1. Name of the Initiative: Gyankunj Project (Digital Classroom Solution)

2. Objective

There was a growing need to bridge the digital divide and generate awareness among the future generation with the changing technologies. The integration of ICT would call for changes in various aspects of the delivery mechanism. SSA, Gujarat Transformed concept of Computer Aided Learning (CAL) into Gyankunj Classroom Interactivity concept to achieve enhanced interactivity in teaching-learning process of classrooms and to reinforce teaching, learning and assessment through school digitalization.

➢ To enhance classroom interactivity through advancement in teaching-learning process for Teachers and Students

➢ To reinforce teaching, learning and evaluation process with use of technology

➢ To make ease of understanding for each unit of curriculum in classroom itself by using technology as a medium

3. Coverage of the initiatives

The project is implemented in 1,609 Government primary schools, having interactive e-class developed with smart boards using technology in 3173 classrooms of class V to VIII. The 3173 classrooms are spread across all 33 districts and 242 *talukas* (blocks) across the State. Total 2.85 Lakh students of Class V to VIII are taking advantage of this initiative. With this scheme, the state government ensures it scales operations and increases digital inclusivity of the population. Further, in phase 2, the project is implemented in 12000 classrooms of Std.7 and Std.8 across the state with facilities like Short throw projector, Interactive White Board, laptop, speakers, Learning Management System (LMS), Usage tracking software. With this scheme, the students improve their IT Skills and have an opportunity to learn through the digital content. Our aim is to further improve access to Elementary Education and to achieve 100% enrolment by scaling this initiative to next level.

4. Description of the Initiative including innovative aspects of the solution

Gyankunj Project aims to reinforce Teaching-learning and evaluation process with key deliverables as under:

➢ Teachers have full control on normal whiteboard which is made interactive through integrating all solutions (i.e. Projector, IR Camera with stylus & operating software, Laptop)

➢ Teachers able to execute all pedagogy tactics (Do, Define, Demo, Evaluation) on interactive whiteboard for enhanced delivery of curriculum

- Use of e-Content provided by GCEE-SSA and Video Content telecast under e-Class (Distance Learning) project; at teachers-students comfort level
- Exploring utilization of all Educational Contents, Freeware, Open Source Resources, Online Resources, eContent Created / Tailored by teachers etc. with comfort to teachers up to complete understanding of all students
- Academic delivery through e-Contents, Audio-Visuals, Digital Textbooks which can be accessed offline (local host), online (Cloud based) as well as on local computer
- The solution attract Students to learn and grasp the curriculum with long lasting knowledge
- The solution also attract teachers to use the solution seamless by recording video lectures on board, tailoring online resources as per the need of children etc.
- Inspiring teachers to do innovations for academic delivery to address need of children to achieve learning level of each individual

5. Date of Launch of the initiatives/ Start date of the initiative

The initiative of "Gyankunj" project has been launched by Government of Gujarat on 5th September, 2017 - Teacher's Day to accelerate the efforts of Government of Gujarat in the area of digital education inspired from the vision of Digital India.

6. Implementation details

The project implementation was purely based on principle of demand and supply. The project implemented in schools wherever the teachers are interested and keen to use technology for academic transactions. For this purpose, the teachers applied under Google Form published be GCEE-SSA; to get the Gyankunj class at their schools.

Initially, Gyankunj Project is implemented in 1,609 Government primary schools, having interactive e-class developed with smart boards using technology in 3173 classrooms of class V to VIII. The 3173 classrooms are spread across all 33 districts and 242 talukas (blocks) across the State. Total 2.85 Lakh students of Class V to VIII are taking advantage of this initiative. With this scheme, the state government ensures it scales operations and increases digital inclusivity of the population. Further, in phase 2, the project is being implemented in 12000 classrooms of Std.7 and Std.8 across the state with facilities like Short throw projector, Interactive White Board, laptop, speakers, Learning Management System (LMS), Usage tracking software. A help desk was setup for entire project duration to support the teachers for resolving problems of hardware and software. As teacher has key role and accountability under project, the project monitoring methodology is fully digital in form of Mobile Application as well as Web Application to give handy tool to teacher for sharing inputs, feedback and monitoring project status at all level.

The Gyankunj project implementation model has been specifically developed to provide holistic IT infrastructure to aid the Teaching-Learning process and as per the requirements of the school and adhering to the ICT vision of the State.

Implementation methodology adopted of the state government are presented below:
- o Project implementation starts with the Baseline survey which maps the current academic performance of students, infrastructure readiness for setting up the classroom, exposure of teachers and students to computers.
- o This is followed by the Site Preparation which includes basic infrastructure like electrical wiring and networking etc. Once these pre requisites are fulfilled, installation of the modular fittings like the IR Camera for Interactivity, Projector, Laptop, White board, Speaker etc is undertaken.
- o Training of teachers holds prime importance in ICT@ Schools initiative and computer literacy training is imparted with three different training modules for teachers of all schools.
- o A trained TSP (Technical Service Provider) is also deployed by the government in each school for duration of 3 months for initial project handholding.
- o For this, online portals are created and recruitment drives with written examinations followed by personal interviews are held to ensure that good talent with requisite skills is employed.
- o The required hardware and project software like Multimedia Content is then supplied and installed.
- o The final step in this process is an approval via customized FAT, i.e. Final Approval Test by an internal government official ensures all standards and project requirements are met. Teachers are also trained in handling the various hardware and software installed so as to ensure their optimal utilization.

Components under project:
a. Gyankunj model use whiteboard, a computer, a projector, IR camera and interactive software for interactivity in classroom, the components are connected wirelessly or via USB or serial cables. A projector connected to the computer displays the desktop image on the whiteboard and IR camera uses high speed image sensors which can intelligently track and learn the environment and allow for a seamless information control with any display with real-time interaction and writing speed without any lag and superior interactive performance. The IR camera accepts touch input from infra red enabled pen. It also helps schools, teachers and students to stand globally competent with the help of education technology.
b. Interactive Multimedia Content
   The e-Content comprises of various images, videos, animations, virtual labs, demonstration & visualization of activities, self-learning, evaluation and reference material. In addition to this, it also emphasizes on reading, writing and understanding knowledge as per traditional tactics of pedagogy. The e-Content covers more than 450 units of 52 textbooks, more than 3,000 animated videos, 3,000 interactive animations, over 1,000 games on various topics, virtual lab for science experiments and question bank of more than 50,000 questions. Moreover, this e-Content is being telecasted in video form on "Vande Gujarat" digital satellite educational channel, launched with support of BISAG, through Direct To Home (DTH) media under State wide Distance Learning Programme, e-

Class. The episodes are also available on YouTube Channel under "Gujarat e-Class" for downloading, the URL for the same is:
https://www.youtube.com/channel/UCj_MbJEpkmF6FNXPjyZVI0A/videos

c. Online Project Monitoring System
Web based application (www.gyankunj.org) and mobile app have been deployed for the successful implementation of the entire project. Mobile app can be installed from the Google Play Store. Using this application, the head teacher / nodal class teacher from the school level, logs complaint online for problems related to hardware / software. Under this system, the real-time progress of the Gyankunj project can be ascertained at all levels on the basis of details of the project being updated from the school level.
An online monitoring system has been designed to track following thing.
Real time updates from schools in terms of Commissioning, Pending Calls for maintenance support and progress under training
   o Daily Activity Updates from Schools
   o Showcasing success story under Repository
   o Dashboard available at each level with customized reports
   o Clear indications to agencies for quick action
   o Ease of assessing Progress & Pending actions on agency side
All processes like hardware complaints, vendor management, SLA compliances, theft replacement, and physical damage cases are tracked using this online tool.

7. **Challenges faced during the deployment/implementation**
Though ICT provides the opportunity to transform teaching, learning, and management practices in schools, following challenges faced during deployment / implementation:
   o Manpower mobilization: Hiring local talent with the required competencies was a major challenge. Selection of candidates who are well-versed with the local areas and willing to travel was a difficult task. For this the entire selection team moved from district to district to ensure the selection was inclusive and transparent.
   o Geographical inaccessibility: The difficult terrain of few district of Gujarat , heavy rain, dense forest areas, remote locations and backward regions makes travel and communication a tedious task. With many areas having no 'pakka' roads and reliance on make shift modes of transport, travel of the officials and project team and transport of sensitive IT equipment was a big challenge.
   o Poor Connectivity: The monitoring of such large projects relies on the connectivity and MIS reports generated by the project sites, i.e. the schools. Given the poor mobile connectivity in these areas, daily reporting and updation of MIS became a tedious task. 'Paper and Pen' methods i.e., physical records, are followed and information is sent to the Control Room which are then input into the system. Reports manually sent often face postal delays or are lost in transit. In order to ensure timely dissemination of information, extra staff is deployed for MIS and reporting. Based on such experiences, the

mechanism for data collection is being improved though it will continue to be a challenge.

- **Outcomes/Impact of the initiative**

  Empowerment of Teachers: The use of technology-based Learning Solutions has resulted in the following impact on the Teachers:
  - o Improved Lesson Delivery: With the aid of technologies such as Computers and Multimedia Content, the teachers have been able to improve the lesson delivery by making learning process more interactive and increasing attentiveness amongst Students
  - o Familiarization with New Tools: Exposure to new technologies such as Computers, and Multimedia Content Development, the teachers have in turn been able to build technological capacities for faster adaptation in today's world

  Impact on Learners: The learners as part of the technology-based learning projects have been the largest beneficiary; with receiving benefits such as:
  - o Improved Learning Levels: With the aid of interactive tools including multimedia content, virtual experiments and educational videos, students are able to learn more effectively and at a faster pace relatively
  - o Easier Understanding of Difficult Concepts: With the aid of technologies and visual aids through Multimedia Content, the students are able to understand the difficult concepts especially in Science and Math with relative ease
  - o Improved Attendance in Schools: The use of innovative technologies and the Multimedia Content has been successful in increasing interest levels amongst students. The schools as a result are witnessing more and more students coming to the classroom
- The impact of Gyankunj implementation is assessed through Statistical Bureau under directions of General Administration Department (Planning) during 6-7 February, 2018. This third party assessment is carried out through school visit and response to questionnaire designed to measure the impact.
- Impact assessment was carried out through Probability Propionate to Size Sampling (PPS) of 33 districts and 3 Municipal Corporations. Pre-designed questionnaires were filled for 650 students, 163 parents, 326 teachers, 163 school principals/head teachers and 17 non-beneficiaries. Key areas assessed under the survey as per below:
  - o Availability of equipments allotted under project
  - o Usage of tools by students and teachers for teaching-learning process
  - o Usage of e-Content for different subjects
  - o Structure for maintenance
  - o Approach of students, parents, teachers and head teachers towards new methodology

- The results reveal that non-beneficiary students' like to learn through Gyankunj if facility provided to them. The study report has concluded that 100% students can understand the unit taught through Gyankunj facilities and they love to learn through audio-visuals. 100% parents have admitted that their child is excited to go school and opined to have benefits of the method to their child

8. Documents/media related to initiatives (Submit any of the below as a documentary proof with short description on the same)

a. **Testimonials**

Teachers' feedbacks on the implementation of the Gyankunj project have been invited online through Google form. Under which, a total of 1,224 teachers have submitted their feedbacks so far. According to the feedbacks received from teachers, 73.9% teachers have considered the concept of "Gyankunj" model excellent and 24.7% teachers felt it effective. While 68.6% of teachers have reported methodology of "Gyankunj" project model as excellent, 24.7% teachers have recognized it as a good methodology.

b. **Quotes from stakeholders**

c. **Press release**

d. **Video/Audio**

e. **Photos**

f. **Others**

The teachers are using the provided solution with seamless integration of technology for enhancing learning experience. The key highlights of the same are as per below:

- The schools are teaching the students by creating interactive multimedia content by their own. For example, please visit BlogSpot of a school: http://vigyan-vishwa.blogspot.in/
- Use of Augmented Reality for 3D experience in classrooms and online unit test of the students, please visit:
http://vigyan-vishwa.blogspot.in/2017/11/augment-reality-in-classroom.html
https://www.youtube.com/playlist?list=PLXGTUaCXHECoyC6hHmsfD1w5yRb10g7U7
- The schools are sharing their work carried out through technology for interactive learning experience by creating BlogSpot, YouTube Channel and Facebook page. Please visit:
http://budhejgyankunjportal.blogspot.in/?m=0
https://www.youtube.com/channel/UCtNe5z4JaQT9mK7ke-pL6zg
https://www.facebook.com/profile.php?id=100023903436004

- The teachers are creating online quiz modules for individual assessment of the students. Please visit: https://testmoz.com/1486026