Study of some educational initiatives of
Amdavad Jilla Gramodhyog Sangh

Submitted by
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PREFACE

The "Amdavad Jilla Gramodhyog Sangh" a registered non-governmental organization has been working with government primary schools of Gujarat, specifically in Kheda district of Gujarat state for setting up "SMART CLASSROOM" in the schools. Their work started work from Dharoda Primary school, which was the first school from date 30/07/2018 and completed the work in the last school on 04/05/2019. The organization had installed digital equipment like smart board, projector, speakers, CPU which was attached to smart board, wireless mouse and keyboard, pointer stick and power voltage regulator, in ten schools of the Kheda district. The organization had also fixed embossed educational chart ceramic tiles, which are fixed on the walls of six government primary schools of Dahegam block of Gandhinagar district. The initiative of the organization was to support government primary schools by providing them teaching-learning material and other IT based digital equipments to enhance the learning process in schools. This support focused on providing infrastructural material only. Both the initiatives were being funded by the CSR wing of ONGC - (Oil and Natural Gas Corporation limited).

Amdavad Jilla Gramodhyog Sangh entrusted FAIR-E (Foundation for Augmenting Innovation and Research in Education) to review and document the perception of impact of both the initiatives undertaken in all government primary schools. FAIR-E has independently assessed both the initiatives under the academic mentorship of Educational Innovations Bank, RJMCEI, Indian Institute of Management Ahmedabad. Field visits were done in all the schools and interaction was done with the stakeholders like teachers, students, SMC (School Management Committee) members and other community members.

We thank all the teachers, students, SMC members and community members for providing support for undertaking the assessment study.

INTRODUCTION

This is about the study mentioning perception of impact due to the interventions done by Amdavad Jilla Gramodhyog Sangh, in partnership with ONGC, CSR-wing in government primary schools of Dahegam block in Gandhinagar and Navagam in Kheda district ("SMART CLASS-ROOMS" and ceramic educational charts). Field visits were conducted in project area comprising of 16 schools and generate report after <u>quick review on perception of impact of interventions</u> done by Ahmedabad Jilla Gramodyog Sangh, in partnership with CSR wing of ONGC. We understand that no baseline information was collected; also, the impact of one small intervention like ceramic calendar on learning will be difficult to measure, but perceptions of how it has been received can be assessed.

SUMMARY:

- Both the initiatives of setting up "SMART CLASS-ROOM" and fixing of the ceramic educational tiles were undertaken by the Amdavad Jilla Gramodhyog Sangh and are a good entry point activity to initiate the corporate social responsibility interventions of the ONGC.
- Secondly, these activities have been appreciated by the school community as well as the community from the village, specifically the teaching community.
- It was found that SMART CLASS-ROOM has been very much helpful to introduce technology to the students which has resulted into increase and sustaining attendance in the school.
- The teachers have mentioned that, student attentiveness and engagement has started to increase due to SMART CLASS-ROOM, which is a positive sign.
- The SMART CLASS-ROOM has also been helpful in conducting periodic assessment tests, specifically administering the question paper.
- The SMART CLASS-ROOM has been specifically helpful in those schools were there are not adequate teachers as per the prescribed norms.
- The state government also took initiative of providing software for "SMART CLASS-ROOM". Secondly, there is an extensive use of internet facility for educational purposes, which earlier was limited to only administrative purposes.
- The SMART CLASS-ROOM has been helpful in consolidating the learning of students as it was used for revision and other educational activities.
- The educational ceramic tiles have been beneficial in doing writing practice, for revision of the subject topics learnt and for remedial work.
- The educational ceramic tiles are easy access learning resource which cannot be damaged or lost.
- The teachers have created games and other learning activities based on these educational ceramic tiles which are often being practiced to understand the learning levels of the students.

RECOMMENDATIONS:

- There has to be a proper structured implementation frame-work designed for increasing the effectiveness of the SMART CLASS-ROOM. This frame-work also includes all kinds of testing tools to assess the impact of the intervention.

- Secondly, digital content also should be provided along with the hardware for enhancing teaching-learning process in the class-room.
- The teachers need to be trained for how and when to use the SMART CLASS-ROOM in the teaching- learning processes, specifically when there is no digital content available for new syllabus.
- Discussion forums of teachers should be created of the teachers using SMART CLASS-ROOM so that there can be effective peer learning and sharing.
- Only one set of current educational tiles should be provided and the other set of tiles could have other material as per the subject matter in tune to syllabus.
- The tiles should have grooves in it with indications of writing directions to write alphabets, which can turn into a very effective practice tool.
- The tiles should have games like reasoning and puzzles.
- There has to be implementation manual for using educational tiles.

Demands from schools:

- The schools have requested for a good quality laptop, many schools have also demanded for RO water treatment plants, specifically in Navagam, Kheda district.
- The schools have also requested for ICT based training programmes for making effective use of SMART CLASS-ROOM.
- The schools have requested additional SMART CLASS-ROOM in their schools.

Foundation of Collaboration: Interview with Mr.Chintan Bhai Patel from AJGS

Amdavad Jilla Gramodhyog Sangh trust was established by Bhikhubhai Patel in 1982. In the year 2017 they were informed by one friend (working at ONGC), that ONGC has a CSR wing and they do provide CSR funds to NGOs to carry out various activities. Mr. Chintanbhai took the opportunity at once and fixed a meeting with officials of CSR wing at ONGC. ONGC showed inclination to fund for government primary schools functioning in their project area villages. The trust selected Navagam as it was nearby to Ahmedabad. A principal Mr. Amitbhai Patel from Dharoda Primary School, Navagam, is a friend of Chintanbhai Patel, so they set a meeting with Amitbhai in 2017 for discussing requirements of the school. The principal said that they were in need of infrastructure (classroom, playground), Computer lab, RO water treatment plant and Smart Class. The trust decided to provide "SMART CLASS" in the school as they thought that "SMART CLASS" was costly and therefore it would be difficult to find indigenous donors to fund the SMART CLASS and for other mentioned things school might get donors from village but for "SMART CLASS" it will not be the case. So the trust decided to provide smart class in the school. The government primary school Principal, Mr. Amitbhai Patel is very techno savvy person, therefore he was also very much interested in the smart class and said the there is no need of software as Government had provided SLATE so it could be installed in it. Mr.Amitbhai had demanded 5 smart classes as he was confident about their teachers and there were total 270 students in the school. The trust prepared a proposal note in March 2018 and also formulated budget by discussing it with a vendor "Title Display Centre" Kalol. They put the file to the ONGC, three discussion meetings were held with the officials of ONGC CSR wing, before approving the proposal in June 2018 it was installed in that school. After successful work in 1 school the trust made a proposal for the smart class for 9 other schools under Dharoda pay centre, as demand started to come

from ground also. At the same time Chintan Bhai had come across Ceramic Tiles as Educational chart in one of the schools of Ahmedabad Municipal Corporation, when he had gone for casting his vote. This time, they thought to give it in Dehgam Block of Gandhinagar and selected 6 schools for educational charts. The proposal for 9 smart schools and 6 schools for educational charts was tabled in March 2019. Proposal was approved and installation of SMART CLASS and Educational Ceramic Tiles was done in May 2019. WhatsApp groups with school principals were created for regular communication and coordination. All technical queries were directly handled by technical person from Vendor Company. WhatsApp groups are still active.

"SMART CLASS-ROOM"

DATA COLLECTION:

A questionnaire was designed to conduct the interviews of the teachers, students and SMC members to understand their perception of impact of the "SMART CLASS-ROOM". Formal and informal conversations were also video recorded.

The data and collection of other details was done through field visit to school and interacting with teachers, students and SMC/community members. Interviews of the teachers using digital equipments/Gadgets in the class-room were conducted. Interviews of and school Management committee members or community members wherever available were also conducted. The team visited on 18/February/2020 and 19/February/2020.The team interacted with 12 teachers to understand the implications of digital infrastructure and 6 principals also voluntarily contributed in the discussion and also gave the feedback as school leaders. Feedback was also sought from the school management committee members and people from the local community on "SMART CLASS-ROOM"

Based on the field experiences, below mentioned is the summary of perception of teachers based on their experience in using "SMART CLASS-ROOM"
1. In use of technology, teachers mostly use videos and information from various websites in classroom education activities which they display on smart board present in the school. This use of technology helps students to understand concepts more clearly as they see it in moving format which helps them to relate and also is a major factor which enables to sharpen memory of the students. Teachers, through daily observations in classroom activities, participation of student and while discussing respective topics with student are able to gauge the impact of the technological intervention. Use of technological inputs from website or use of videos has generated interest among students while carrying out teaching of formal syllabus as children see the matters attentively. Teachers have started to think about assessing impact through the performance of children in classroom unit tests.
2. Secondly, technology has helped to supplement information to the text matter mentioned in current syllabus, for example to explain the concept of "volcano", the information about the concept section mentioned is less and students are unable to visualize it as no practical experience can be carried out, so teachers go on internet, visit relevant websites and collect more information about that specific concept, also expose children to the concept of "VOLCANO" by showing various photographs and videos of the volcano. This was mentioned Mr. Sanjay Kumar Patel, teacher of Adaser Primary school in Kheda district. Secondly, in the Gharoda Primary school in Kheda district, two teachers Rashimiben Chaudri and Kantaben mentioned that SMART class

has helped them to conduct the periodic assessment tests and other tests effectively. There are limited activities pertaining to that many concepts in text books, so they surf on website and find out similar activities which can be added to the concept which helps to firm up the understanding of the concept among students and also identify videos specifically in language subjects which can be used for improving reciting skills and reading skills and hence has helped to overcome limitations faced due to limited text matter in the text book on any topic/subject. These activities lead to more exposure of the student to that subject matter translating into wider knowledge base resulting into providing scope and platform for improvement of learning outcomes.

3. Teachers relate and compare the text matter/information printed in syllabus text books along with the information mentioned on website to supplement topic with extra information. This has been mostly found in subject of social science and science & technology for standard 6 and 7. To find the matter they visit search engine "google" and see the relevant websites and fetch information which is required, the choice of selecting information to show or share with students purely depends on the individual teacher as per the need. The teachers need to be trained in identification of the digital content from the public domain or from open source so that no wrong information is shared with the students. The teachers are also sourcing relevant videos and other digital content from their WhatsApp groups and other colleagues.

4. Technology has helped to supplement information to the text matter mentioned in current syllabus, for example in Guajarati language in poetry section, the information about the poet in "KAVI PARICHAY" section mentioned is less, so teachers go on internet, visit relevant websites and collect more information about that specific poet, also expose children to other creations of poet, show various photographs of the poet. Secondly, in the exercise section of that subject of poetry, there are limited activities pertaining to that poem, so they surf on website and find out similar activities which can be added to the exercise section and also identify videos which can be used for improving reciting skills and reading skills and hence has helped to overcome limitations faced due to limited text matter in the text book

5. If a teacher is absent for a day or two due to any reasons then teaching or educational process does not stop in the classroom, the teacher is temporarily supplemented by "SMART CLASS" and other technology based inputs and the teaching of that specific subject matter continuous in classroom in absence of teacher.

6. The teachers and principals have mentioned that these class-rooms have improved the attendance in their schools, specifically girl students and also have noticed increase in student engagement in teaching learning processes of their class.

7. Finally, this all combined efforts will lead to transition of students to higher education and open opportunities for shaping career in future life.

To summarise, the initiative of setting up of the "SMART CLASS-ROOM" is well received by the school (Principals/Head Teacher, subject teachers, students and school management committee including other community members) in the first year. But it still has further scope for strengthening. Two cases as examples are attached.

Navagam Pay Center School, District Kheda

Principal Name – Ramilaben Patel 9924109555

"SMART CLASS" has been installed in one classroom. It is a boys' school and school strength is of 126 students. Students of 5 to 8 standard are using it every day 1 hour for each class. There is no fix time table set who will use it when. When teacher finds it necessary to use for that class they use it. Programme installed in the system is SLATE and it has been given from district MIS, Samagra Shiksha, Government of Gujarat. Principal had seen it in the nearby cluster school so they have also demanded smart class for one classroom. If they had demanded it for more they might have got for more classrooms. There are 6 teachers in the school and 4 teachers are teaching in 5 to 8 standard. One male teacher and other 3 are female teachers. Male teacher is using the system very frequently. Principal thinks that he is very techno savvy and he can use it properly. All teachers first teach students by traditional or conventional method in their own classroom and then for revision they use smart class. There is a black board in the class but it is not in a condition to use. Teachers mostly do not use it also.

Training: One-day training had been given to 4 teachers and operating part has been taught in the training. Nothing has been given related to teaching material. Only 3 CDs of science has been given in the school.

Technical Support: The Teacher of schools Mr. Nalin Patel is techno savvy so he could handle technical query. If there was any major issue, there was contact number of one technical person and they called him to solve the problem. They faced technical issues in the system when they don't use for 15-20 days. They used at the interval of 1-2 day.

Network: They do have internet facility in the school.

Interview with Teacher: Nalin Patel Std: 6 to 8 Subjects: Hindi, Social Science and Sanskrit

This is a very good system, students do enjoy animated stories and songs. In this there is "Kaun Banega Crore Pati" that is what students enjoy a lot. With animation they could teach and make them understand every topic very easily. Before that he was using TLMs for teaching and SAMSUNG LED TV for showing BISAG programs. He was also using YouTube videos for teaching some concepts. Sometimes he does find videos on the YouTube instantly in the class and some videos he does search it in his free time. He identifies and selects videos which were animated and short, so he could teach concepts in short time. He also saw the language of the video; in which language it is. He mostly selected videos of Gujarati and Hindi Language. He also showed videos of art and crafts to students in free time. They saw it and according to video instructions they also did craft work in the classroom. Sometimes he also showed them videos of other schools available on YouTube so they came to know that in other schools what kind of activities they were being undertaken. They became aware about the environment of other schools. For evaluation purpose, earlier he was taking oral tests of students, now he is taking unit test which is organized by government. He uploaded a question paper on the system so no need to write it on the black board, students copy it in notebook and answer it. This was very useful system, if one does not have equipment for doing a science experiment then one could show videos of the same experiment from YouTube.

Before when this system was not there he was not able to explain them some concepts clearly like if he had to explain concept of factory then how should he explain them that what kind of infrastructure it had, how big it is but with help of SMART CLASS he was able to show them pictures of factory infrastructure and related videos through which they could easily understand and relate to it. For example, they had only seen these small shops in village and in Ahmedabad there were big malls now he was not able to take them to mall but through this he could show them malls and explain it to them. Basically through the use of internet one could explain everything in detail.

This system works fine but speakers given, many a times did not work properly. Volume of the speaker is very low. They needed to close all the doors and windows when they played

any video. They did not mention about it to anyone as they felt that it would be bad, as on one side they were getting free things and on the other hand they did complain about the things, they did not find it suitable to complain or discuss about the issue. Some major issues happened twice, but then they did video call and informed about the issue and got it solved. Parents and other people of village were aware about it. Students at home did discuss about this and told their parents that today teacher had taught them that subject matter through video etc. They knew that these things would help in updating knowledge levels in their child. They were happy that in school this kind of equipment's were being used. SMC members were saying that we should get it for all the classroom.

They did take care of all this equipment very carefully. They did operate it daily and close all the system properly every day. Some students had been trained in operating these things carefully.

As he was very techno savvy person he did not get any difficulty in using these things. He had a laptop at home and was using it before at home therefore had understanding about how to operate these things and use it. And he was in touch with other teachers through WhatsApp group. Some other teachers were coming with him in his car from Ahmedabad they did talk about some educational programs and other material on their way. His wife is also a teacher and she has a google classroom in her school so, they did talk and exchange ideas about these things very much.

All teachers should use this in their school and give benefit of this to their children. They were planning to get some donors for getting this in other classrooms, in future. They do get other things like Note books and bags through donors, so could definitely get it from a donor.

Teacher Interview: Sunitaben Prajapati, Language teacher 6 to 8

She has been working in this school from 6 years and had total experience of 20 years as a teacher. Because of this system attendance of the students improved a lot. Before it was 80% now it is 90%. Like, if she told students that tomorrow she was going to show a story then they would not be absent in the school in any case. She did use slate program for children and it was very good. All things were animated and all the material was given properly. She also used her smart mobile phone for showing some pictures. There was no question of quality as everything was given in slate, and did not need to use other material in the class. Student became very disciplined because of this. They did watch all the things very carefully. Concentration of students was very high while using SMART CLASS and she mentioned that by watching what student could learn, they could not learn that from any other thing. SMC members were also very happy about it. Community felt happy and proud that in their public school SMART CLASS was there, because in many private schools such facility is not there even after paying fees. So they were very happy.

Internet connection was there in the school so she played some poems and stories through speakers. She does like to use all these things while teaching. Unit test, they did upload in this so they need not write everything on board.

Technology was very effective in teaching learning process. For example, she showed them video of "Kutch Darshan" and after that she started asking questions to all the students and they were very much involved in the classroom process, they answered all the questions and she could clearly observe that student did remember all the things very easily and answered the questions very easily. She made it very simple that, if this SMART CLASS was not there, then she would not have been able to explain them about "Kutch". Overall this was very useful system and they needed it for all the classrooms.

Classroom Observation: Std: 8 Sub: Social Science Teacher: Nalin Patel

There were 23 boys in the classroom. Teacher had started the system but it was taking time. Teacher had operated slate program in it and gone to social science subject and opened chapter no 9 "Apni Arthvyavsthao". This program was like Gyankunj only, there were 3 parts in the chapter. In the section "SAIDHANTIK SAMAJ" there was a content of the chapter with pictures and PPT with audio. Every concept/term was being explained with pictures and other audio content. Teacher was playing for some time then paused it and then started to explain meaning of concept with real life example. All students were involved in classroom activity. In between, teacher was asking questions to students. When students were answering the questions teacher did explain in between as well. While explaining, if any technical term came he was explaining it too.
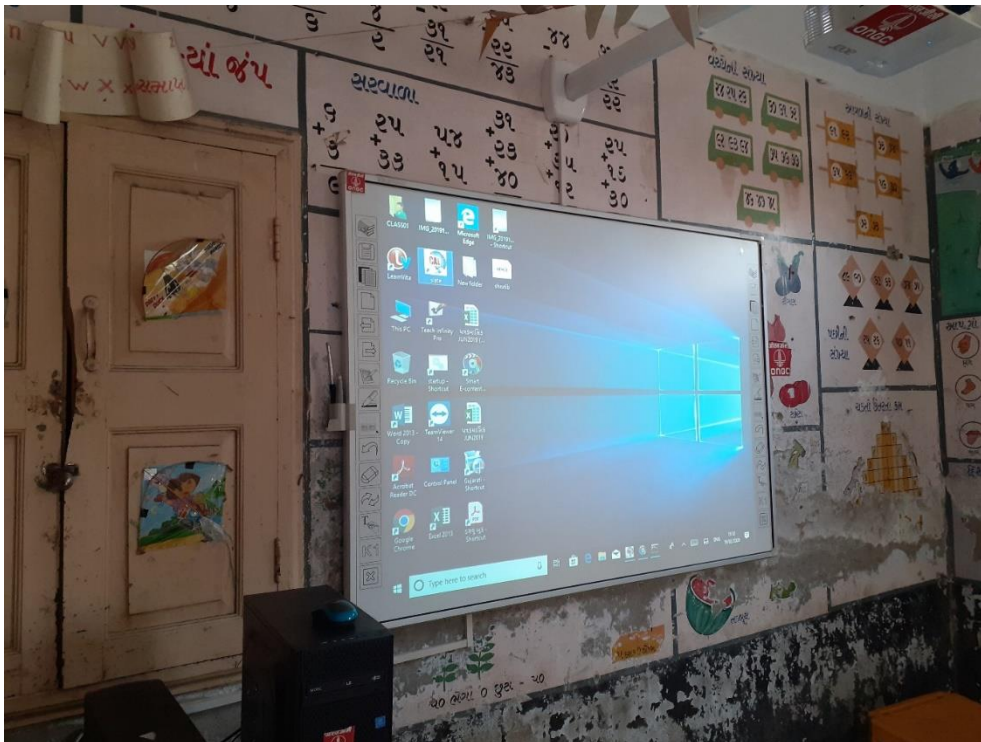

Figure 1 Smart Board in the class

Figure 2: Teacher Mr.Nalin Patel teaching Social Studies in the smart class

Navagam Kanyashala

Principal Name – Hansaben Patel

The "SMART CLASS" had been installed in class 3, but students and teachers of all standards were using it. Every class got 1 period daily in the smart class. They had got 1 CPU, 1 projector, 1 Keyboard and Mouse, 1 smart board, 1 stick and 1 Pen. They had internet facility in the school and it had been connected to the system. There were total 129 girls in the school and 4 teachers and 1 principal. In the class they had both smart board and green board and teachers had suggested that they want both. The school did not have regular math and science teacher in the school. Every teacher had to teach two standards together because of lack of teachers. This was where smart class was playing major role. They could give some work to one class having "smart class" like watching videos, playing educational games, quiz (Kon Banega Crore Pati) etc. so that they could teach in another class and balance the timings.

Training: Teachers had got one-day training on using hardware. From 10 schools about 4-5 school teachers came for the training.
Technical Support: They had mobile number of one technical person in case of any emergency. Till date there has been no issue with the system. There was one principal in nearby school Amit Patel, they used to take help of him for solving some queries related to functioning.

Network: They had JIO network connection in the school and it was connected to smart board system.

Interview with Teacher: Renukaben Jani Std 6 7 8 Sub: Gujarati and English

In education technology plays a major role. If students learn through technology it was a new thing for them and they got excited about it. At home they usually used mobile and watched TV. But through this they got to know that technology could be used for the purpose of education also. In the classroom, in the teaching learning process, it was very useful, as it reduced their burden. In traditional method sometimes students got bored of it and as teachers were the only ones who kept on talking in the class, while by watching the videos and audios they got to know many new things, so they didn't get bored and excitement and curiosity prevailed. As teacher taught English language subject with help of English spelling videos, in that they could see spellings in big and bold and got to know how to speak it with pictures and animation so concentration level was high and they had observed that with help of "SMART CLASS" they learned fast and could remember it for the long time.

Teacher used videos from YouTube only, and that was also only related to the topic and lessons given in the textbook. Teacher did not use extra videos which were not related to topics of textbook. As teacher had two classes to take together she did not get much time to balance and pay attention to all the details and activities that were happening in the class-room. There were two criteria to select video from YouTube, she just searched the topic and saw which video was short in time duration and came first. If any, teacher colleagues suggested any videos, they used those videos too.

Smart class had been very useful in the schools where there were no sufficient teacher appointments. So they could give some work to one class and teach in other class, that helped them to reduce wastage of time. For evaluation purposes, they used to stop video in between and then asked students meaning of some difficult words, name of the characters in the stories, writer of the poem or story etc. She searched and identified videos in the classroom only did not use internet at home. She took help of her colleagues to find some simple spelling related games that student could play in the class like fill in the blanks or synonyms antonyms etc.

She did not use ICT in her classroom before this system came to her school. She used to teach by traditional method only. The teacher used videos for her learning purpose at home. As they didn't have Math teacher in the school so many a times she had to teach math in standards 6 to 8, at that time she used YouTube videos for self-learning. She also mentioned that she had to teach those topics which she did not know, so at that time she started to watch videos and for her knowledge gaining, but she did this everything at home as mobile phone was not allowed in the school and she also does not use it in the school.

By watching videos, students did grasp the concept very easily. For example, if she had to explain how to use first aid kit in case of emergency she could not tell them and explain everything but if she showed them a video that how accidents happen and how to use first aid kit at that time, and screening videos about it helped students learn easily and did remember also. In unit test also if the "SMART" board was not there, then she had to write the whole paper on the black board while in SMART board could show pdf of the questionnaire and writing time got saved. Touch of the board was sometime problematic as she touched at something and something else opened, which got solved but occurred again, many a times.

SMC members and parents did know about the "SMART CLASS-ROOM" as students talked about it at home and also mention that they learned through it. When SMC members or parents visited the school, they said that SMART CLASS should be provided in every class so every student were benefited.

They also needed a "RO" plant in the school, as in this area water was contaminated, factories were there in the nearby area, so water got polluted. Water was a basic necessity which was required in the school and if that was contaminated then health of the student got affected. Girls were very excited about the SMART CLASS as they don't get this type of facility at home. They had started to gain knowledge on how to use technology and had started to explore themselves.

Teacher Interview: Shwetaben Kadiya, teaching in standards 1 and 2 of Pragna

There were some subject topics and other learning matters which they could not bring it to the class and show it to the students or even go to the nearby to schools to show the students, but through technology they could show that subject topic with help of video broadcasted in classroom detailing about sea, mountains, malls, waterfalls, zoo etc. Students of class 1 and 2 like to see animated videos very much and they learn with fun. The teacher was techno savvy person, before SMART CLASSROOM came into school, she used to show them videos in slate Programme in the computer lab but the issue was size of the screen. In SMART BOARD the screen size was large and they did not fight for sitting in front row, audio quality was good which could be played at required pitch so that it was audible to everyone. As in their school, teachers were also less so they played some video and games in the class to make a stop gap arrangement and taught in another class at the same time.

She did use applications for her students, like, Gujarati Kids App, Learning Gujarati, Kids Gujarati Learning, Paglu Book, Sankhyagyan, Palakha and 1 to 100 Ekda and had been using it since last 3 to 4 years. She looked for applications in Google Play store and used them. Internet issue was not there, as they had Jio net in the school. Before the SMART CLASS came in teacher used to play more audios of poems and stories in her mobile. These audios were from open source. But then, they were able show videos also, which were more effective as it had visuals. It was very difficult to gather attention of students of this age, therefore use of technology in the class-room had made it easy to seek attention of students during teaching learning process. They only chose applications and videos with animation as they were attractive and helped to gather attention of students, secondly used only short videos so students did not get bored.

She also got help from her peers for getting digital content/material. For evaluation purpose, she had downloaded question papers from WhatsApp and Facebook groups and used them. This question papers were like practice sheets which peers created and put it on the blog and shared the link. Name of the groups were "Vande Guruji" and "Vande Gujarat".

Students also knew how to operate the system; they liked to operate the system and waited for their turn.

Teachers did not face any problem in teaching learning process through SMART CLASS. Sometimes if any technical issue happened they got worried and found out ways to solve it. She took help of neighboring school principal when any technical issue occurred.

Parents and SMC members were aware about the smart class and they suggested to get it for more classes so all students could get benefit of it. Parents were also happy that their children were learning with such systems and they felt that their children were getting facilities like private schools.

Overall it reduced their burden and student did attend class with high interest, they used different material all the time in the SMART CLASS, as repeating same videos or any other material made teaching learning process boring. Therefore, teachers also had to update themselves and generate or get different kind of material accordingly, so that interest of child was maintained. Teacher had to balance the academic transactions, as traditional method was also very important, all the time they could not show videos and teach in the same style,

they had to start with traditional/conventional method and for additional support in teaching-learning process one could use technology in the classroom.

Classroom Observation: Renukaben Jani Std: 8 Sub: Gujarati
There were 10 girls in the classroom and 9 girls were absent as there was one function in the village and all girls had gone for lunch. Teacher started class with searching a video from YouTube. She typed chapter number, standard and subject in the search bar and got video from "First School" Channel. Video is of Unit 17 "Sanskar Ni Shrimantai". She was stopping video at some interval and asking questions to students to understand their level of engagement and explained some hard words and storyline. Video was animated one and had duration of 15 minutes. All students were watching it very carefully and were answering all the questions asked by teacher. After the video finished, teacher asked some questions like who were the characters in the lesson? Who was writer? Teacher was asking to write words from the story and also meaning of the word. Now teacher was out of the class and all students were writing words from text book.

Discussion with students: Girls of std 8, Group of 10 girls
All students knew about the installation of SMART CLASS in the school and also who had installed it. They got 1 hour in the class every day. They did understand concepts clearly through videos and they could remember things for long time. Teachers were showing videos as required. Not a single girl said that they operated the system, only teachers did. They were saying that if they got this SMART CLASS in all classroom, then it would be helpful for all and time saving.

Parent Interview: Jyotsanaben Deepakbhai Solanki (Parent of Hetal Solanki, class 1 and Hiral Solanki class 5)
She was aware about the system given in the school. They did not know who gave it. When her child returns to home after school and talks about the SMART CLASS for example mentioning about what today teacher taught them with help of videos and animated stories, they enjoyed it, it was very interesting to learn the new concepts as they could visualize it etc. According to her SMART CLASS facilities were required in all schools, they as parents were not capable enough to buy and provide any digital items for learning at home for their children, but in school their children got an opportunity, they were able to touch, operate and explore digital equipments. "We even don't know name of all these things but our child is using this so we get confidence that they at least using the things which are need of the time. All children should get this in all classrooms", the parent mentioned.

Figure 1 Class 8 students in smart class

Figure 2 Class 8 teacher Renuka Jani teaching Gujarati in Smart Class

Figure 3 Students of Navagam Kanya Shala

SCOPE FOR STRENGTHENING CURRENT "SMART CLASS-ROOMS"

Information Technology is playing a very crucial role in in all the sectors today, this is because it is a medium which does the delivery on large scale at a very low cost, has given access to information that prevails across globe, done drudgery reduction and much more. Today we see that use of IT in government schools is very much prevalent and is also an integral part of main stream education.

Computer labs were set up in government primary schools initially and CAL- Computer Aided learning was introduced, SMART classroom came into existence also. Many teachers in Gujarat who were motivated and knew the significance of IT, established other additional gadgets or infrastructure by raising funds locally or with support of local community. Teachers also designed and set up computer/IT labs indigenously with support of SMC or community members for better ergonomics or to resolve issue of space in their schools. Today, most of schools have internet connection with support from state government. Majority of teachers regularly visit various education websites for sourcing additional information pertaining to subject matter also for their professional self-development.

Along with use of IT, social media applications like WhatsApp and Facebook also have become one of the major platforms for exchange of information/thoughts which can be useful in peer learning and sharing. These social media platforms also support exchange of Videos and photographs/images and many computers based files. Mobile technology has brought revolution, specifically when it comes to use of smart phones. These smart phones have made access to information technology world very easy and also handy. One can get information required by just tapping fingers on smart phone.

FOR WHAT DO WE USE "IT" TODAY?

In use of technology, teachers mostly use videos and information from various websites in classroom education activities. This use of technology has helped students to understand

concepts more clearly as they see it in moving format which helps them to relate and also is a major factor which enables to sharpen understanding among students.

Technology has helped to supplement information to the text matter mentioned in syllabus, for example in Guajarati language in poetry section, the information about the poet in "KAVI PARICHAY" section mentioned may be less, so teachers go on internet, visit relevant websites and collect more information about that specific poet, also expose children to other creations of poet, show various photographs of the poet. Secondly, in the exercise section of that poetry, there are limited activities pertaining to that poem, so they surf on website and find out similar activities which can be added to the exercise section and also identify videos which can be used for improving reciting skills and reading skills and hence has helped to overcome limitations faced due to limited text matter in the text book on any topic/subject.

Teachers also use social media specifically WhatsApp and Facebook, teachers form their groups on WhatsApp and the major motivation for forming groups is to get regular information about educational activities happening in the government primary schools and regular updating of administrative matters. If they have any query about any administrative matter then it is shared in the WhatsApp group for seeking answers for that. Facebook is largely used for sharing the teacher or student activity as it can cater to very large audience. Many government primary teachers have also created their own websites or blogs and regularly post matter pertaining to classroom education and also education administration matters as well.

DO WE ASK OURSELVES?

Are we using "IT" to strengthen our role as a teacher?

As a teacher have we ever asked or tried to assess that how much we use IT for professional development. For example, have we ever used IT to sharpen our skills in learning other functions of "MS-EXCEL" to analyse large data sets. Have we ever assessed our current skill sets, do we think that there is a need for professional development to overcome weak areas? Secondly, do we foresee or able to identify the skill sets that will be required in future as the situation in education sector will have new challenges. Having knowledge of IT is important in today's world, but it is more important for us to understand that how we benefit from it.

For instance, the online "SAMARTH" Training is a very good example pertaining to the professional development of teachers; it provides scope for knowing what is happening in other schools by reading case studies. Attempt questions at the end of each module to understand our analytical skills and also get feedback on the performance. This IT based intervention for capacity building provides us many opportunities for professional development, for example the case studies presented helps to generate a bank of readily available solutions, the feedback on attempted module questions helps to sharpen our analytical skills and decision making, peer-learning and sharing and so on.

Am I trying to replace myself with use of "IT" in class-room?

We should be very careful about the use of IT specifically the digital content from any website in classroom for academic transactions. Use of IT in academic transactions, mainly is a tool to gather information to either overcome limitations of the text book or give a visual detailing which helps a student to understand any concept in a better way. IT cannot replace a teacher, but we as teachers should use it extensively for our professional development. *As a teacher we have to gain knowledge with use of IT, convert the acquired knowledge into a format which can be used for class-room interaction and should try to avoid unplanned display of the digital content.*

How Am I using social media?

Today, digital social media is providing large as well as small platforms for information exchange in text, image/photograph and audio-video format. Various kinds of information is exchanged on this platform in digital format. These all digital content posted can be downloaded and stored at personal level. ***Can we ask ourselves that these social media websites and applications are just source of entertainments or a place to dump digital content or a place for peer learning and sharing?*** We do use social media for entertainment primarily but it also has other meaningful outcomes like to start a maths or science club where in only subject related content is posted. ***To have meaningful outcomes we need to share our problems/issues pertaining to academic transactions without any fear for qualitative peer-learning and sharing. We should also take the feedback from our peers in a positive way and get back to them if in confusion.***

How do we use "IT" with our students?

Use of digital content in teaching-learning processes has to be done very skilfully, it has to be inculcated in the teaching-learning process in such a way that it acts as tool for learning any subject matter and should not be perceived as source of entertainment. We should try to see that "IT" is one of the components of learning process and avoid making it as the only source. "IT" can be very useful for developing a question bank for students, especially in maths and other subjects. Secondly we can use it as a different form of representing content with help of power point presentation, use MS-word for revision or any other academic purpose. ***We should always do pre-planning for using IT in classroom transaction, we should be very precise to design how much role of IT is going to be in teaching-learning process, how much maximum students can be involved, how we are going to involve slow learners or students with learning disabilities and also check the issues within class-room.*** We can also create an "E-library" where we can store downloaded digital material for offline use, but be careful about the quality of material from quality point of view, authenticity and also the language used. The "E-library" will be very useful where there are issues of internet connectivity. This "E-Library" can also be set up in your regular library where you can keep the down loaded in the DVD format, CD or even in external hard disk, we can do the cataloguing in the same format as we do of the regular library.

We should be careful of

- All the content that we are going to use should not have any derogatory or discriminatory language; do not use any content having religious and caste biasness.
- Always check the copyright matter of the content before using it.
- **Always prepare yourself** before using the digital content in class-room and make sure that how you want to use it and what learning outcomes you are expecting.
- **Be patient with the children who are facing issues with operating IT based gadgets**, best option is to take support of the student who has learned it for teaching other students as peer learning and sharing will act faster.
- **Always keep chart of indicators designed by you,** and should be framed keeping in view the academic status of students. This chart can help us in mapping the operational abilities developed in children for using the gadgets and also what learning outcomes they have achieved.
- IT can be very beneficial for sharpening or consolidating the subject based concepts if used as a tool for doing revision and testing. It will also enable student visualise to concept or processes, situation etc., **but when it comes to testing tool we should see that same questions are not repeated as it is possible that students may memorise it**.

"CERAMIC EDUCATIONAL CHARTS"

DATA COLLECTION:
A questionnaire was designed to conduct the interviews of the Principal, teachers, students and SMC members to understand their perception of impact of the "Ceramic Educational Charts". Formal and informal conversations were also video recorded.

The data and collection of other details was done through field visit to school and interacting with teachers and students. Interviews of the teachers using educational charts in the class-room were conducted. Interviews of and school Management committee members or community members wherever available were also conducted. The team visited on 26/February/2020. The team interacted with 9 teachers to understand the implications of digital infrastructure and 6 principals also voluntarily contributed in the discussion and also gave the feedback as school leaders. Student observation and group discussion with students for understanding use of material. Feedback was also sought from the school management committee members and people from the local community.

Based on the field experiences, below mentioned is the summary of use of ceramic educational charts

1. Whenever students were free they went and read from those charts with peers. This was how students were spending their free time with charts and learnt by themselves, Peer to peer interaction was happening.

2. After discussion with students it came out that charts are pictorial so they had seen some flowers, birds etc. for the first time. This was how students came to know about new things and it did help them to create memorise it with help of pictures.

3. Students of class 6 to 8 were using it as educational material, teachers did also teach them with use of charts like Freedom Fighters, Animals, birds etc. in standard 1 to 5 teachers were using it for the purpose of identification of letters, words, pronunciation of words etc.

4. As students do see tiles regularly and it is part of their physical infrastructure teacher observed that they were doing less mistakes in writing spellings.

5. Std. 3 to 5 students were also using it for learning spellings, pronunciation and finding meaning of gujarati words.

6. Students were using it for playing games like show us your favourite flower and speak the spelling.

7. Most of the students were using it in their free time without any instructions, some instructional guidelines could be provided by teachers to students and some other games could be formatted by teachers themselves for self-learning of students and teachers could be trained in it also.

8. Some teachers had suggested that there is no need of two sets of tiles. One is enough and some other subject matter topics could be included in charts like Songs, stories, Poems etc.

9. Other suggestions from the teachers were that charts should be in the form of games and puzzles. So students could apply their knowledge and learning could happen by doing.

10. Blank tiles could also be used for some other purpose, specifically for exhibiting other content also.

11. In Std 1 and 2 of Danbhaina Para Primary school, Karoli while learning new letters students did touch the letters on the tiles and learned from it. This is how they learned to write the letters.
12. These charts were useful for remedial teaching also like in Dhamij Primary school teacher Dharmishtha Patel of class 1 and 2, teacher taught difficult letters like "S" and "૨" by showing its shapes and differentiating it from each other, so students do not make any mistakes in recognizing the letter and writing it.

Below mentioned are the two case studies of the schools where educational tiles were fixed.

Shree Indira Nagar (Karoli) Primary School, Dehagam, Gandhinagar

On 26-02-2020, visit to Shree Indiranagar (Karoli) Primary School for obtaining opinions of students, principals and teachers regarding tiles, there were provided to six government schools of Dehgam by ONGC and Ahmedabad Jilla Gramodhyog Sangh.

Two sets of tiles had been provided to each school. One set of tiles contains Gujarati (36), Hindi (36) words illustrated alphabets; English (26) illustrated alphabets (with its pronunciation, spelling and Gujarati-Hindi meaning), animals (16), birds, fruit (16), leaves (12), craftsmen (16), great leaders of the country (12), vehicles (16), parts of body (12), numbers (1 to 12), etc.

The school had std. 1 to 5 in which 28 boys and 39 girls aggregating to 67 students and 3 teacher including principal were there. 100% of the population of the village was of OBC. Due to shortage of rooms, Std. 1 and 2 as well as Std. 4 and 5 sit together while Std. 3 sits in the other room.

A person from ONGC had paid visit to the school in summer. He understood the demands of the school. The school had raised this demand during the summer vacation of the year 2018-19, to provide and fixed the educational tiles on the wall of lobby and classroom of school. As the principal and teachers had been given complete freedom to install the tiles, one set had been fixed in the classroom and another set had been fixed on the school lobby as well as on the wall of playground. The tiles were fixed 2 feet above the ground/floor level. Blank white tiles were fixed in this 2-feet gap. The respective educational tiles were fixed on the upper side.

Interaction with students on tiles: Std 3 students, 12 students 3 Boys 9 Girls
The students mentioned that it was fixed in summer vacation. The tiles mentioned details about animals, birds, English alphabets, Gujarati alphabets and hindi alphabets, fruits, vegetables, craftsmen/artisans, leaves, flowers etc. Students know that this is provided by the ONGC. Teacher had mentioned it to them. When they come to school, they see it. Sometimes in recess, sometimes in groups, sometimes they learn names/words mentioned on the tiles. Zalak mentioned about vegetables, Bhavna mentioned about fruit and Flower, Nisha mentioned about bird, Rita mentioned about ABCD alphabets, Nita mentioned about fruits, Ami mentioned about Vegetables, Amit mentioned about craftsmen. Sometime teacher does a question answer session with students, ask students about things that were shown on tiles such as if a student likes a flower, spell out the spelling of flower he or she likes.

Conversation with the principal about tiles:
A person from AJGS trust came to the school in month of March 2019. He asked them about the requirements of the school. He also discussed about fixing of educational titles in school. Therefore, agreed and these tiles were fixed in school during the summer vacation. Two sets

were provided in the school. The school has 3 rooms. If all the tiles were fixed in the rooms then there would be no space for the TLM to display. Considering the knowledge level of the student, tiles were fixed accordingly. According to the Pragya system, ગ, મ,ન,જ is the process, so in that order tiles were fixed in the lobby, while ક,પ,ગ,ધ was fixed in the classroom. Since the tile installers were not much educated, one had to be present to guide the masons so that they arrange and fix the tiles systematically. When any subject topic was taught in the classroom, information about the animals, the craftsmen, the vehicles was included in respective unit and was taught with help of tiles. The tiles are only useful for schools having std. 1 to 5. There is no literature regarding Std. 6 to 8. Instead of 2 set of tiles 1 set was enough. The second set was only repetition; instead of tiles containing other educational information if provided (math formulas, poetry, etc.) would be beneficial. There could be literature that could be used for learning, through use of games e.g. If there is a concept of "heart" to be taught in class-room, the tiles should be prepared in puzzle format, so that it increases student engagement in teaching-learning process. Should add some more educational content e.g. Mathematics formulas. Before the TLMs created by the teachers were displayed on the wall of the classroom all year long, but now was only displayed during respective lesson unit taught in class-room because of the wall space constrain.

Interaction with teacher Hiteshbhai, teacher of Std. 4 and 5.
Tiles were good tool for free time reading and practice, and if more educational details were provided, it would be more beneficial. Students had fun learning through the pictures drawn on tiles.

Figure 1 Educational Chart on outside walls of the school

Figure 2 Charts in Class 3

Figure 3 Chart on the front wall of the class 3

Moti Morali Primary School, Dehagam, Gandhinagar

About 100% of the students studying in this school are of OBC. There are 79 students, 39 boys and 40 girls and 5 teachers are in the school. The school is from standards 1 to 8. Three classes

are run in the office of the school. The Principal said that educational tiles were provided by ONGC, this information was shared by his relative and he also mentioned about the process for availing benefit. He had also requested to AJGS official to survey the school. On March 2019, officer had visited the school and conducted the survey and agreed to provide tiles after discussion with principal and teachers.

Interaction with principal regarding educational titles:

On March 2019, a person from ONGC and one from Ahmedabad Jilla Gramodyog Sangh came for survey to the school, requested them that the school will benefit in educational activity by getting educational tiles. Tiles were fixed in summer vacation in year 2019. They were free to decide the place where tiles could be placed. So they decided to fit it in the classrooms of Pragna (Gujarati, Hindi alphabets, birds, flowers, leaves, vegetables, parts of body and digits) and Std 8 (Hindi English Alphabets), other tiles were placed on the outside walls of the classrooms, these tiles had been fixed for students to learn while moving around the school lobby, which included details of animals, artisans/craftsmen, birds, great leaders, Gujarati alphabets, etc.

When the students were trying to write the names of animals in standard-2, the teacher asked the students to look at the tiles and write them down. Thus, there were various kind of uses of tiles related to the subject. In free time, students gain knowledge in different ways, during recess break and also specifically before and after school timings, students read them as the tiles were fixed in the lobby of the school. After fixing the tiles, and on the opening of first semester and in the prayer meeting students were made aware about who had provided the tiles, which subjects were covered in it, how to make use of it etc.

Instead of 2 sets 1 set was enough. Tiles with educational subject like maths, science etc. could be replaced instead of the 1 extra set. He had told teachers that while teaching in a class if you feel that the literature in the tiles is helpful then make use of it. For example, as a social science teacher, when he was conducting a class on the subject of great leaders of India, students were instructed to identify the leaders by looking at the picture of 12 leaders.

Interaction with students of Standard- 8

The English class was going on, the total numbers of students in class were 18, 11 girls and 7 boys. Inner side of the wall of classroom has tiles containing English and Hindi alphabets are fixed. On the outer side of wall, tiles containing birds and Gujarati alphabets are fixed. Students informed that as it is more colorful than a paper chart and its characters were engraved, it is fun to learn by touching with the letters with bare hands. Mehul mentioned that there were names of animals and birds. Twinkle mentioned that there were names of Vegetables and fruits. Priti mentioned that there were names of artisans/craftsmen, fruits, gujarati, hindi and english alphabets. They made use of tiles for reading while they moved around in the school premises, as well as after meals in lunch break.

Interaction with Prajapati Preetaben, a language teacher of Std. 6 to 8.

The walls of the classroom and the lobby looked beautiful with the tiles. Students are using it to gain knowledge in their free time, mostly they read and did compete with each other, specifically on who spoke the more correct words. Every kind of English spelling, pronunciation and meanings were given in Gujarati and Hindi and students had been practicing by reading them. E.g. previously students did mistakes in writing spelling of fruits and flowers, after fixing the tiles, students showed improvement, which was realized by checking their notebooks. There was need of only one set instead of 2 sets. Instead of two sets repeating the same charts some other content can be included in the same. The tiles

which were fixed, there were 2 tiles higher than the ground or floor level. So 2 black tiles could be fixed below in that empty space so that students could write with chalk for doing "writing practice". The tiles could also have the picture of items used in the kitchen, the chart of food items, the pictures of Indian leaders and martyrs should be more. With regard to the English subject, the singular-plural explanation charts, the basic English- Hindi grammar charts, the tables from 1 to 20, Sanskrit subject seemed difficult to all, then its basic words should be placed in alphabetical chart.

Note: In the Pragna class observation did not happen because teacher was on leave and only five students were present and they were also found playing outside the classroom.

Figure 1 Educational Chart on the wall