson plans. This not only support them in assessing the progress of the students but also motivate them to make topics interesting for their students. Encouragingly, teachers had opinion that they are professionally trained and now received the training on conducting smart class with digital content. They see an opportunity to use hybrid mode of teaching.

As mentioned earlier, the project has been able to create impact on schools (teachers and students both).

Sustainability

Currently, Yuva has provided them operations and maintenance (O&M) support through the vendors and local supplier. All the schools have the helpline number for seeking support for any smart class related grievance. In future, schools need to incorporate dedicated budget for the repair and maintenance or seek support from the department or other local NGOs, depending upon the situation and considering the type of service the need.

4.2 Recommendation

Following recommendations are being made based on the findings of the assessment:

- HDFC Bank can incorporate the component of repair and maintenance in the support in discussion with the schools or department.
- Partner organization leading the implementation of project can focus on addressing the local issues like power cuts. The further course of action could be discussed with Headmaster on how such situation would be dealt with in future.
- While providing the digital content, schools must be guided on how updated content would be obtained from different sources.

Annexure: Check List of Smart Class Support Provided by HDFC Bank

District	Tehsil/Block	Name of School	Smart Class Available	Smart Class Functional	Smart Projector Available	Smart Projector Functional	White Board Available	Flooring Available	Class Painting Available	Benches Available	Digital Content Available	Posters/IEC materials Available	Total Parameters available out of 7	Total Parameters functional out of 7
Raigarh	Mangaov	N.M. Joshi Delyabhawan , Gorgyaen Raigarh	1	1	1	1	1	0	0	1	1	1	5	5
Raigarh	Mangaov	New English school shiravati Raigarh	1	1	1	1	1	0	0	1	1	1	5	5
Raigarh	Mangaov	Kranti surya Y.D. Savarkar	1	1	1	1	1	0	0	1	1	1	5	5
Raigarh	Mangaov	SMT. S.K. Bhate. Madhyamik school Borwadi	1	1	1	1	1	0	0	1	1	1	5	5
Raigarh	Tale	Madhyamik vidya mandir Padhvan	1	1	1	1	1	0	0	1	1	1	5	5
Raigarh	Tale	Gyandeep Vidya mandir school Haveli Borgarh	1	1	1	1	1	0	0	1	1	1	5	5
Jodhpur	Jodhpur	GSSS Yomit jungil Bhagat ki kothi	1	1	1	1	1	1	1	1	1	1	7	7
Jodhpur	Keru	GUPS Nayapura chokha	1	1	1	1	1	1	1	1	1	1	7	7
Jodhpur	Jodhpur City	GSSS Bhadvarya Jodhpur	1	1	1	1	1	1	1	1	1	1	7	7
Jodhpur	Bhopalgarh	GSSS Buni khurd	1	1	1	1	1	1	1	1	1	1	7	7
Jodhpur	Jodhpur	GSSS Baldev Nagar Masuriya Jodhpur	1	1	1	1	1	1	1	1	1	1	7	7
Jodhpur	Basni	GSSS Basni Jodhpur	1	1	1	1	1	1	1	1	1	1	7	7
Bhopal	Punda	Madhyamik shala Shikandarabad	1	1	1	1	0	0	0	1	1	1	4	4
Bhopal	Hujur	Madhyamik shala Kolukhedi	1	1	1	1	1	0	0	1	1	1	5	5
Bhopal	Hujur	Govt. kanya pr. School Islam nagar	1	1	1	1	1	0	0	1	1	0	4	4
Bhopal	Hujur	Madhyamik shala Kurana	1	1	1	1	1	0	1	1	1	1	6	6
Bhopal	Hujur	Govt. pr. School Mubarakpur	1	1	1	1	1	0	1	1	1	1	6	6
Bhopal	Hujur	Madhyamik shala Imaliya	1	1	1	1	1	0	0	1	1	1	5	5

1 = Yes; 0 = No
