

Implementations in Government Schools in India



Department of School Education & Literacy
Ministry of Human Resource Development, Government of India

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1. Introduction

As part of the process of developing the Core Scope document, NISG has undertaken a detailed assessment study to better understand the School Education sector in India and to do a preliminary identification of opportunities for leveraging ICT to improve the sector. The detailed assessment study involved interactions with four principal categories of participants in the School Education ecosystem in India:

1. *State governments*: NISG interacted with state governments through focused visits to states to interact with various state government education agencies (states selected being Kerala, Gujarat and Bihar), three regional workshops (planned at Hyderabad, Kolkata and Chandigarh) and a final national level workshop with participation from all states.
2. *Various central government education units* such as NUEPA, NCERT, CBSE, NIOS, NCTE, KVS, NVS, KGBV, etc.
3. *Non-governmental organizations (NGOs)* working in the area of School Education
4. *Private business organizations* working in the area of School Education

This report focuses primarily on interactions with State Governments and other Governmental Organizations.

It covers interactions with the following:

1. Kerala
2. Gujarat
3. Bihar
4. District Collectorate, Hyderabad
5. Puducherry
6. RIE, Mysore
7. Department of Mass Literacy, Karnataka
8. MP (Secondary Research of MP Education Portal)

2. Detailed Assessment - Kerala

2.1. Background

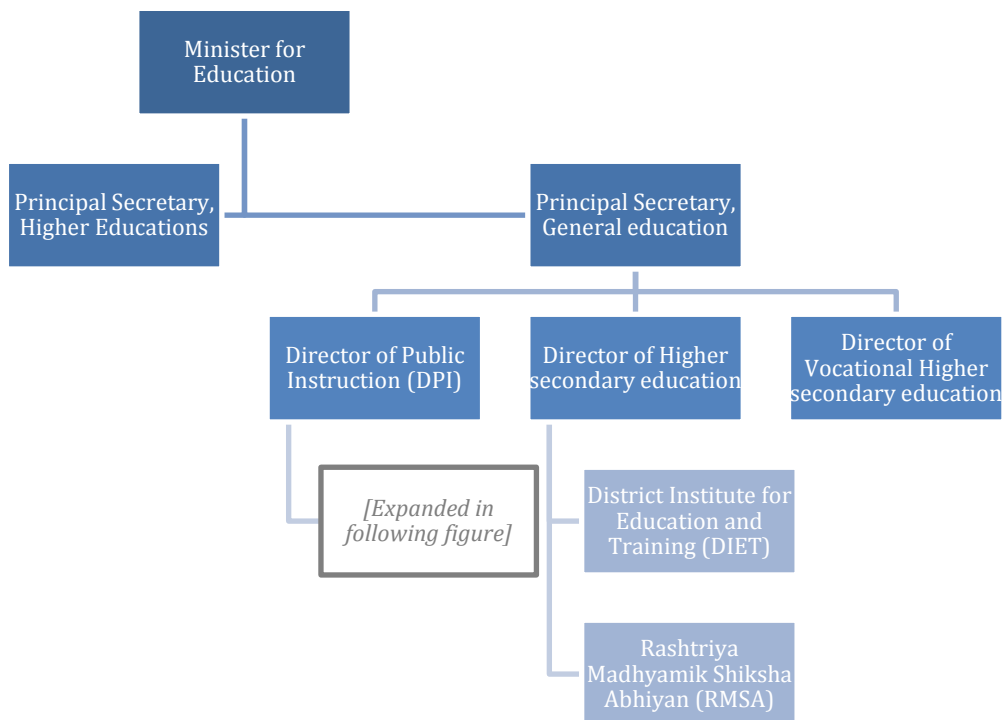
As a part of the core scoping exercise, the assessment phase aims to capture a snapshot of the school education ecosystem in India. This includes interactions with MHRD, Central education agencies, select State education departments and agencies, initiatives by state governments, non-governmental agencies in education, academic researchers in education, and private sector players in education and ICT. In this context one of the steps is visiting states, which have shown initiative in implementing ICT in School education to study the type of services that have been implemented as well as knowing more about the challenges encountered during implementation. The NISG team visited Kerala, Gujarat and Bihar for an assessment of the education ecosystem with specific focus around ICT.

Always at the forefront in learning solutions, both ICT and non-ICT, Kerala has worked a lot on literacy programs and was amongst the first to successfully implement the ICT@School program. Kerala's tryst with ICT in education was guided by the Task force document "IT in Education: Vision 2010" headed by Prof. U.R. Rao. The task force acknowledged that Kerala, "with its unique academic, social and technological environment is ripe to tap the benefits of the IT revolution to enrich its education". The task force aimed to use IT to increase computer proficiency of the students and also enhance curricular comprehension of students. The task force also encouraged creating a greater infrastructure penetration along with making IT relevant for education.

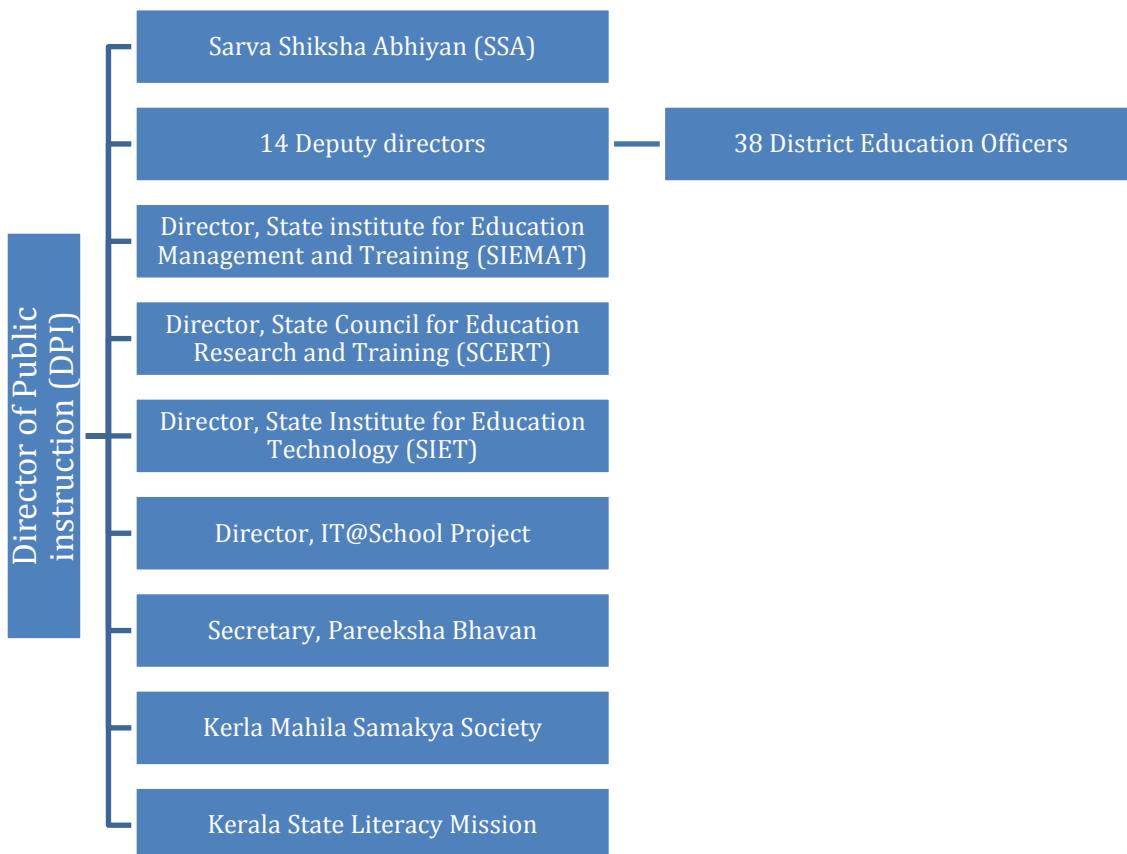
Therefore, Kerala was chosen as one of the states for an assessment with an intention to derive inputs for the Core Scope Document for the MMP. This report captures the Assessment of ICT interventions in School Education in Kerala.

2.1.1. Organization Chart

The Principal Secretary, General Education is the Head of the General Education department and he is assisted by three Directors; Director of Public Instruction, Director of Higher Secondary Education and Director of Vocational Higher Secondary Education. The figures below show the organizational structure of the Education department in Kerala.



The figure below expands the organization structure under the Director of Public Instruction (DPI):



2.1.2. School Statistics

As per the state report card provided by DISE, Kerala has about 12924 schools with a total enrollment of 3.3 million children. There are about 1.4 lakh teachers in the state with a Pupil Teacher Ratio of about 21. The overall literacy is recorded at 91%.

2.1.3. Departments / Agencies Visited

In the course of the assessment visit, the NISG team visited following agencies and had detailed interactions with them to better understand the ecosystem of the education department in Kerala.

| Sl No. | Agency name | Functions |
|--------|---|---|
| 1 | Directorate of Public Instruction | The DPI works with the primary and secondary schooling and manages the Sarva Siksha Abhiyan. It is also responsible for Education research, Educational technology, Training, IT@School project, Literacy mission, teacher management, and textbook management. The DPI also works on examinations through the Pareeksha bhavan. |
| 2 | IT@School | It is an agency established to implement ICT @ School project of Govt of Kerala; setup in 2001 for implementing ICT enabled education in the schools in the State. With operations over a decade long, the agency works towards improving IT infrastructure, IT capacity building, e-Governance, and educational content for school education. The detail of the work done by IT@School is provided in Section III. |
| 3 | State Council for Education Research and Training (SCERT) | SCERT is an institution of the Education Department entrusted with planning, implementation and evaluation of all academic programmes from pre-school to higher secondary levels. SCERT is responsible for curriculum development and modifications. It also provides core training to teachers. The services provided by SCERT include: <ol style="list-style-type: none"> Curriculum Preparation / Course Material preparation including Handbook, A/V material, Requirements for Application Development Core Training for Teachers Training for conducting evaluation as per CCE |

| Sl No. | Agency name | Functions |
|--------|--|---|
| | | <ul style="list-style-type: none"> d. Exam Question Pool Preparation (ongoing) e. Content development for Children with Special Needs: content ready for hearing impaired. Content for visually impaired in progress. f. Collaboration with IT@School in their ICT initiatives especially for content development and curricular relevance |
| 4 | Pareeksha Bhavan | <p>Pareeksha Bhavan is an institution of the Department responsible for undertaking examinations of the education department and Government including, SSLC, THSSLC, KGTE, Scholarship exams etc. The Secretary heads the institution. The services provided by Pareeksha bhavan include:</p> <ul style="list-style-type: none"> a. Conduction of Examinations and other student evaluations b. Publishing of Results c. Maintenance of student records and Creation of mark sheet and certificates d. Teacher Eligibility Test (TET) is proposed to be brought under Pareeksha bhavan as well. |
| 5 | State Institute of Educational Technology (SIET) | SIET is responsible for the planning, research, production and evaluation of educational software, Audio /video and computer based multimedia programmes. |

2.2. ICT implementations in School education in Kerala

An MMP such as this can be used to transfuse ideas from advanced states to all states. For example, Gunotsav in Gujarat is something that can be learnt from. As part of Gunotsav, government officials from the state visit government schools, interact directly with students and teachers and get firsthand information on status-quo. On an average, every school is visited once in three years.

Over the past 12 years, Kerala has moved closer to the vision set out by the task force in 2000. IT@School, which began as a project in 2001 to improve computer

literacy, is now a nodal agency in the state for every aspect of ICT in School Education. IT@School manages almost all projects including e-Governance and IT-enabled learning taken up by the State. The salient features of the implementation of IT in education in Kerala are:

1. IT infrastructure has been set up in Schools for all (4071 nos.) schools in Secondary and Higher secondary education. Rollout across Upper primary schools (8000 nos.) is ongoing
 - a. Computer ratio stands at 1 per 15 students
 - b. Broadband connectivity (of 2 Mbps) is also provided via a tie-up with BSNL
2. Currently, the state has 160 internally trained master trainers and 5600 School-level IT coordinators.
3. Given Kerala government's push on Free and Open Source Software (FOSS), the entire platform, including the operating system and the applications for IT education and IT-enabled education, have been developed in-house by IT@School. The project is considered as: "Single largest simultaneous deployment of FOSS based ICT education in the world".
4. Besides, introducing ICT in student learning, the state has implemented over 10 e-Governance initiatives (One of them being implemented by SIET) that work towards improving the functioning of the School Education department.
5. Currently these e-Governance initiatives are implemented across Government and Aided schools, although recently there have been requests from some unaided schools to be a part of some of the systems.

The services provided by these e-Governance initiatives implemented across the state can be divided into three categories:

1. Learning support services
2. Governance of schools
3. Governance of School Education department

The table below showcases all the services across these 3 categories:

| | Name of initiative | Category | By | For |
|--|--|---|-----------|-----|
| 1. | Sampoorna – A school management system | Governance (School level) | IT@School | DPI |
| Envisioned outcomes | | Coverage | | |
| <ul style="list-style-type: none"> a. More efficient handling of Student information b. Improved service delivery to students from the school administration | | Classes 8-10 completed, 1-3 in-progress | | |
| Features | | | | |
| <ul style="list-style-type: none"> a. Examination management <ul style="list-style-type: none"> i. Preparation of Student Nominal Rolls ii. Payment and Receipt of Examination Fee iii. Preparation of Hall-Ticket- Admission Card b. Student related <ul style="list-style-type: none"> i. Student Enrollment and Registration / Admissions ii. Student Attendance/ Absentee Management iii. Change Student Class iv. Student transfers v. Missing Student Registration (Tracking System) vi. Section details vii. Drop out monitoring viii. Student health monitoring (Vaccination data etc.) ix. Student scholarships management c. Issue of documents <ul style="list-style-type: none"> i. Transfer Certificate issue ii. Migration Certificate iii. Issue of certificates like conduct, bonafide, etc. iv. Bus Passes d. School management <ul style="list-style-type: none"> i. Issue of Text Books/ Note Books/ Uniform and Stationery to the students ii. School Fee management iii. School MIS Reports iv. Fee Regulation v. Class/ Teacher Scheduling (time table) | | | | |
| <p>A unique ID is allotted to each student and school to enable this system. And there is a proposal to integrate with Aadhar ID, if feasible.</p> | | | | |

| | Name of initiative | Category | By | For |
|--|--------------------------|---|-----------|-------------------------|
| 2. | School Wiki | Governance (School level) | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| a. Create online community of schools to enable better sharing of information between schools b. Decentralize the data updation process to school level | | Existing for all schools, capitalized by only a few | | |
| Features | | | | |
| a. Each school is given wiki page to update their information <ol style="list-style-type: none"> i. History of school ii. Location (on Google maps widget) iii. Student Strength & Staff strength iv. Contact details b. They can add any details including photos and videos etc. c. Work done by students and achievements of the school can be showcased d. Vision is to make it into a Facebook for school | | | | |
| | Name of initiative | Category | By | For |
| 3. | 'Spark' – A teacher HRMS | Governance (S.E. dept. level) | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| a. Accurate and useful database of teachers b. More efficient payroll management c. Support to other complimentary systems through more accurate and relevant data | | All teachers | | |
| Features | | | | |
| a. Teacher ID is given to each teacher and linked to Schools ID b. Provides data for teacher transfers and postings system c. Teacher database: <ol style="list-style-type: none"> i. Registration for Teaching/ Non-Teaching Staff/ Vidya Volunteers ii. Attendance for Teaching/ Non-Teaching Staff/ Vidya Volunteers iii. Information recorded includes: | | | | |

1. PEN (Permanent Employment Number)
 2. Name
 3. Personal Memoranda
 4. Present service details
 5. Details of parent department, if currently on deputation
 6. Present address
 7. Recruitment details
 8. Details of Dependents
- d. Financial / Payroll management
- i. Access to schools to draw salary directly through system
 - ii. Linked to treasury department for direct payment to teachers via system
 - iii. Online balancing of loans, pensions benefits etc.
 - iv. Online bill reimbursement
 - v. Information recorded includes:
 1. Present salary details
 2. Additional pay and allowances
 3. Deductions and Recoveries
 4. Details of disbursement of loans like HBA, MCA, GPF advance etc.
 5. Details of current loans / Advance recovery
 6. Details of benefits like GPF, GI.SLI.FBS, C.C.R.G, and Pension etc.
 7. Nominations for PF, Pensioner and other claims
- e. Training support
- i. Identification of training requirement based on qualification and existing training
 - ii. Posting of training details through notice board
 - iii. Information recorded includes:
 1. Teacher Qualifications
 2. Details of Training programmes attended
 3. Previous Qualifying services
 4. Departmental Tests passed
 5. Details of Awards received
- f. Service matters
- i. Electronic Service Register of Teachers
 - ii. Leave management
 - iii. Details of regularization provided online
 - iv. Online access to service and disciplinary records
 - v. Access to promotion details and records
 - vi. Online submission of Annual Performance Report
 - vii. Notice board for teacher depositions
 - viii. Information recorded includes:

1. Promotions due,
2. Scheduled retirement,
3. Service details
4. Disciplinary actions
5. Details of declaration of Probation
6. Notice board for Teachers for deputations and trainings
7. Annual Performance Report
8. Details of official accommodation availed (quarters)
9. Leave on Credit
10. Leave Availed
11. Encashment of Leave during service

| 4. | Name of initiative | Category | By | For |
|---|---|---|-----------|-------------------------|
| | Textbook Indenting system | Governance (S.E. dept. level) | IT@School | DPI |
| Envisioned outcomes | | Coverage | | |
| a. Accurate, faster and more efficient Textbook indenting process | | Implemented for Secondary, Higher Secondary and Vocational higher secondary | | |
| Features | | | | |
| <ol style="list-style-type: none"> a. Textbook indenting b. Aggregation of textbook requirement c. Procurement request d. Textbook printing order e. Monitoring of Textbook printing process f. Monitoring of textbook distribution | | | | |
| 5. | Name of initiative | Category | By | For |
| | Teacher transfer and postings / 'Teacher's package' | Governance (S.E. dept. level) | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| <ol style="list-style-type: none"> a. Complete transparency in transfer mechanisms b. Complete coverage for all use-cases c. Enable users to post grievances | | All teachers and Headmasters | | |
| Features | | | | |

- a. Maintenance of teacher student ratio
- b. Supports all types of transfer applications
 - i. HM / teachers
 - ii. Inter-district
 - iii. Intra-district
- c. Standard process followed across the state
- d. Online teacher rationalization
- e. Online complaints registry
- f. Data pertaining to successful and unsuccessful transfer applications is available online and is transparent to all

| | Name of initiative | Category | By | For |
|--|--|---|-----------|-------------------------|
| 6. | Extra-curricular event support (3 systems): Portals for Kallolsavam, Sastrothsavam & School sports | Governance (S.E. dept. level) | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| <ul style="list-style-type: none"> a. Enable organizers to manage events more efficiently b. Increase visibility of events and participants c. Support entitlement mechanisms | | All major events | | |
| Features | | | | |
| <ul style="list-style-type: none"> a. Background: Education department conducts 3 major events annually – across the state: <ul style="list-style-type: none"> i. Kallolsavam (arts and cultural) ii. School sports iii. Sasthrolsavam (science, design and innovation: science fair, social sciences fair, math fair and works fair) b. Entry of participant list from districts, c. Scheduling of events (because students participate in multiple events), d. Categorization of students, e. Immediate result processing, f. Portal for publishing results, g. Results and videos are published online; h. Students winning scholarships are also directly noted through system; | | | | |
| | Name of initiative | Category | By | For |
| 7. | School GIS mapping | Governance (S.E. dept. level) | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| a. Provide accurate and reliable geographic data of all | | All schools in the state have been mapped | | |

| | | | | |
|---|---------------------------|---|-----------|------------------|
| schools | | | | |
| Features | | | | |
| <ul style="list-style-type: none"> a. Currently GPS locations of schools are taken and layered on GIS application b. Proposed integration with Google Maps c. Several views and reports possible d. Poised to form a decision support system on clustering of schools | | | | |
| 8. | Name of initiative | Category | By | For |
| | Examination systems | Governance (S.E. dept. level) | IT@School | Pareeksha Bhavan |
| Envisioned outcomes | | Coverage | | |
| <ul style="list-style-type: none"> a. Complete transparency in examination process b. Fast turnaround in lead-up to exams and results tabulation and publishing c. Protect reliability of certificates issued by reducing fraud | | For all exams. Teacher eligibility test is proposed to included too | | |
| Features | | | | |
| <ul style="list-style-type: none"> a. Examination management (for Board Exams, Evaluation and Results) <ul style="list-style-type: none"> i. Student registration/nomination rolls and issue of Hall tickets ii. Question paper & Answer sheets – indenting, printing and distribution iii. Allocation of students to the examination centers iv. Allocation of teachers / staff towards invigilator duties v. Allocation of answer papers to teachers / evaluators vi. Digital entry of mark sheets vii. Recounting of Marks viii. Photo Copy of Answer Sheets ix. Recounting of Marks x. Automated certificate creation b. Certificate management <ul style="list-style-type: none"> i. Issue of Duplicate certificates ii. Certificate repository iii. Migration Certificate iv. Correction in SSC certificate v. Duplicate SSC certificate vi. Birth Certificate as per SSC vii. Online genuineness verification (Starting June, registered agencies like police, army etc. can access certificate directly online to check genuineness of submitted certificates) | | | | |

| | Name of initiative | Category | By | For |
|--|--|--|-----------|-------------------------|
| 9. | Content development for IT-enabled education | Learning support services | IT@School | General Education dept. |
| Envisioned outcomes | | Coverage | | |
| <ul style="list-style-type: none"> a. To create Information Technology skills in students passing out from schools in Kerala b. To improve the intellectual ability of the teacher and comprehension ability of the students (learner) through ICT c. To develop content for various subjects using ICT tools to enable faster and effective learning within the national curriculum framework d. To complement the course delivery in various subjects and laboratory experiments through ICT based simulation and other tools e. To explore and exploit satellite technology to create a synergic environment of edutainment in schools under the project | | For all subjects across grade levels | | |
| Features | | | | |
| <ul style="list-style-type: none"> a. Content for IT education and IT enabled education being prepared along with relevant examinations b. Training <ul style="list-style-type: none"> i. Subject wise training provided to teachers with separate training for computer literacy ii. IT Training for Visually Handicapped being developed c. IT Exams, both Theory and Practical, are conducted d. Training content development <ul style="list-style-type: none"> i. Content for training teacher to use ICT ii. Subject wise content for helping teachers use IT-enabled subject content better – In tune with school curricula as per yearly changes e. VICTERS education channel <ul style="list-style-type: none"> i. Live classroom education channel providing 17 hours of daily broadcast through EduSat ii. Studio present in IT@School office; all content created internally | | | | |
| | Name of initiative | Category | By | For |
| 10. | SIET’s Digital content development | Learning support services | SIET | SIET |
| Envisioned outcomes | | Coverage | | |
| <ul style="list-style-type: none"> a. Create supporting Audio-Visual tools for curriculum b. Ensure high access to developed material to the | | Operations in all 14 districts and content for all | | |

| students | subjects across grade levels |
|--|------------------------------|
| Features | |
| <ul style="list-style-type: none"> a. Creation of Digital Content – Around 900 titles of educational CDs have been prepared to cover each chapter at every level of school education. b. Creation of A/V Content c. Radio / TV content broadcast d. Educational audio broadcast through Gyanvani FM Radio e. Video broadcast through Doordarshan and Victers Educational Channel f. Distribution of Digital Content in CD formats through CD Mart franchisees in all 14 districts g. Maintenance of CD libraries in all schools h. Internet learning through www. Sietkerala.gov.in i. Conducting of children’s film festival j. Online Aptitude test which aims to measure Aptitude, Interest and Personality k. Language Lab for English l. Currently working on Digital textbooks on tablets | |

2.3. Challenges

To achieve its objectives even better in the future, the state of Kerala is looking to tackle the following key challenges:

1. Kerala has largely addressed issues related to Access and Equity and has identified the need to focus more on the quality of education delivered
2. There is a major push to use ICT for increasing quality of education; therefore to ensure that the quality improvement programs run optimally, the infrastructure required to support such programs should be maintained. The state needs to account for continuous ICT infrastructure upkeep and expansion. And given that the state has decided to use internal resources for the initiative, the state is keen to focus to improve quality of recruitment and training to ensure that the quality teachers are provided to impact the quality of education positively.
3. Although, content has been made available to the school education community, the evaluation of content based on Learning outcomes is yet to be implemented in a regular and effective manner. The state understands that the quality and effectiveness of the content and its delivery can only be known by measuring the learning outcomes of the recipients. The top officials realize that establishing such reliable mechanisms to complete the rigorous feedback loop could very well be the greatest challenge for Kerala policy makers.

The IT@School initiative faces the following challenges in the near future:

1. The design of ongoing computerization of upper primary schools and upcoming computerization of lower primary schools is a key challenge. Many studies and reports have shown that designing an ICT experience for children of primary level is a challenge. Kerala has to keep that in view and create a relevant and effective design to ensure that the learning levels of primary children are positively impacted.
2. Most of the computerization has been done using funds provided by the Government of India. The central fund flow for IT infrastructure will cease in 2012. It is important for the sake of the students that IT@School is not discontinued. The Kerala government is looking at various options for funding to meet expenditures to replace ageing IT infrastructure, maintenance of the same that is foreseeable in the future, in order to continue the scheme for the benefit of students.
3. One of the challenges currently faced by IT@School for implementing e-Governance initiatives is to capture relevant requirements and necessary information from the General education department (understanding processes, etc.).
4. Kerala's state's IT policy requirement of using only FOSS, is a challenge for IT@School in implementing or scaling up learning solutions.

2.4. Salient features of the Kerala implementation model

Assessment of ICT implementation in Kerala schools, interactions with key stakeholders, policy makers has provided some important and relevant inputs for the MMP design. These inputs are being highlighted in this section. Kerala is one of the few states to have implemented ICT in School education significantly. Also, the state has over a decade of experience in sustaining and scaling up their initiatives. Therefore, Kerala's implementation model is worth noting in the context of the SE-MMP. Some of the salient points that are worth noting from this model are:

1. Focus on in-house capacity building

The state laid a clear focus on using in house government resources for the implementation. The number of functions that IT@School carries out using internal resources includes: program design, infrastructure specifications, bid management, project monitoring, software development, hardware maintenance, capacity building, training, content creation, and content production.

2. Emphasis on teacher capacity building for IT

In the early stages of IT@School, teachers with aptitude for ICT use were handpicked from government and aided schools to form a core group to plan and initiate the project. These teachers are still part of the program and are currently master trainers. Instead of earmarking a dedicated IT teacher in a school, all subject teachers are expected to be computer literate and use ICT to teach their subjects. Most of the training is done in training venues and at occasion it is conducted online through video conferencing. Initially, computer literacy for teachers was focused upon and later they were trained on computer-aided teaching. At the inception of the program, the state engaged private sector training firms for imparting the training.

3. Phased rollout approach since 2003

- a. Phase I – Selection of “Master Trainers”, who are all teachers from each of 14 districts (160 total) and training them in computer literacy and ICT-enabled education
- b. Phase II – Deployment of hardware and software in some secondary and high school. No separate lab for computers, but rather focus on “in classroom” IT education
- c. Phase III – Content development and management
- d. Phase IV – Steady rollout to all Secondary and HS schools across the state.
- e. Phase V (ongoing) – Development of special software (Operating system and Learning tools) for primary section and Rollout of infrastructure to Upper primary schools

4. Alignment of teacher training with deployment of IT infrastructure at school level

Computer literacy training of teachers in Kerala was carried out in parallel with infrastructure deployment to ensure that the infrastructure does not lie unused. Teachers were also trained for handling the IT hardware in the schools. SITC (School IT Coordinator) is the operational coordinator for IT activities in a given school. This role is different from the master trainers (who do the training). Student IT coordinators assist the SITC in setting up computers, keeping logs, arranging training programs and other admin activities. Hardware clinics have also been conducted to refurbish defunct or outgoing PCs.

5. Exclusive deployment of open source technologies in implementation

In alignment with the state government’s policy, the entire platform for IT@School was developed on FOSS. This transition into hundred percent usage of FOSS was made in 2007. The state has developed their own version of OS, using Linux, for deployment in Secondary and Higher Secondary schools. A separate new version is almost ready for deployment in LP and UP schools, as students of this age group have different needs and user profile. This has proven to be cost effective and as

well hassle free usage. This initiative along with maintenance of IT infrastructure with internal resources has made IT@School a very sustainable initiative.

6. In-house development of Educational digital content

Initiated in 2003, Educational digital content was developed by IT@School to teach subjects beyond just IT. To start with, Intel supported the State in developing content and over a period of time, content the master trainers for all subjects did creation, in collaboration with members of the SCERT's education wing to ensure that content is tightly coupled with existing school curriculum. The state has trained the subject teachers to use this content in ICT enabled teaching. This model has proven that as capacity building of teachers is the only way that IT awareness and IT-enabled education can become ubiquitous.

7. Compulsory computer exams

In 2007, Computers as a subject was made compulsory subject for 8th grade, 9th and 10th grade followed suit the following year. All necessary enablers such as teacher capacity and putting in place sufficient infrastructure at schools were provided prior to this by the State. Besides, computer exam was introduced in the annual exams to emphasize the seriousness of administration towards computer literacy.

8. ICT Focus is on supporting learning rather than governance

ICT in education was primarily focused on improving the student learning rather than automation of departmental administration. The entire effort was focused on using IT to support teachers and students so as to improve the computer proficiency and curricular comprehension of the student. IT for automation of departmental administrative tasks was given second priority comparatively unless it directly impacts the primary focus of student learning.

2.5. Future Focus Areas

As Kerala has attained a high level of maturity in implementing ICT interventions in school education, the state is focusing on the next generation of ICT initiatives wherein, they would launch Decision Support Systems (DSS) based on near real time data to facilitate right decision making in School education in the state. In order to achieve this, a lot of backend data needs to be digitized and needs to be integrated with the decision-making criteria of the department. The possible areas for future focus are:

1. Track each child from the entry into the education system till its completion (including higher education). Currently the student database doesn't have 100%

coverage. Kerala state has expressed that this system is a requirement for all states and hence has suggested for central level initiative so that it is implemented across all states in a uniform manner

2. A seamless integration of all child related information including:

a. Background information

Child information such as Name, Parent name, Address, Caste, etc. for each child who enters the education system

b. Achievement portfolio

Performance information of the child based on any assessments or evaluations conducted. This can include the information collected through CCE as well as co-curricular achievements.

c. Performance improvement

Link child data to school and teacher data to analyze the teacher and school performance and undertake large-scale analytics to find patterns that can help identify areas of improvement in the system.

d. Entitlement

Information regarding any government sanctioned benefits that the child is entitled to, such as scholarships etc. The fulfillment of those entitlements may also be tracked.

e. Certificate/Document depository

Creating a depository that contains all the certificates and formal documents that are issued to the students, such as SSC or HSC graduation certificate etc. It was also proposed to give access to other agencies such as Police, Army or prospective employers for verification purpose.

3. Link each Student/child to UID so that a student/ child can be tracked across school and university level.

4. Roll out of IT @ school scheme to all schools

5. Adopt data standards in the e-Governance applications to facilitate the interoperability of intra state and inter state IT systems. Teacher accountability and performance appraisal are the key focus areas for conceptualizing ICT interventions to support RTE implementation in the State.

3. Detailed Assessment - Gujarat

3.1. Background

As a part of the Core scoping exercise, the Assessment phase aims to capture a snapshot of the school education ecosystem in India. This includes interactions with MHRD, Central education agencies, select State education departments and agencies, initiatives by state governments, non-governmental agencies in education, academic researchers in education, and private sector players in education and ICT. In this context one of the steps is visiting states, which have shown initiative in implementing ICT in School education for conducting a study of the type of initiatives that have been implemented, type of services delivered, as well as knowing more about the challenges encountered during implementation. In the shortlisted states, the NISG team conducted a detailed study of the education ecosystem around ICT. The NISG team visited Kerala, Gujarat and Bihar for assessment study.

The state has been investing a lot in developing technology-based solutions for problems in education. The state has also created an ICT policy in education along with a document on services that should be ICT enabled. Therefore, Gujarat was chosen as one of the states for an assessment study with an intention to derive inputs for the Core Scope Document for the MMP. This report captures the assessment of ICT interventions in School Education in Gujarat.

3.1.1. Organization Chart

The Principal Secretary, Education is the Head of the Education department and he is assisted by a Secretary, Primary Education and 6 Deputy Secretaries covering everything from secondary education to technical education to budgeting etc. The figure in the next page shows the organizational structure of the School Education department in Gujarat.

3.1.2. School Statistics

As per the state report card provided by DISE, Gujarat has about 40746 schools with a total enrollment of about 7.8 million children. Most of these children are enrolled in schools, which have both primary and upper primary sections. There are about 2.4

lakh teachers in the state with a Pupil Teacher Ratio of about 31. The overall literacy rate for the state has been recorded at 69%.

3.1.3. Departments / Agencies Visited

In the course of the Assessment visit, the NISG team met various agencies and had detailed interactions with them to better understand the ecosystem of the education department in Gujarat.

| Sl No. | Agency name | Functions |
|--------|---|--|
| 1 | Office of the Principal Secretary (Education) | The Principal Secretary of Education heads the department and reports directly to the Education Minister. The PS manages School education, Higher education, Technical education and Adult education. |
| 2 | Office of the Secretary (Primary education) | The Secretary (Primary education) focuses on the education in primary schools. This includes all the lower and upper primary schools. |
| 3 | Gujarat Council for Education Research and Training (GCERT) | Gujarat Council of Educational Research and Training (GCERT) is a pivotal institution at the state level for the enhancement of qualitative education at primary and secondary schools. It provides resource support and guidance to all the teacher education institutions and works in collaboration with the NGOs, subject experts, educationalists and pioneers in bringing about reforms in the school education sector with specific focus on remote and underserved areas of the State. It disseminates latest information with regard to modern trends and approaches in primary education, pre-service and in-service education, pedagogical advances in the country, wide use of distance education as a mode of training, organizing community awareness programmes and updation of curriculum of primary education in view of new and emerging concerns. |
| 4 | Sarva Shisha Abhiyan (SSA) | SSA project implemented by Gujarat Council of Elementary Education in Gujarat State. Sarva Shisha Abhiyan (SSA) is Government of India's flagship programme for achievement of |

| | | |
|---|-------------------------------------|--|
| | | Universalization of Elementary Education (UEE) in a time bound manner. |
| 5 | Commissionerate of School Education | The office of the Commissioner of schools and mid-day meals manages the development and maintenance of general education after Class 7. The office gives administrative instructions and has control of Secondary and Higher secondary schools and also the responsibility for approving grant to non-government and special institutes. |

3.2. ICT implementations in education in Gujarat

Over the past few years, Gujarat has initiated various ICT initiatives in School Education, including large-scale enablement of IT infrastructure in schools. The salient features of the implementation of IT in education in Gujarat are:

1. IT infrastructure has been set up in all schools in secondary and higher secondary education (6000 nos.). Rollout across upper primary schools (22000 nos.) is set to be initiated
 - a. Each school has 11 computers, 40' LCD TV, Antenna for satellite reception, printer, UPS etc.
 - b. All the computers run on an Ubuntu platform
2. Multiple e-Governance initiatives have been undertaken by different sections of the department.
3. There is no single nodal agency for all the e-Governance projects. All projects are initiated by different wings/ agencies of the department and supported centrally by the Principal Secretary of Education.

The services implemented across the state can be divided into three categories:

- a. Learning support services
- b. Governance of schools
- c. Governance of School Education department

The table below showcases all the services across these 3 categories:

| | Name of initiative | Category | By | For |
|--|---|---|--------------------------|------------------------|
| 11. | BACALS (Biometric Attendance and Computer Aided Learning for Schools) | Governance (School level) | SSA office (through TCS) | School Education dept. |
| Envisioned outcomes | | Coverage | | |
| c. Real-time and accurate data collection regarding Teacher and Student attendance | | Implemented in 8 tribal districts | | |
| d. Centralized analysis of attendance data for decision support | | | | |
| Features | | | | |
| <ul style="list-style-type: none"> e. Biometric fingerprint based attendance system installed in all schools of the select districts f. Login provided for each school and institution to enroll their students or staff directly g. All attendees are required to mark their attendance by simply placing their finger on the fingerprint scanner. This is done twice for every school day. h. Three responses (with audio in Gujarati) are provided upon scanning: <ul style="list-style-type: none"> i. Accepted ii. Attendance already punched iii. Fingerprint not recognized i. Dashboard views created for each district, for state HQ and other offices j. Data can be studied at a school level, student level, block level, district level and state level | | | | |
| | Name of initiative | Category | By | For |
| 12. | School GIS mapping | Governance (S.E. dept. level) | School Education dept. | School Education dept. |
| Envisioned outcomes | | Coverage | | |
| b. Provide accurate and reliable geographic data of all schools | | All schools in the state have been mapped | | |
| Features | | | | |
| <ul style="list-style-type: none"> e. Currently GPS locations of schools are taken and layered on GIS application f. Customized GIS platform created by the state g. Schools are identified as per the school type (Secondary, Higher Sec, Lower Primary and Upper primary) h. Distance between schools can be measured and 'neighborhood' area can be mapped out given the radius of the neighborhood circle | | | | |
| | Name of initiative | Category | By | For |
| 13. | Examination systems for SSC board | Governance (S.E. dept. level) | School Education dept. | SSC board |

| | | dept. level) | Dept. | |
|--|---|--|---------------------------|------------------------|
| Envisioned outcomes | | Coverage | | |
| d. Complete transparency in examination process e. Fast turnaround in lead-up to exams, results tabulation and publishing f. Protect reliability of certificates issued by reducing fraud | | All 11 lakh SSC students | | |
| Features | | | | |
| c. All schools are registered d. Exam fees are paid online e. School portal created using the data collected f. 10 th class application rolled out online g. Automated issue of hall tickets to students h. Online publication of results | | | | |
| | Name of initiative | Category | By | For |
| 14. | Data management for 'Gunotsav' | Governance (S.E. dept. level) | School Education Dept. | Gunotsav |
| Envisioned outcomes | | Coverage | | |
| a. Support the large-scale and rapid turnaround data entry requirements for the annual 'Gunotsav' | | Conducted for students of Classes 1-7 and all teachers in 9000 schools every year | | |
| Features | | | | |
| a. Data entry of filled forms b. Data is collected, entered and available for analysis within within few days c. Publishing of results online | | | | |
| | Name of initiative | Category | By | For |
| 15. | Content development and delivery for IT-enabled education | Learning support services | Comissionerate of Schools | School Education dept. |
| Envisioned outcomes | | Coverage | | |
| f. To impart Information Technology skills in students of Gujarat government schools g. To develop content for various subjects using ICT tools to enable faster and effective learning within the national curriculum framework h. To complement the course delivery in various subjects through ICT based simulation and other | | For class 8 th to 12 th of all schools which have computers installed (approximately 6000) | | |

| | | | | |
|--|----------------------------|--|------------------------|------------------------|
| <p>tools</p> <p>i. To monitor delivery of ICT-enabled content across enabled schools</p> | | | | |
| Features | | | | |
| <p>f. Computer literacy modules have been developed</p> <p>g. Content has been created with partnership of two private partners, Educomp and NIIT with the former covering Classes 8,9 & 10 and the latter covering 11 & 12</p> <p>h. Content is primarily video lectures with animations</p> <p>i. Each video lecture is linked to a specific curricular objective</p> <p>j. Over 820 topics across Maths, Science and Language have been covered for in the ICT-enabled content</p> <p>k. Content is designed to work on Ubuntu based Operating system</p> <p>l. Digitized textbooks have been preinstalled in computers</p> <p>m. No user ID or password is required to access the content</p> <p>n. No usage-tracking feature has been created. Tracking is done manually by school coordinators</p> | | | | |
| 16. | Name of initiative | Category | By | For |
| | Online teacher recruitment | Governance (S.E. dept. level) | School Education Dept. | School Education Dept. |
| Envisioned outcomes | | Coverage | | |
| <p>a. Transparent recruitment process</p> <p>b. Efficiency for department officials and ease of use for applicants</p> | | Teacher recruitment for all government schools | | |
| Features | | | | |
| <p>a. Online process for application submission</p> <p>b. Centralized test</p> <p style="padding-left: 20px;">i. Teacher Aptitude Test (TAT) – 60%</p> <p style="padding-left: 20px;">ii. Marksheets 40%</p> <p>c. Automated creation of merit list</p> <p>d. Online listing of preferences by teachers for their preferred districts for posting</p> | | | | |

3.3. Challenges

To achieve its stated objectives in a better way in the future, the state of Gujarat has the following key challenges:

1. Gujarat has largely addressed issues related to Access and Equity and has identified the need to focus more on the quality of education delivered. The priorities of the state are now focused around the objectives of quality that it has set for itself.
2. RTE implementation
With RTE implementation mandated for the next academic year, there is a lot of focus on carrying out the implementation in an effective and smooth manner. Amongst all the aspects of the RTE, the State is looking at IT interventions for implementation of CCE, recognition of private schools and allotment of 25% seats for the poor
3. Teacher vacancy, recruitment and transfers
Calculation of teacher-student ratio (TSR) is a key concern area, as multiple vested interests are responsible for providing inaccurate data into any system. This results in erroneous calculation of teacher vacancies. Although, recruitment of teachers is done transparently through online system for the government schools, recruitment continues to pose a major problem for the aided schools (of which Gujarat has many). Though the state has issued teacher recruitment guidelines to the aided schools, the recruitment process for the aided schools is yet to be improved. As of now, all the allotment of fresh teachers and teacher transfers are done offline through 'camps' for counseling and allotment.
4. No central accurate data
Although, Gujarat has worked a lot on access of education to schools, it hasn't been able to create a real time and accurate central database of basic information such as, number of schools, students, teachers, and teacher qualification etc. This problem, however, is not unique to Gujarat and is common across the country. In spite of the DISE data being collected, there are concerns on the accuracy of the data so collected.
5. Teacher absenteeism
The low attendance of teachers is considered one of the most critical problems in the delivery of learning services. Various incentives and campaigns have been tried earlier to improve the teacher attendance, but none of them have showed lasting results. Therefore, along with the Tribal welfare department, the School Education department has piloted a biometric solution for attendance for both teachers and students. The system is now in place in all 8 tribal districts of Gujarat on a pilot basis. The success of this initiative in the pilot will determine its rollout across the state.

6. Teacher performance appraisal

Considered as one of the critical components of quality assurance of delivering learning, it is currently completely absent in the education system. The School Education department intends to look at methods and means of carrying out a teacher performance appraisal.

3.4. Salient features of the Gujarat implementation model

Assessment of ICT implementation in Gujarat schools, interactions with key stakeholders, and policy makers has provided some important and relevant inputs for the MMP. These inputs are being highlighted in this section.

Gujarat is one of the few states to boast of significant IT implementation in education sector. The state is also known for taking up a few reform-oriented initiatives. Some of the salient points of Gujarat model that can provide valuable inputs to conceptualization of School Education MMP are:

1. Having already addressed the access and general infrastructure problems in education to a significant extent, the current focus of the department is on improving quality of education. The State is adopting outcome based approach in fixing priorities for implementation
2. The State adopted Public Private Partnership model for implementation with private players are responsible to set up infrastructure, create content and for operations and maintenance. The Commissionerate of Schools (CoS) conducted the entire process, under direct guidance from the top administration. The salient features of this PPP model are:
 - a. Infrastructure:
 - i. Specifications of the computer, accessories, TV, UPS etc. were drawn up by the CoS
 - ii. Schools were identified, and the decision was taken to limit the ICT rollout to 6000 high schools.
 - iii. Open Source Ubuntu platform is adopted for the computers. Though the content used would be proprietary which would be eventually transferred to Gujarat government.
 - iv. The contract was for 5 years with following scope:
 - Infrastructure installation as per prescribed schedule
 - Training to all teachers for ICT literacy
 - Infrastructure upkeep
 - Hand-holding to teachers
 - Supplementary IT education
 - Deployment of new applications being developed

- b. Content
 - i. Content was developed in partnership with private players with assistance from a 3rd party consulting domain expert. Over 800 topics were covered across Maths, Science and languages for classes 11 and 12.
 - ii. Educomp and NIIT were chosen to develop the actual content based on the requirements laid out by the state. Most of the content is in the form of animation videos laid out in an interactive chapter format.
 - Create and deploy content across all the schools
 - Train teachers in using the content to enable better learning experiences
 - Refresher training when required
 - Development of newer applications or content within prescribed content requirements
 - Training for new content
 - iii. 3rd party domain consultant finalized the curricular topics for which the content was to be developed and advised on the fitment of the content with the curriculum. Consultant also tests 30% of the content for fitment.
 - iv. Development of content done with close involvement from teachers as well as developers. Developers given a 2 day workshop on method creating education content. Teachers were heavily involved in the storyboarding and the evaluation of the content.
3. Overall, it took 2 years for the procurement process, including specifications, tendering, until the award of the contract.

3.5. Future focus areas

Gujarat's ICT interventions in school education sector is evolved and matured over a period of time. The state is currently focusing on the next generation of initiatives with specific focus on improving quality of school education through outcome measurements. There is a lot of work yet to happen to enable quality improvement, such as the measurement of teacher attendance; teacher performance appraisal; standardized assessments etc.

To achieve this, a lot of systems and infrastructure needs to be put in place and the systems needs to be integrated with the decision-making criteria of the department. The following focus areas for the future are:

1. Track each child
 - a. Either from the entry into the education system till its completion (including higher education),

- b. Or from the time of birth itself by including child health into its ambit
2. Provide more IT infrastructure, especially for upper primary schools, which constitute the majority of schools
3. Development and deployment of innovative ICT interventions to curtail teacher absenteeism and scaling up across all schools.
4. Assessment of the ICT rollout and content which is deployed
5. Concept based rigorous assessments for students, especially for the board level examinations
6. Digital examinations, to improve efficiency of exam conduction and reduction in usage of paper. The state has the following ideas to realize this initiative:
 - a. Create infrastructure to set up common assessment centers at district or taluka level
 - b. Each center is equipped with all digital means to enable student to give exam
 - c. Common assessment centres to be capable of conducting exams such as IIT-JEE, AIEEE, BITS, Teacher Test etc
 - d. Instant result for tests with objective questions and fast turnaround for tests with subjective questions
7. To procure content or centralized content depositary
8. IT application to monitor RTE implementation to include features, customizable to state rules.
9. CCE implementation
 - a. Teacher's to provide feedback be done directly online
 - b. Data input on school computers itself to enable real-time data
10. 25% clause of RTE
 - a. Child tracking
 - b. Private School lists with relevant details of the school
 - c. Online admission process
 - d. Lottery / Methodology for allotment or admission
11. School registration
 - a. Online application for new school registration
 - b. Committee checks and evaluation online
 - c. Online appeals
12. Robust grievance redressal system
13. School Management Committee
 - a. Accounting management
 - b. Infrastructure monitoring and scheme monitoring
 - c. Application for SMC post

4. Detailed Assessment - Bihar

4.1. Background

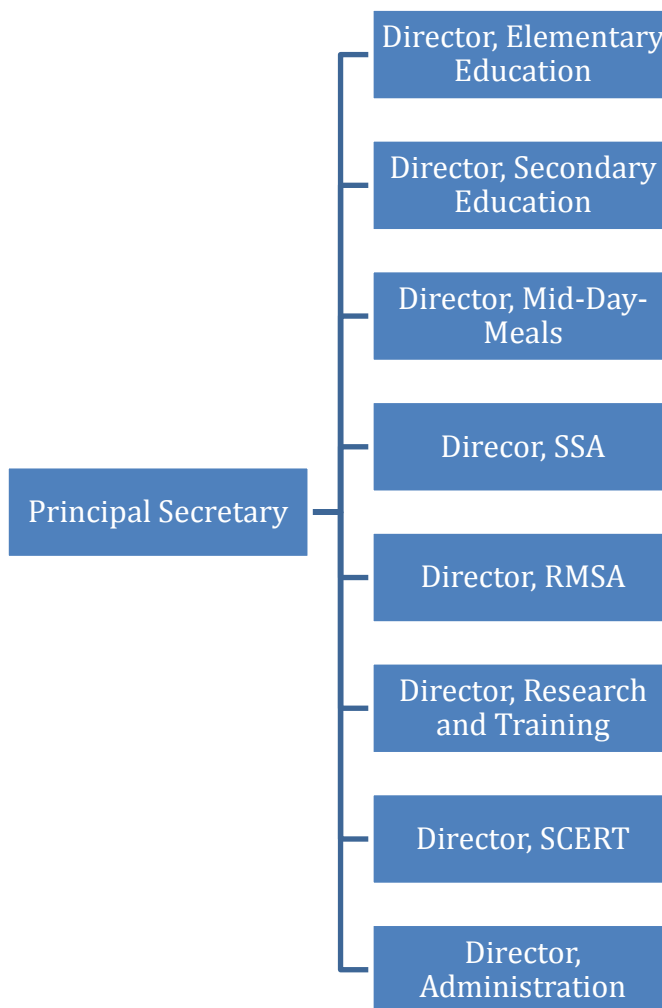
As a part of the Core scoping exercise, the assessment phase aims to capture a snapshot of the school education ecosystem in India. This includes interactions with MHRD, Central education agencies, select State education departments and agencies, initiatives by state governments, non-governmental agencies in education, academic researchers in education, and private sector players in education and ICT. In this context one of the steps is visiting states which have shown initiative in implementing ICT in School education and conducting a detailed study of the type of services that have been implemented as well as knowing more about the challenges encountered during implementation. In the shortlisted states, the NISG team conducted a detailed study of the education ecosystem around ICT. The NISG team is visiting Kerala, Gujarat and Bihar for assessment of the education ecosystem with specific focus around ICT interventions undertaken by these States in school education sector.

Over the last few years, Bihar has been witnessing reforms in Education as well as in other sectors of Government. Given the fact that Bihar faced many infrastructure and service delivery challenges in the past, the current path of reforms makes the state a good case for study. The MMP shall have to address the needs of various states facing basic service delivery issues as well as primary infrastructure challenges such as electricity, connectivity etc.

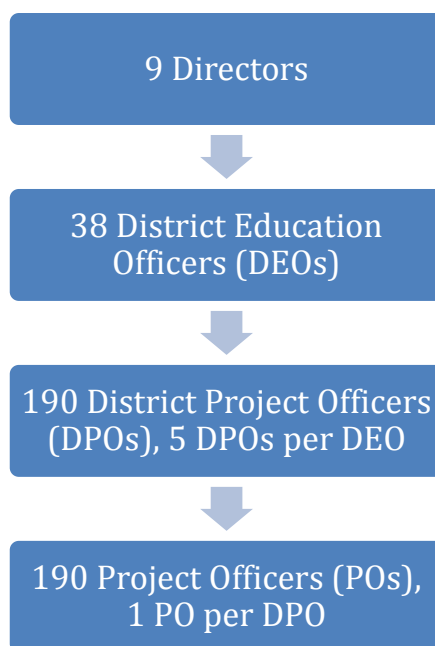
Therefore, Bihar was considered as one of the states for an assessment with an intention to derive inputs for the Core Scope Document for the MMP. This report captures the Assessment of ICT interventions in School Education in Bihar.

4.1.1. Organization Chart

The Principal Secretary, Education is the Head of the Education department and he is assisted by 9 Directors covering everything from secondary education to research etc. The figure in the next page shows the organizational structure of the School Education department in Bihar.



The state has also undertaken a restructuring of the departmental administration such that each Director has a supporting executive at the district level in the form of a District Project Officer of this function. At the same time, to create a cohesive team at the district level, the District Education Officer heads the team of DPOs. Therefore, each of the Directors coordinates with the District Education Officers of all the 38 districts and also with the District Project Officers of the respective function under the DEOs.



There are 5 DPOs under each DEO. The roles of the 5 DPOs are:

1. DPO – Establishment
 - a. Teacher service conditions
 - b. Promotion / Penalty for teachers
 - c. Monitoring service book
 - d. Draws on non-plan expenditure
2. DPO – Accounts and Planning
 - a. Monitors budget usage of planned budget
 - b. Draws on Plan Expenditure
3. DPO – Elementary education & SSA
 - a. SSA implementation
 - b. Primary education development
 - i. School infrastructure
 - ii. Teacher capacity building
 - iii. Implement SSA schemes
4. DPO – Secondary education, RMSA, Literacy & Training
 - a. RMSA implementation
 - b. Secondary education development
 - i. School infrastructure
 - ii. Teacher capacity building
 - iii. Implement RMSA schemes
 - c. Adult literacy
 - i. Coordinate with Jan Shiksha Sansthan

- ii. Coordinate with Panchayats
 - d. Training
 - i. Coordinate training with training institutions.
5. DPO – MDM
- a. Manages MDM scheme in district

4.1.2. School Statistics

As per the data provided in the Bihar state report card by DISE, Bihar has about 69,379 schools with a total enrollment of about 19 million children. Most of the children are enrolled in the primary schools (Only primary or Primary with Upper primary). There are about 3.3 lakh teachers in the state with a Pupil Teacher Ratio of about 58. The overall literacy rate is recorded at 47%.

4.1.3. Departments / Agencies Visited

In the course of the Assessment visit, the NISG team visited agencies and had detailed interactions with them to understand the ecosystem of the education department in a better way. The following agencies were visited:

| Sl No. | Agency name | Functions |
|--------|---|--|
| 1 | Office of the Principal secretary (Education) | The Principal secretary of Education heads the department and reports directly to the Education minister. The Pr. Secretary not only manages School education, but also manages all other levels of education including Higher education, Technical education and Adult education. |
| 2 | Bihar Education Project Council | The Bihar Education Project Council (BEPC), popularly known as Bihar Education Project (BEP) is an organization dedicated to achieving Universal Elementary Education (UEE) in the State of Bihar, India. Launched in 1991 with the purpose of bringing about quantitative and qualitative improvement in the Elementary Education system in Bihar. Primary education has been focus area during the implementation of BEP & DPEP-III programmes till 2001-02 and was subsequently extended to Elementary level with the launching of programmes like Sarva Shiksha Abhiyan (SSA) and National Programme for Education of Girls at Elementary Level (NPEGEL). Currently it also handles Kasturba Gandhi Balika |

| | | |
|---|---|--|
| | | <p>Vidyalaya (KGVB), District Primary Education Programme (DPEP), School Sanitation and Hygiene Education (SSHE) and Bihar Education Quality Mission (BEQM)</p> <p>Being the State Implementing Society (SIS) of these prestigious programmes, the Council emphasizes on the education of deprived sections of society, such as Scheduled Castes (SCs), Scheduled Tribes (STs), Minorities, Girls of Bihar.</p> |
| 3 | Bihar Madhyamik Shiksha Parishad (BMSP) | <p>Primarily, BMSP has been assigned with the job of implementing Rastriya Madhyamik Shiksha Abhiyan (RMSA) a centrally sponsored programme with the basic aim of universalisation of secondary education.</p> <p>Besides RMSA, BMSP has been assigned with the job of implementation of ICT@School, Girls Hostel, Model School, IEDSS (Inclusive Education for Disabled at Secondary Stage) ,INSPIRE Award Scheme, incentives for girls at secondary stage etc.</p> |

4.2. Challenges

The state of Bihar faces many underlying challenges in the basic infrastructure. There is a significant challenge of power and connectivity across the state. Besides, the brick-and-mortar infrastructure, teacher capacity are some important issues that the state has to bolster so as to achieve the objectives of Access and Equity for School education. Most of the Bihar's School education department's expressed challenges stem from execution/implementation of various schemes. Some of the challenges are:

1. Funds management

Transfer of funds and maintaining accounts are two key issues in Fund management. The state transfers funds to headmasters for various projects. This process is currently not a smooth and continuous one. There is a fluctuation in funds availability; it is low during the beginning of the year and it gets lower as the year passes on and funds are pumped in at the end of the year. It is important that these fluctuations are smoothed out to effectively implement the schemes. Also, decision makers across the department level,

are not aware of the funds utilization by schools across various budget heads on real time basis. This leads to delay in release of funds to Schools.

2. Scheme management

The School education department is addressing most of its underlying challenges to achieve Access and Equity through implementation of various schemes, supported by both central government and state government. The State has realized that a rigorous and robust monitoring process is required to improve their delivery. This includes monitoring of physical and financial progress. Bihar has taken some noteworthy initiative to monitor Mid-Day-Meal scheme through an online system. The monitoring of scheme implementation has to take place across all levels of government, including state, district, block and school.

3. Data entry

Even for the scale of current initiatives, data entry is emerging as a key execution challenge. There are issues with availability of power at data entry points and also with assigning different levels of data entry, such as school, block or district with the appropriate type of data to enter. To maintain data integrity, it is important that the appropriate and accurate data is required to be entered in at the right level.

4. Measurement and usage of Achievement levels

While most of the focus in Bihar is on ensuring Access Equity for School Education, a substantial thrust is aimed towards quality as well. To attain quality, a measurement based approach is being planned. Wherein, achievement levels of student is to be measured and analysis of such achievement levels will support decision making. For e.g. such a system would be able to not only identify the requirement for remedial education but also give inputs for the design of content. For this purpose, large scale standardized diagnostic assessments need to be carried out. Such a system would have challenges regarding design of such standardized assessments as well in creating question banks, standardized assessment engines and fruitfully analyzing the data.

5. Scholarship management

Bihar has introduced a Right to Services act, which stipulates a time-bound response to service requests by citizens. Scholarship schemes run by the School Education department are included as a service under the RTS act. This would require the department officials to provide a fast and accurate resolution to scholarship requests else face a prescribed penalty. The entire set of activities ranging from managing databases, receiving applications, processing applications

and disbursing scholarships are now posing a major challenge to the education department of Bihar.

6. Coordination amongst administrative levels

As presented in the previous section, the state has undertaken a restructuring of the department in which 5 functional DPOs are present in every district. This has led to a lot of challenges in coordination between the DPOs, as well as between the DPO and their respective functional Director

7. No central accurate data

Although, Bihar is focusing to achieve access of education, it hasn't been able to create an accurate and reliable central database of basic information (such as, number of schools, students, teachers, and teacher qualification etc.). This problem, however, is not unique to Bihar and is being experienced across the country. In spite of the DISE data being collected, there are concerns on the accuracy of the data so collected.

4.3. ICT initiatives in education in Bihar

Bihar is yet to embark upon major ICT initiatives in School Education. There have been some ICT initiatives that are implemented across the department to address some of the pressing problems. Many of these initiatives have been in the form of small-scale projects, which have not been recorded in this study. There have been just 2 significant ICT initiatives. These are presented below:

Mid-day meal MIS

An MIS is implemented by BEPC for monitoring the Mid-day meal scheme being rolled out across the state. This MIS enables the monitoring officials at all levels to access real-time information on meals served, grains distributed and funds disbursed. The MDM MIS also allows for future planning by estimating the funds requirement 2 months in advance. The data entry for different variables is done at different levels; District, Block etc. The State Director monitors the MDM scheme at the state level. This system is likely to be replaced by the Mid-day meal MIS designed by the central government.

Pilot for Model schools

About 1000 high schools have been chosen to conduct a pilot on 'Model Schools'. Each model school is equipped with a 'Model computer lab' that not only imparts IT literacy but also work on IT-enabled learning. This project is headed by Adarbhut

Sanghathan Nigam and funded by RMSA. Each of the lab contain one server, 10 PC nodes, networked with Printer and Scanner, computer furniture etc. As part of improving the basic infrastructure the project also provides for physical infrastructure improvement of computer lab by constructing false ceiling, Vinyl flooring painting etc. and power backup facility like UPS and Gensets in each school. To enable student to have quality computer education a dedicated IT Trainer is provided for each school. To mitigate various risk of failure on operational and financial front, the project is implemented under PPP model (BOOT basis on quarterly lease basis for 3 years). The State has selected two service providers, Pearsons and IL&FS.

4.4. Future Focus Areas

Bihar has an ambitious plan to use ICT to bring process efficiency and transparency in School Education governance. To achieve this, lot of systems and infrastructure needs to be put in place and needs to be integrated with the decision-making criteria of the department. The following are the key future focus areas for ICT interventions:

1. Registration of private schools

The entire process of registration/recognition of private schools is proposed to be made transparent and efficient. Conducting the process of receiving applications, validation of credentials, and final registration is proposed to be done through a web based IT application.

2. Tracking of each child

a. Either from the entry into the education system till its completion (including higher education),

b. Or from the time of delivery itself by including child health into its ambit

3. Provide more IT infrastructure in UP primary school, which constitute the majority of schools. Emphasis is on designing IT infrastructure which can achieve program objectives in spite of underlying challenges such as power shortages etc.

4. Development and deployment of innovative ICT interventions to curtail teacher absenteeism and scaling up across all schools.

5. Online File processing system with automatic office work flow to improve transparency and efficiency of the administration

6. Teacher's financial disbursements

7. Like in any other state, teachers are the single largest chunk of the state employees. Ensuring that timely and accurate disbursement of salary,

reimbursements and pensions to teachers is of paramount importance in maintaining teacher motivation.

Besides, the state has also embarked upon a project to create a single MIS system for one of its largest State Implementing Agencies, BEPC.

Single MIS for BEPC

The Bihar Education Project Council manages SIX (6) different programs ranging from SSA to KGBV. Therefore, its key functions are planning, implementation and monitoring. As this entails management of a large amount of data, which needs to be accurate and real-time, BEPC has undertaken the design and implementation of a comprehensive MIS system. The MIS is aimed to cater to all levels of the departmental administration and also to monitor different programs managed by BEPC. This project is going through the phase of information requirement assessments across all levels of administration and a competitive tendering process is expected to be started soon. BEPC has arrived at the following requirements for the proposed MIS:

Requirements across programs and administrative levels

| Administrative level | Sarva Siksha Abhiyan | National Programme for Education of Girls at Elementary Level (NPEGEL) | Kasturba Gandhi Balika Vidyalaya (KGBV) |
|----------------------|---|--|---|
| School | <ul style="list-style-type: none"> • Functioning of Residential Hostel • Functioning of Special Training (RBC/NRBC) • Distribution of Free Textbooks • Transfer of Fund for Uniforms • Utilization of TLE Fund • Establishment of Library • Utilization of Annual Grants - SDG,TLM, R&M • Functioning of Balvarg (ECE) • Functioning of CAL Centre • Meeting of VSS • Status of Construction of NSB, BLS, ACR, HM Room, CRC Building, Toilets, Ramps Etc. • School Development Plan (SDP) • Student Attendance • Teacher Attendance | | |

| Administrative level | Sarva Siksha Abhiyan | National Programme for Education of Girls at Elementary Level (NPEGEL) | Kasturba Gandhi Balika Vidyalaya (KGBV) |
|----------------------|--|--|--|
| | <ul style="list-style-type: none"> • Outcomes Indicators of Learning • One Day Orientation | | |
| CRC | <ul style="list-style-type: none"> • One Day Teacher Training at CRC • Release /Expenditure of all grants for CRCs | <ul style="list-style-type: none"> • Construction of MCS Building • Skill Development Activity • One Time TLE Grant • Vocational Training • Learning through Open Schooling | |
| BRC | <ul style="list-style-type: none"> • In Service Teacher Training at BRC (10 Days) • 30 Days Induction Training • Training for untrained Teacher - 60 Days • Head Teacher Training at BRC • Training of RPs at BRC • Salary of BRC RPs and another Staff • Release /Expenditure of all grants for BRCs • Salary of CRCCs • Training of SMC/PRIs/Community Leader • Status of Construction of BRC • Bal Mela at School, CRC & BRC Level • Implementation of Shiksha ka Haq Abhiyan | | <ul style="list-style-type: none"> • Construction of KGBVs Building • Functioning of KGBVs |
| District | <ul style="list-style-type: none"> • Entry of activity wise approved Budget • Opening of School & Upgradation of Schools • Opening of Residential Hostel • Opening of Special Training (RBC/NRBC) • Supply of Textbook to Schools • Transfer of funds for Uniform to Schools • Transfer of funds for TLE to Schools • Transfer of funds for Teacher Salary to DPO- Establishment • Training for untrained Teacher - 60 | <ul style="list-style-type: none"> • Transfer of Fund • Learning through Open Schooling • Community Mobilization & Management Cost | <ul style="list-style-type: none"> • Transfer of Fund |

| Administrative level | Sarva Siksha Abhiyan | National Programme for Education of Girls at Elementary Level (NPEGEL) | Kasturba Gandhi Balika Vidyalaya (KGBV) |
|----------------------|---|---|--|
| | Days <ul style="list-style-type: none"> • Transfer of funds for Library to Schools • Transfer of funds for Annual Grants to Schools - SDG,TLM, R&M • REMS Activities • Intervention for CWSN • Innovation - Girls Education & ECE • Innovation - CAL • SMC/PRI/Community Training • Fund for Construction Activities • Project Management • LEP Activities • Bal Mela at District Level & Other Media Activity | | |
| State | <ul style="list-style-type: none"> • Entry of activity wise approved Budget • Supply of Textbook to Schools • Transfer of funds for Teacher Salary to District • Transfer of funds for Civil Works to District • Transfer of funds for Others Activity to District • Project Management | <ul style="list-style-type: none"> • Transfer of Fund • Learning through Open Schooling | <ul style="list-style-type: none"> • Transfer of Fund |

The Bihar government is looking forward to the rollout of the School Education MMP so as to utilize the potential of ICT for addressing its many challenges and issues.

5. District Collectorate of Hyderabad (Hyderabad)

5.1. Introduction to the District Collectorate of Hyderabad

About District Collectorate of Hyderabad: The Hyderabad District Administration is responsible for the delivery of various citizen services related to land, welfare benefits and pensions, selection of housing beneficiaries, self-employment schemes etc.

Activities related to Education fall under the District Educational Office, District of Hyderabad (under the Ministry of Education, Government of Andhra Pradesh). Its main responsibility is to ensure that Children receive good quality education and care across the district. District Educational Office, headed by District Educational Officer (DEO) and his team of Dy. EOs and DIOs collectively support service provision and maintain close communication with all Schools across the district. They implement education programs such as the ABC Program, RVM, RMSA, MDM, etc.

More details about the Collectorate and the Education Department can be found at <http://hyderabad.ap.gov.in/> and <http://hyderabad.ap.gov.in/education/>

5.2. Key insights on School Education

1. An overview of the School Education system from an ICT enablement perspective: four main stakeholder categories and their key requirements:
 - a. Students
 - i. Learning: dissemination and assessment
 - ii. Student life cycle management: enrollment, records of assessment and performance, tracking of movements – transfer certificates, services such as conduct certificates, school completion certificates, marks and transcripts issue, etc.
 - b. Teachers
 - i. Teacher capability: training, assessment, coaching and handholding
 - ii. Teacher life cycle management: applications, recruitment, TETs, promotions, transfers and postings, retirements, pensions, etc.

-
- c. School management
 - i. Payroll, student database, enrollments, administration of government plans and schemes, time table management, accounting and financial management, examinations management, etc.
 - d. Administrators and supervisors: this includes administrators including Head Masters at school level, Mandal (Block) education officers, district education officers, district collectors, commissioners, senior officers in the state education department and also senior officers in MHRD.
 - i. Managing the operations of the education system: conducting exams, text book distribution, management of government and welfare schemes, funds disbursements, recruitments management, etc.
 - ii. Decision support systems: using available data to take decisions on managing the education system; primarily those decisions that will lead to interventions to improve the core areas of school education – student learning and teacher capacity.
2. Key challenges from a learning perspective:
- a. Student perspective: Lack of adequate systems to support remedial education. Usually in the state government school system, it is reported that the learning is less than what is expected. This gap is left unaddressed as a student is automatically promoted to the next class. In the absence of effective, individualized remedial action, this gap only expands as the student moves up from one class to another automatically. This leads to a huge gap by the time student reaches 10th class.
 - b. Teacher training perspective: an important dimension often neglected is continuous coaching of teachers. Usually teachers are given periodic training, but it is very important to have continuous monitoring and coaching / handholding support to ensure actual improvement in teacher's performance.
 - c. CCE frameworks are usually quite complex. They need to be simplified.
 - d. Data collection from schools during school inspections, etc. also tends to be complex. Simplifying data collection formats will improve reliability and quality of data collected at the ground level.

5.3. Possible opportunities to apply ICT to improve School Education

1. Suggested areas for ICT intervention to yield results in the areas of student learning and teacher capacity:
 - a. Student: Learning: teaching, assessment in key areas of learning
 - b. Teacher: Teacher training and continuous monitoring and coaching
 - c. Decision support: Views of student and teacher performance that would provide insights into these two areas, so that remedial action can be taken to improve teacher capacity and student learning
2. The challenges with solutions that depend on the presence of ICT infrastructure at school level:
 - a. Success depends on the presence of functioning infrastructure at school level, which may not may not be the case in small and rural schools
 - b. Requires necessary familiarity of usage from school staff
 - c. Even in case of presence of infrastructure, there will be challenges of maintenance of infrastructure, etc.
3. Student centric solutions
 - a. Important to figure out metrics of assessment that are simple to capture and are meaningful
 - b. One possible way is to simply CCE frameworks
4. Teacher centric solutions
 - a. Meaningfully linking student performance to teacher performance will help identifying the training requirements at teacher level. As mentioned above, must be supported by continual coaching support for teachers.
5. Decision support for administrators (from the perspective of improving student learning and teacher performance):
 - a. Track individual performance of individual students across different learning parameters over a period of time. Such longitudinal tracking of performance is very important to assess the rate of improvement and effectiveness of interventions over a period of time.
 - b. Student performance when mapped to teachers and schools will suggest corrective actions at teacher and school levels (this is a point similar to the one made by the Principal Secretaries of General and Higher Education in Kerala)
 - c. When student performance is plotted geographically and analyzed at locality (or any other unit of geography) level, it becomes possible to

relate performance to other factors such as demographics and socio-economic features of that locality / region.

d. Will be possible to identify Student, Teacher, and School needs

6. In summary, what can be done is:

- a. Setting up of a platform for the collection of data (simplified versions; possibly enabled on mobile devices that could be used during school inspections)
- b. Meaningful organization of the data to provide desired views / reports
- c. Framework for action points / decisions to impact (examples): Curriculum, Teaching Aids, Teacher Training, and Plan & execute school inspections

5.4. People Met

Person met: Mr Gulzar Natarajan, Collector of Hyderabad.

6. Madhya Pradesh Education Portal

6.1. Introduction to MP Education Portal

About MP Education Portal: The MP Education Portal is an integrated e-Governance system for enhancing the performance of school education sector and providing proactive, transparent and accountable governance to fulfill the goals of SSA, requirements of the RTE Act and the spirit of the RTI Act. It's an effort of RSK, DPI and NIC.

School Education in MP: School education in the state of MP is large and diversified and is managed and administered by multiple administrative units at district and sub-district levels under multiple departments: School Education Department (CPI, RSK, SCERT) – 224 blocks; Tribal Welfare Department (CTD) – 89 blocks; Panchayat Raj Institutions (PRI) – 50 Zila and 313 Janpad panchayats and nearly 400 Urban Local Bodies (ULB).

It covers more than 1.15 lac government schools located in more than 90,000 remote inhabitations; and nearly 3.47 lac teachers and support staff.

Intended beneficiaries of the School Education sector include more than 1.6 crore:

- a. Nearly 1.12 crore students in government schools
- b. More than 1.6 lac out of school children (OOSC)
- c. More than 1 lac children with special needs (CWSN)

6.2. Underlying Principles

The MP School Education Portal intends to facilitate a common platform for school education related application software, online services and single source of authentic and live information. It focused on capturing basic transactions of the target processes. It also includes generation of desired reports on the fly and targets the elimination of repetitive processes.

1. Key design principles include:
 - a. It comprehensively addresses the diverse needs of students, teachers, citizens and administrators.
 - b. Designed as a suite of online applications that implement, streamline, automate and reengineer the existing processes and maintain common entity and process databases

- c. It is intended to facilitate the evolution of processes and mechanisms that facilitate integrated, well synchronized and transparent functioning of all participating departments, agencies, beneficiaries and other stakeholders.
2. Key implementation principles include:
 - a. Codification and Creation of a LIVE Relational database of core entities (Teachers, Schools, Offices, Institutions, Agencies, Payment Authorities, Civil works, OOSC, CWSN, Beneficiaries)
 - b. Role-based, work-flow applications
 - c. In-house Development by NIC for economy, efficiency, reliability, easy adaptability and scale up
 3. Key portal design and architecture principles followed include:
 - a. 24X7 Accessibility from anywhere: web-based, online system can be accessed from any PC using a browser
 - b. Single sign-on for all applications, role-based access to all
 - c. Log-in /Passwords issued to all 3.5 lac teachers/staff
 - d. Hindi support using Unicode and intuitive interface
 - e. Scalable architecture to accommodate more applications and users
 - f. Each and every transaction /operation is logged
 4. Intended and registered users of the system include the following categories:
 - a. Payment Authorities/HSS Principals
 - b. District Education Officers
 - c. District Organizer /Assistant Commissioner (Tribal Welfare)
 - d. District Project Officers
 - e. Block Education Officers (BEO)
 - f. Block Resource Coordinators (BRC)
 - g. District Institutes of Education Training (DIETs)
 - h. District Collectors
 - i. Teachers / staff
 - j. Officers who conduct inspections

6.3. Processes and Systems Integrated with the Portal

1. Office/School/Institution/Unit Management: Live databases of all entities
2. HR Management: employee database, payroll, service records, transfers, counseling for posting, grievances redressal, new pension scheme implementation
3. School Management System- enrollment, facilitation for PTR norms, CTR Norms, Guest faculty Deployment, SSA funds transfer
4. Demand and distribution of Assistance like Textbooks, Uniforms, Scholarships, bi-cycles, etc.
5. Academic Achievement levels of Children – Monthly Tests, analysis of weakness
6. Content Management System – online circulars, GOs
7. Civil Works Management and Monitoring
8. School Inspections – Monitoring, follow-up and management
9. RTE: Online workflow system for the automation of the processes involved in recognition of private schools under RTE
10. Financial and Accounts Management System for SSA
11. Learning Resources – online multimedia lessons, online textbooks
12. Village Education Register- micro-level planning up-to habitation level
13. Out of School Children (OOSC): registration, follow-up and mainstreaming
14. Children With Special Needs (CWSN): registration, follow-up for Medical test, aids and other assistance and mainstreaming

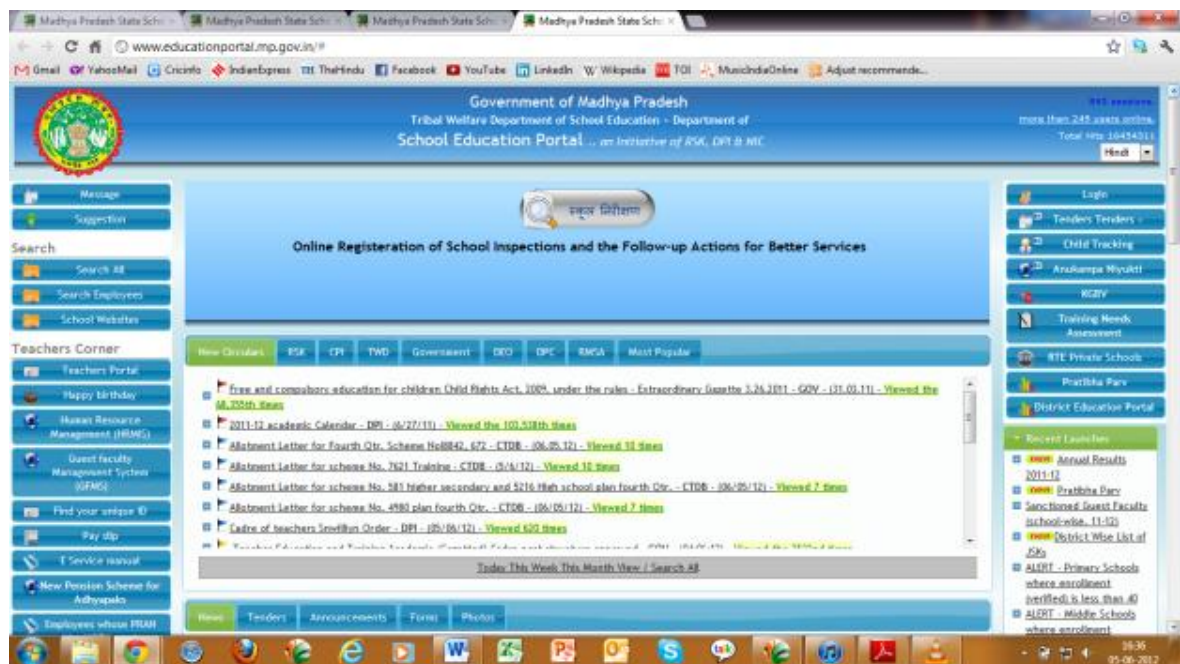
This portal has also enabled improvement of operations through process reengineering / automation and a basis to implement legal reforms. For example, the following are enabled by the portal (indicative list):

1. Use of portal to generate pay bills of employees
2. Mandatory use of unique ID for all administrative transactions
3. Information flow through the portal replacing communications through email, fax, CD, etc.
4. Online endorsement of transfers
5. Online generation and maintenance of service books

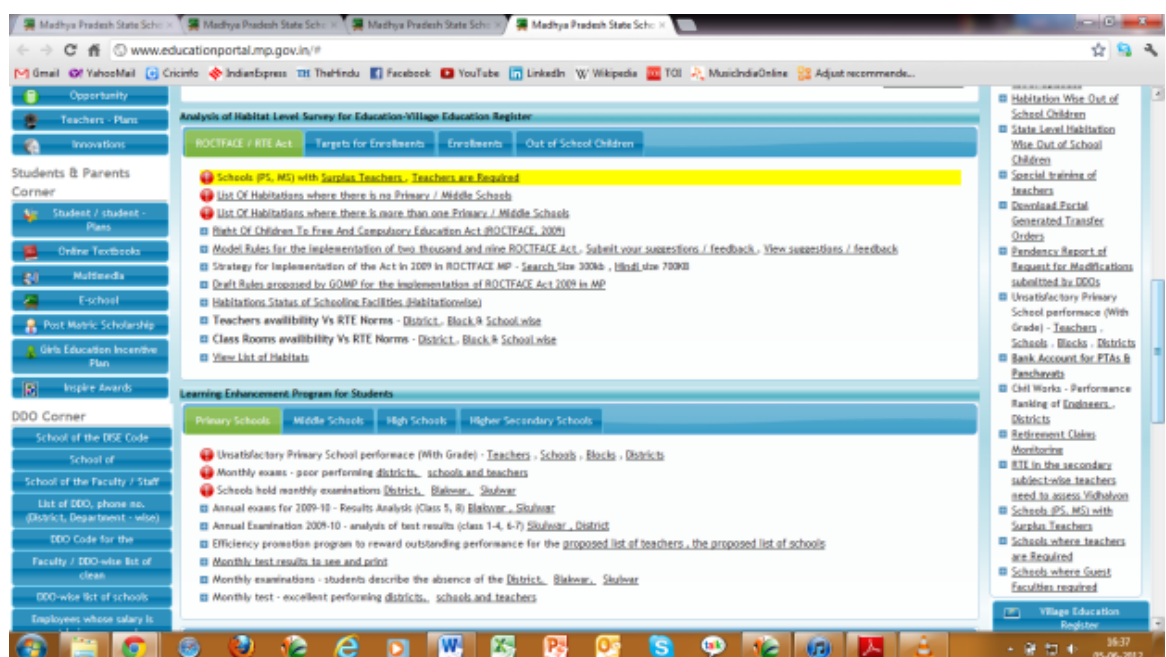
6.4. Key Functionality of the MP Education Portal

The following is the homepage of the portal. All the screenshots presented in this report are English translations of the webpages that are originally built to be displayed in Hindi.

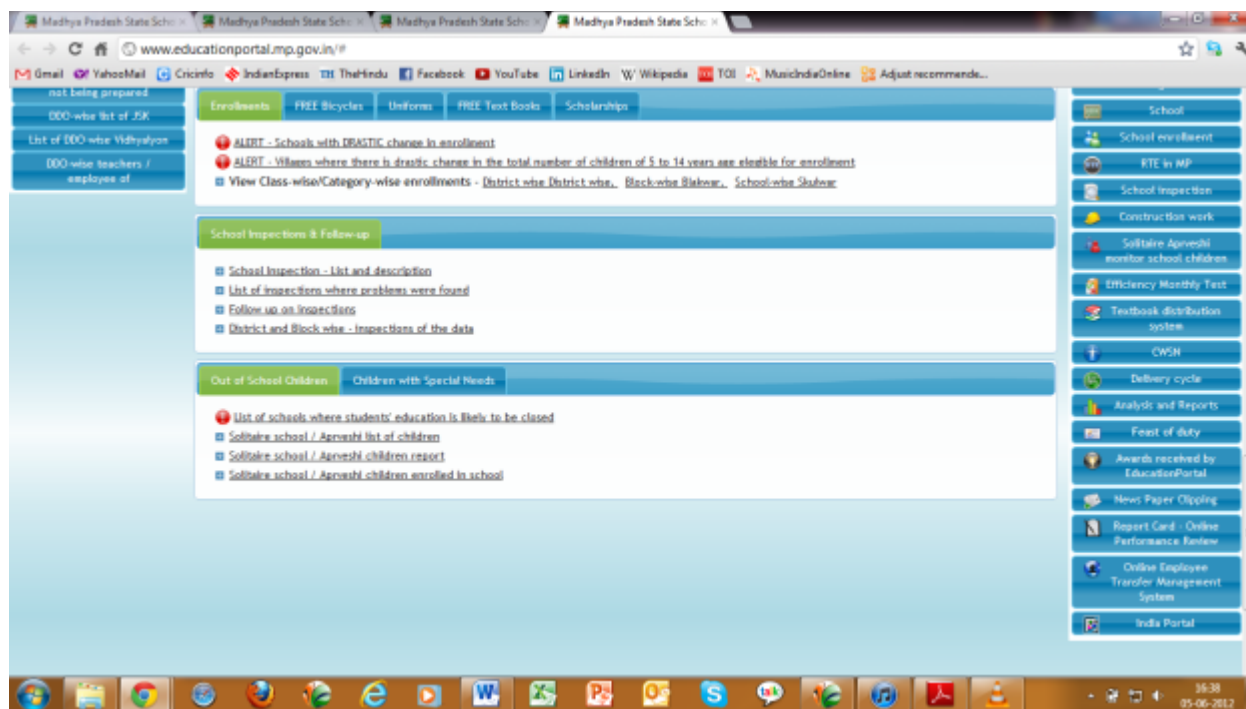
(Picture – 1/3)



Picture – 2/3



Picture – 3/3



As can be seen from the above screenshots, the portal caters to all important stakeholders in the school education system – teachers, students, parents and administrators. In addition, frequently used functionality – such as access to recent news and announcements, frequently used reports, etc. – are clearly made accessible from the homepage.

HR MIS (Human Resource Management Information System)



The HRMIS module is one of the most important parts of the portal and forms a single window for the management of all HR related issues and includes the following key functionality:

1. Payroll management (ensure timely disbursement of salaries, minimize pilferage,
2. Management of teacher centric services and administrative functions on the basis of unique ID for teachers
3. Teacher lifecycle management – transfers, promotions, retirement, maintenance of service records, etc. Teachers can use their unique login IDs to manage the documentation around their life cycle activities – pay slip generation, teacher assessment tests, posting/transfer applications, etc.
4. Grievance redressal
5. Online counseling
6. Implementation of new pension scheme
7. Guest faculty management system

This module is also equipped to generate useful reports on the basis of which administration has been able to make useful interventions. For example:

1. Take informed and data-driven decisions on appointments, postings, promotions, regularization, etc.
2. Ensuring compliance to policies and guidelines
3. Mapping of student performance to teacher performance
4. Correction of errors of any sort

RTE Implementation in Madhya Pradesh



RTE implementation in government schools addressing the following functionality:

1. Analysis of village education survey
2. Management of OOSC
3. Access to education
4. Assessment of school requirements in various habitations including teacher availability, classroom availability, etc.
5. Assessment of teachers
6. Attendance tracking, etc.

The following is the interface relating to RTE implementation with regard to private schools (school recognitions and fee reimbursements):

The screenshot displays the Madhya Pradesh State School Education Portal. The main heading is "Children To the Right of Free and compulsory Education (RTE) Act, the 2,009th". Below this, a welcome message states: "Welcome to online portal to facilitate the effective implementation of the RTE Act, 2009 in Madhya Pradesh. The portal includes an online work flow system that has been designed and developed with the objective to automate the processes involved in granting recognition of Non Government Schools Under The RTE, Act 2009 in a transparent manner. All non-government schools have to use this system to apply online for the recognition under The RTE, Act 2009. They can also track the status of their applications and download the recognition certificate online. This system shall facilitate the faster disposal of applications in a transparent manner and minimize delays at various levels as the details of the pendency at all levels shall be available online. The applications along with complete details of all schools including their infrastructure, facilities, fees being charged, staff profile, photographs and all related documents shall also be available online to public for social audit. The schools and public shall also be able to view the remarks made by the inspecting authority and the reasons of rejection and objection, if any. All schools shall get a login / password after the registration of their profile. After basic registration, the documents to BRCC who is ex-officio Block Elementary Education Officer (BEEEO), after print-out of the application from the portal and submit it to the concerned officer uploaded. Application that are no Action shall be taken on incomplete in any respect. Private schools will also Attendance Register of the Profile and Under Admitted Student and Transport Master. The same after attend and then an officer after 2009 in an attempt will not be advantage school and only after the year of registration the process of being".

The sidebar on the left includes a "Private School Corner" with options for "Law education", "of disadvantaged groups and poor class children enter private schools provide first class free", and "Register Your School". Below this are login options for "Registered users with secret ID and Key", "Registered users with user name and Forget Portal (NEW)", "BEEEO Office", "BEO Office", and "Administrators Office".

The main content area features a "Circulars" section with a list of links:

- Vulnerable groups and disadvantaged groups in private schools at least 25 percent of the children's free to enter the new date - RTE (4.6.12) - Viewed 1661 times
- Education Act - to operate without accreditation action against private schools - RTE (05/30/12) - Viewed 2491st times
- In respect of recruitment of teachers in private Vidyalaya - RTE (05/29/12) - Viewed 7190 times
- No. Council questions, S - 1174 S, answerline point, About sending B - RTE (21/05/12) - Viewed in 2961 times
- Question No. 1174 on House - RTE (21/06/12) - Viewed times two thousand nine hundred and ninety three
- Right to Education Under the rules, resolves complaints of teachers - RTE (04/12/12) - Viewed 4001 times

The bottom of the page shows a navigation bar with "Contacts", "Disclaimer", and "Feedback" links, and a "NIC" logo. The system clock shows 17:28 on 05-06-2012.

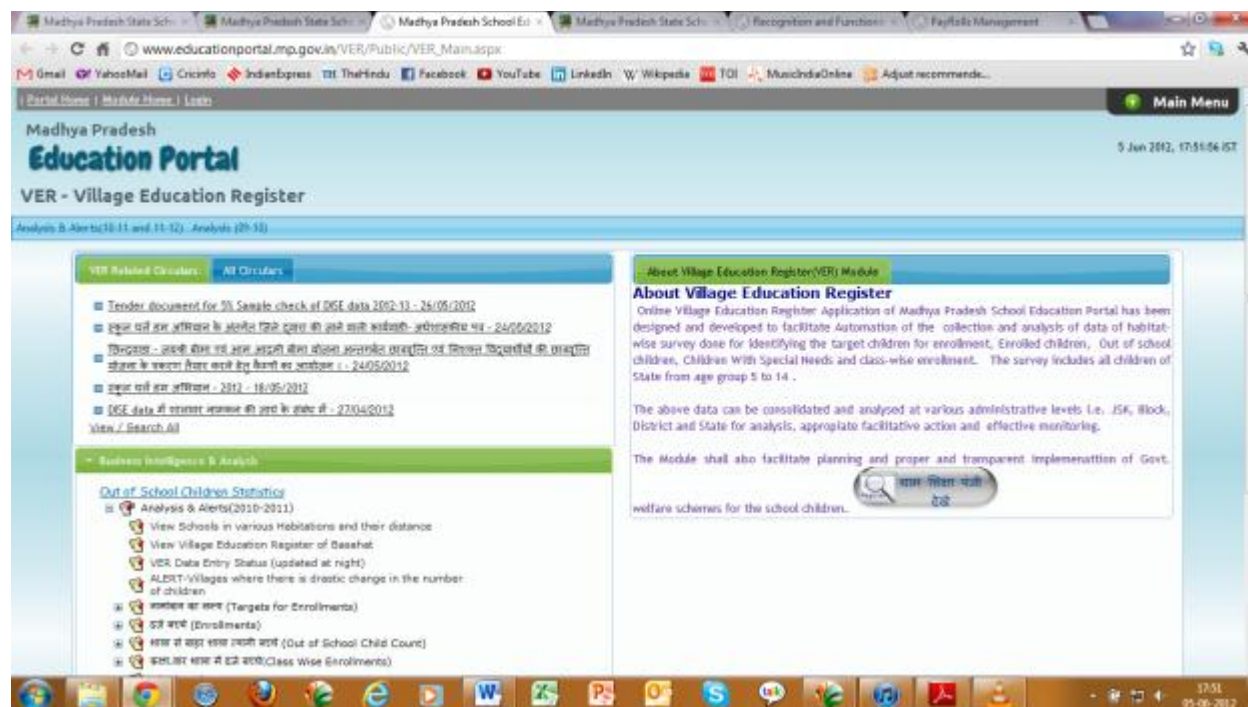
Key functionality includes:

1. Recognition of private schools under RTE: online applications by private schools, process of verification, online transmission of reports in the supervisory chain, issue of certificates, monitoring of prescribed time limits, registration of fees
2. Fees reimbursement: registration of students admitted under RTE by private schools, details of attendance as uploaded by private schools, fee reimbursement proposal generation, online tracking and monitoring of reimbursement.

Finance and Accounts Management System

This is used not only for payroll, but for also managing the various state and central schemes in school education including related finances, reimbursements, utilization certificates, related analysis, etc.

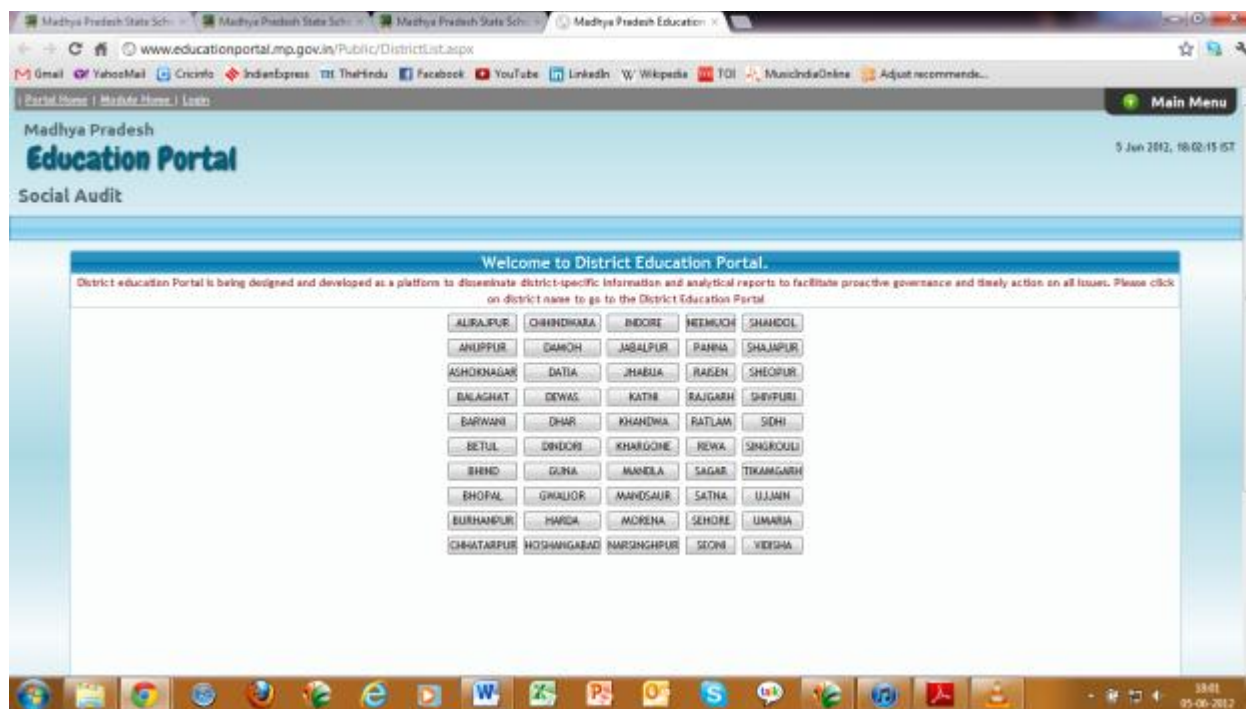
Village Education Register



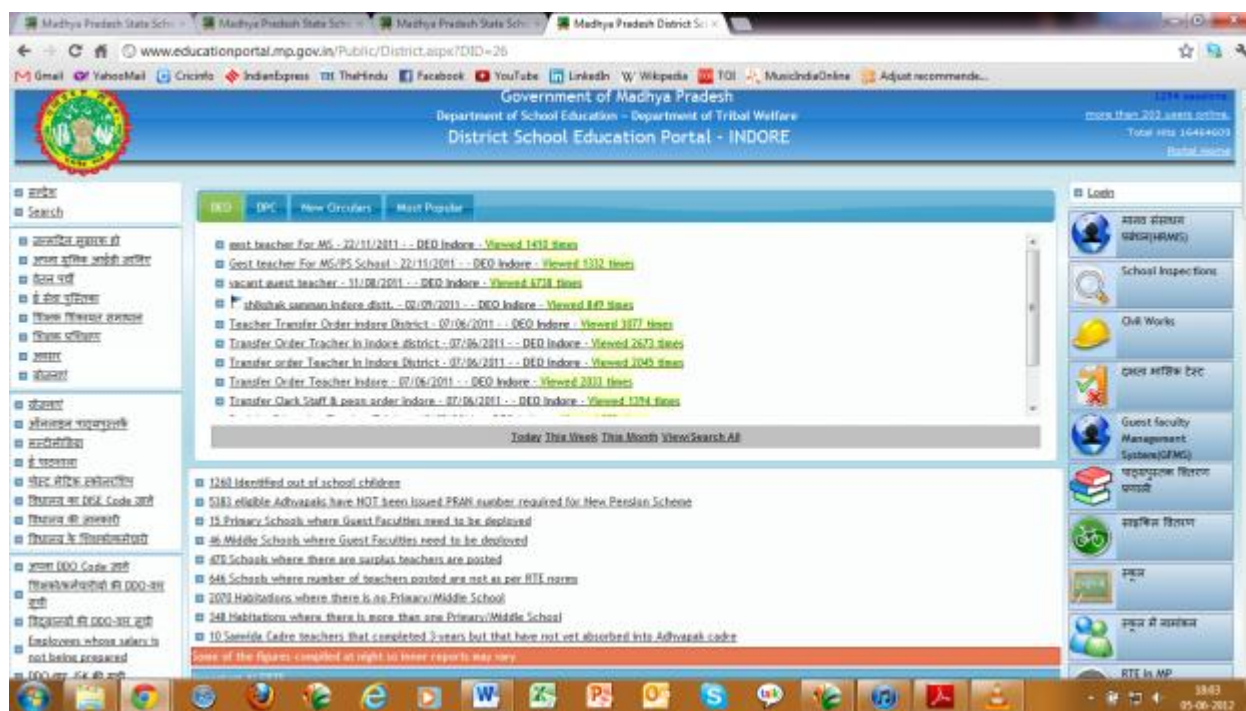
The Village Education Register includes the following functionality:

1. Family-wise survey conducted for identifying school children for enrollment
2. Analysis of the enrollments / profiles of children along categories such as: class, gender, OOSC, dropouts, those never enrolled, CWSN, homeless, etc.
3. Various views of above data – ex. Block-wise, district-wise, state-wise, etc. – to enable remedial measures

District Education Portal



This provides a district-wise view of the school education system. On selecting any district, the user is provided a view that is similar in interface and functionality with the state-level portal, but providing information at district-level. For example, the following screenshot provides a view of the Indore district.



School Inspections



This functionality facilitates records of inspections as well as provision for analysis of inspections related data.

Analysis and Reports



This functionality provides interface to access analysis and reports along various parameters.

Other key functions

Some of the other key functionality offered by the MP Education Portal includes:

1. Tenders tracking
2. Construction work
3. Textbook distribution system
4. Awards, etc.

More Information

More information about the MP Education Portal is available at:

<http://www.educationportal.mp.gov.in/>

http://mhrd.gov.in/sites/upload_files/mhrd/files/Madhya%20Pradesh.pdf

7. ICT support for CCE by Puducherry

7.1. Introduction to Puducherry's ICT initiative for CCE support

The Sarva Siksha Abhiyan, Puducherry has taken an initiative to create an IT-based service to support the RTE-mandated Continuous and Comprehensive Evaluation (CCE). The aim is to begin with providing support for data entry and analysis and thereafter, iteratively add features including creation of assessments from an assessment bank etc.

7.2. Principles underlying the implementation of CCE system

1. Key design principles include: using CBSE's CCE manual as the base process manual. The ability to choose weightages, rating scales and evaluation techniques is left to headmasters and teachers.
2. Key implementation principles include: development of the software is being done in partnership with a private enterprise. They are doing the implementation for Puducherry for no cost in lieu of ownership of the intellectual property developed by the private partner. The system is still in development. There is a plan to follow-up the implementation of CCE with developed of assessments and teacher training workshops.
3. Intended and registered users of the system include the following categories: Teachers, Headmasters, School Education department officials.

7.3. Key Functionality of the CCE system

CCE has 2 types of assessments:

1. Formative assessments: These are assessments for the teacher to gather quick feedback on the performance of their students and use that information to change their approach in the classroom. The teacher may use different tools (Qualitative, Observation schedule, Rating scale etc.) and different techniques (Examinations, Assignments, Group Discussions, Quiz etc.) to assess the classroom. The teacher based on the context in the classroom creates the assessment.
2. Summative assessments: These are more standardized assessments looking to benchmark a child's understanding of a particular topic. Summative assessments may be of Objective type, Short answer type or Long answer type. The questions for these assessments may be derived from standardized question banks.

Sticking to the spirit of CCE, the system is designed in manner such that the headmaster and the teacher have maximum independence in designing customized assessments and using the data collected from these assessments. The following functionalities have been provided:

3. Formative assessments:
 - a. The headmaster may choose the rating scale (out of 10 or out of 5 or out of 3) for the entire year so as to standardize the results of assessments conducted across classes and subjects.
 - b. Each term has 3 formative assessments. For each of these assessments, the teacher may feel free to choose whichever tool and technique they intend to use for the assessment. The data collected from the assessment will then be filled into formats suitable for the given combination of a tool and technique.
 - c. The school administration might fix the technique (say assignments) for one of the formative assessments.
4. Summative assessments:
 - a. A question bank will be created covering each topic in every subject across grade levels. A teacher may choose questions from this to create an assessment.
 - b. The assessment structure will be standardized across all schools, so as to make the scoring comparable.
5. Analysis:
 - a. The weights to be allotted for each assessment (formative or summative) and for each term may be decided by the teachers or headmasters or by the department administration. The decision for where the decision will lie will be as per the state policy, which is yet to be finalized.
 - b. The results across schools will be made statistically comparable. Comparative charts may be created.

7.4. People Met

Person met: Mr Parthasarathy, Director, SSA, Puducherry

8. Regional Institute of Education, Mysore

8.1. Introduction to RIE

The Regional Institute of Education Mysore (Formerly Regional College of Education) founded on 1st August, 1963, is one of five such institutions established by the National Council of Education Research and Training (NCERT), New Delhi. The other Institutes are located at Ajmer, Bhopal, Bhubaneswar and Shillong. The Regional Institutes were started with main the objective of qualitative improvement of school education through innovative pre-service and in-service teacher training programmes and relevant research, development and extension activities. These are Regional Resource Institutions for school and teacher education and they extend assistance in implementing the policies of the States/UTs and help in monitoring and evaluation of the Centrally Sponsored Schemes. RIE also offers full-time courses in Bsc.Ed, BA.Ed, Msc.Ed., Med., IDGC and PhD in Education.

A Demonstration Multipurpose School (DMS) is attached to each RIE at Ajmer, Bhopal, Bhubaneswar and Mysore as a laboratory for trying out innovative practices in school education and teacher education. These are also used for practical training for the teacher-trainees of the institutes.

8.2. Key Challenges

1. RIE's were initially conceptualized as institutes that can reach out to their respective regions' DIETs and even BRCs to communicate the best practices in education and training. Currently there isn't much of a direct contact between RIE and DIET. Lack of information flow prevents RIE from playing the regional leadership role that it was envisioned to play.
2. RIE doesn't get any direct feedback from the field on the impact of its training. Its involvement ends with Design and delivery at a state level. Thereafter, there isn't much information flowing back into RIE from the field, which negatively impacts RIEs ability to improve its quality.
3. Training for ICT-enabled TLM needs to be across platform agnostic. For e.g. as most of RIE resources were trained in Windows based platforms, they were unable to assist Kerala in its training for its FOSS implementation.
4. RIE carries out some program evaluation, but the process is data intensive
5. There isn't a high amount of exchange of learning and experiences on training methods or modules between RIE, NCERT and SCERT

6. RIE has experience in creating and evaluating digital content but there is no systemized way in which it can offer those services to state governments looking to evaluate digital content prior to purchase.

8.3. People Met

Interacted with the entire team of RIE, especially Dr. V. Bhatt and Dr. Gopal.

9. Department of Mass Literacy, Karnataka

Intel@School is a foundation that works with teachers using Intel's assets and their applications. They focus on teacher capacity building and follow-up with state governments on implementation.

9.1. Introduction to DoML

This state department is a part of the national Adult Education section under Ministry of HRD. The structure in each state is: State Literacy mission authority, District literacy mission authority, Block literacy mission authority and the Gram Panchayat.

There are 3 main programs:

Basic literacy: The department runs literacy centers operating in villages. These centers are run by volunteers to teach illiterates in 3 months / 600 hours. Training has to be given to these volunteers by the state team. As it is difficult to keep adults interested in these centers over time and because retention of learning is low, after 6 months of the program a basic education equivalence test is done. IT-based content is available to GPs and is apparently quite popular, especially with the younger adults.

Vocational training: This program focuses on life skills. The government ties up with Jana Shiksha Sansthan, which are separate NGO entities that are fully funded by GoI. A needs assessment of the area is carried out and on the basis of that, programs are rolled out. Most popular vocational trainings are Tailoring, Embroidery, Mobile repairs, beautician etc.

Continuing Education: This is run through continuing education centers established in each GP. They are manned by 2 preraks (volunteers). It is designed to be a learning hub with a library, computers, T.V. etc. These centers are the end delivery point for all the Adult education programs. It is especially a success in Kerala, where even government employees themselves come back to these centers to complete their SSC certificates. These centers are supported by the State Resource Center, which give academic support for literacy programs and design neo-literacy material.

9.2. Key Challenges

1. To most people, literacy doesn't seem to be a priority and therefore it doesn't receive as much focus as school education. Ownership is missing at the GP level and government officers poorly monitor the programs.

2. Given that most adults in villages are facing very basic survival issues, there is minimal interest in actually coming to learning centers.
3. Monitoring of the programs is quite poor. There is a lot of inaccurate data and lack of literacy tests to gauge literacy levels.
4. Relapse into illiteracy is quite easy. Continuing education centers are key to preventing such relapse.
5. The quality of vocational training given by the Jan Shiksha Sansthan is very varying.

9.3. People Met

Person met was Ms. Cauvery, head of State Literacy mission