Implementation of School Educational Services under NOFN Pilot

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

Report prepared with inputs from Buzzyears Education and ATSI Technology Solution

niSg
Architecting e-Government

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1. Introduction

As part of the DPR engagement, it was decided to conduct the Proof of Concept (PoC) of a few of the services proposed under the MMP at the school level under the NOFN pilot. A total of 28 government and government-aided schools in Arian block under Ajmer District (Rajasthan) that were earlier provided connectivity under ERNET project were selected for the PoC.

Objectives of the Proof of Concept

1. Demonstrate the feasibility of implementation of the services (at least limited functions) proposed as part of the School Education MMP in these selected schools
2. Demonstrate the potential utility of such services to the end stakeholders
3. Understand the challenges in implementation of above services (training requirements, user adoption, perception of utility to end stakeholders, infrastructural constraints, ..)

Due to the limited scope and duration of the NOFN pilot, evaluating the impact of the implementation on the envisaged MMP objectives is not an objective of this PoC.

The scope of the PoC was restricted to implementation of limited functions (as described below) of the School Management Information System:

1. Track progress on lesson plans
2. Capture student and teacher attendance
3. Capture student assessment results
4. Send SMS alerts to parents / guardians for students' missing classes
5. Publish academic calendar, class/section timetable, and teacher schedule
6. Generate the following (indicative) reports
   a. Compare performance of similar schools performing in an area
   b. Compare performance of students in specific classes, subjects across the pilot block
   c. Track student performance across all assessments
   d. Compare performance of students visavis assessments and class/course performance
   e. Student and teacher attendance report.
   f. Track attendance of a student
   g. Where are students excelling?
   h. Where do students need improvement?
   i. How can we group students with similar needs and tailor instruction to meet these needs?

j. What subject areas/content/standards are being learned well?

k. What subject areas/content/standards are students not performing well on?

l. Are there differences or achievement gaps between key populations (economically disadvantaged, gender, and so on)?

m. How is the student/class/school/district progressing over time?

n. Gives insight to teachers' strengths and areas they could use improvement

o. Identify teachers who are in need of training

p. Identify training needs of teachers

While ideally, it is required to run the PoC for one entire academic year, since the academic year has already started, PoC will be run till the end of the current academic year. For the transaction data generated so far (e.g., student records, attendance, progress on lesson plans, assessments,…) the data was captured in the system prior to the start of the PoC implementation.

Buzzyears Education Pvt. Ltd. and ATSI Technology Solution Pvt. Ltd. that have school information systems developed and implemented in government / private schools have come forward to take up the PoC on a no-cost-no-commitment basis. Of the 28 schools, 14 each have been allocated to Buzzyears and ATSI. The scope of the pilot implementation agency included:

1. Localization (including language) and configuration of the application / content as appropriate for the District
2. Initial Data Entry (indicative list below)
   a. Configure School Profile, Teacher Profile, and Student Profile
   b. Configure School calendar, classes, sections, timetable, teacher scheduling
   c. Configure Lesson Plans for the identified subjects and teachers
   d. Configure any other data as required to run the pilot
3. Initial training of end users
4. Onsite handholding support for a period of 3 months
5. Offsite support for the remainder of the academic year
6. Hosted Applications
7. Regular reporting of the usage statistics and any reported issues
8. Purge the entire data (master and transactional) at the end of the pilot

2. List of Schools

Buzzyears:

SI No	Address	Location	Block	Connecting BTS/POP Locations
1	GOVT.Sec.school	Jherota	Arain	Baroda
2	GOVT.Sec.school	Godhiyana	Arain	Baroda
3	GOVT.Sec.school	tazpura	Arain	Nagola
4	GOVT.Sec.school	mandavariya	Arain	Kada
5	GOVT.Sec.school	Katsura	Arain	Kada
6	GOVT.Sec.school	Dhuolpuriya	Arain	Kada
7	GOVT.Sec.school	Bhogaded	Arain	Urseva
8	GOVT.Sec.school	Gagunda	Arain	Urseva
9	Sarswati Bal Sec School	Ariae	Arain	Kada
10	GOVT.Sec.school	Sandoliya	Arain	Kada
11	GOVT.Sec.school	Devpuri	Arain	Kada
12	Ranabai Children Acad Primary Sanskrit School	Arain	Arain	Kada
13	Vandana Primary Sanskrit School Akodia	Akodia	Arain	Kada
14	MRG Academy Sarvad Rd	Arai	Arain	Kada

2. List of Schools

ATSI

Sl No	Address	Location	Block	Connecting BTS/POP Locations
1	Rajkiya Parveshika Sanskirit Vidhalaya	Baroda	Arain	Borada
2	Children Primraj Sanshthan	Baroda	Arai/Arain	Kada/Molkiya
3	GOVT.Sec.school	Manhorapura	Arain	Baroda
4	GOVT.Sec.school	harpura	Arain	Baroda
5	Amrit wadi Sanskritik School	Sayar	Arain	Baroda
6	GOVT.Sec.school	Fathegarh	Arain	Baroda
7	GOVT.Sec.school	Kashir	Arain	Baroda
8	GOVT.Sec.school	Rampali	Arain	Molkiya
9	GOVT.Sec.school	JaliyaIII	Arain	Nagola
10	Ugmarao memorial Sishahad Santhan	Surajpura sarwad	Arain	Borada
11	GOVT.Sec.school	khiriya	Arain	Borada
12	GOVT.Girls Sec.school	Ba Sanpla	Arain	Nagola
13	GOVT.Sec.school	Hingonia	Arain	Baroda
14	GOVT.Sec.school	Lalai	Arain	Baroda

3. Application Modules Implemented

School Management

The details of the school may be recorded on the platform for the higher official to access any detail of the school from anywhere. This application will give the student strength, area of the school, staff strength, photographs and a brief description of the school.

Student Management

The Student Management application helps to maintain all student records for a student such as student profile, parent profile, sibling details, attendance, heath, marksheets, scholarships etc. It also provides customized reports to enable administrators to access any information they manage and track for students.

Employee Information

This application helps manage school staff details. Beyond this it provides numerous reports for schools to be able to obtain information in the form they desire.

Student Attendance

Daily student attendance can be recorded and an sms can be sent to parents in case their ward is missing from school.

Leave Management

Daily staff attendance can be recorded which can also be extacted in report form and is visible on central dashboards real time.

Report Cards

Teachers can use the web interface to record grades for students. When the teacher is ready, these grades can be published from the grade book resulting in progress reports being made available to parents and students.

Curriculum Tracking

Curriculum and lesson plans can be fed into the system and regularly monitored to check if the teacher is giving the required number of tests and is up to speed with syllabus and curriculum.

4. Planning

The execution of the project is based on onsite-offshore model. Following are the key highlight of the execution model –

a. Cloud Enabled Solution is deployed on internet cloud and accessed through internet from the schools
b. The technical software maintenance team is located offsite
c. Support resources have been stationed onsite.
d. Initial Data loading though was originally planned for schools to undertake, was taken up by the support team to overcome slow progress
e. Support resources have been visiting the schools for training and hand holding support at least once a week per school

The project was divided into the following phases

- Data Collection: Initial Data for various applications to be collected by visiting schools. This data was present mostly on paper.
- Data Digitization: The collected data was converted to digital format preserving the language of data.
- Data Setup: Data to be setup for various applications to be working for schools as expected. The digital data was loaded into applications.
- Training: To conduct training in schools for the IT teacher / resource and the principal.
- Hand holding: To provide close hand holding support for the school to be able to use applications on a daily basis and perform routine tasks.
- Running smoothly: School to be able to use the applications on their own and ask for help in special cases.

4.1.   Data Collection

Initial Data for various applications was collected by visiting schools.

- The data in most of the schools was in registers and schools were understaffed to find the time to digitize the data.
- The team went to each school and collected data from their paper records and typed it into the applications to convert it into digital format as required for applications.
- For schools that had data in Hindi, it is represented in Hindi in the applications too.

- For sending SMS's to parents, schools were not maintaining records of cell phone numbers of parents. The schools were requested for this data and they provided this after obtaining it from parents.
- For curriculum tracking, schools didn't have a detailed lesson plan or scheme for delivering curriculum in classes. The curriculum for all subjects in all classes was identified as lessons to be taught in subjects and the same was then uploaded on to the Curriculum Management application.
- Curriculum tracking for these schools is setup to track which chapters are being taught in which classes and in which subjects on which days and by whom.
- Government school teachers maintain a daily diary in which they record the lessons that they taught on that day. Private schools did not follow any daily curriculum-recording plan. Henceforth both Govt. as well as private schools will be recording this in the applications.
- To the schools that were not maintaining diaries, we provided registers to their teachers so this information could be maintained on a daily basis from which the IT person could transfer to the application.

4.2.   Data Set Up

Data was setup for various applications to be working for schools as expected.

4.3.   Training

Training was divided into two locations for 3 days each.

- MRG Academy Arain
- Govt. Secondary School Bhogadeet

During the training, the following modules were covered

- o   Using Internet
- o   Email
- o   Skype
- o   School Management
- o   Student Management
- o   Employee Information
- o   Student Attendance
- o   Leave Management
- o   Report Cards
- o   Curriculum Tracking

4.4.   Handholding

For ease of use and for the discipline of daily use of all applications, schools needed close hand holding and guidance for a period of 2 months or more.

For this, a team of 3 people supports 14 schools by living in a location within the block. This team provides everyday support to schools and addresses any issues that they may have in using the applications on a daily basis. This team speaks to the schools on daily basis and visits them twice a week.

4.5.   Running Smoothly

The handholding phase is planned to continue till it is seen that the applications are running smoothly in the schools on a regular basis. All schools will also be able to generate report cards through the report card application.

5. Timelines

Various phases of this project were conducted with respect to the following timelines,

Buzzyears:

S. No	Phase	Start Date	End Date
1	Data Collection	14 Oct 2013	17 Oct 2013
2	Data Setup	18 Oct 2013	23 Oct 2013
3	Training	23 Oct 2013	28 Oct 2013
4	Holidays	28 Oct 2013	10 Nov 2013
5	Handholding	11 Nov 2013	-

ATSI:

Activity	Oct W4	Nov W1	Nov W2	Nov W3	Nov W4	Dec W1	Dec W2	Dec W3	Dec W4	Jan W1	Jan W2	Jan W3	Jan W4	Feb	Mar	Apr
Project Induction Training	██															
Data Collection	██															
Solution Hosting	██															
Staff Data Entry		██	██													
Student Data Entry				██	██	██	██	██	██							
Training				██	██	██	██	██	██	██	██					
Hand holding Support										██	██	██	██	██	██	██

6. Application Screens – Buzzyears

The project plan above was designed to achieve the following goals in applications listed below,

1. Application: School Management
   a. Data Entry
      i. School information set up
   b. Dashboard
      i. Principals and block/district/center users are able to see information as required

Figure 1: School Management Application

2. Application: Employee Information
   a. Data Entry
      i. Student details to be recorded in school
   b. Dashboard
      i. Principals and block/district/center users are able to see information as required

Figure 2: Employee Information Application

3. Application: Student Management
    a. Data Entry
        i.   Student details to be recorded in school
    b. Dashboard
        i.   Principals and block/district/center users are able to see information as required

Figure 3: Student Management Application

4. Application: Student Attendance
   a. Data Entry
      i. Student Attendance recorded in school
   b. Notification
      i. Parents are informed when child is absent by 11 am by SMS
   c. Dashboard
      i. Principals and block/district/center users are able to see information as required

Figure 4: Student Attendance Application

Figure 5: SMS sent to parent of a student when student is absent

5. Application: Leave Management
    a. Data Entry
        i. Teacher Attendance recorded in school by 11 am
    b. Dashboard
        i. Principals and block/district/center users are able to see information as required

Figure 6: Staff Leave Management Application

6. Application: Report Cards
   a. Data Entry
      i. Assessment details are recorded
      ii. Report Cards are generated by schools as required
   b. Notification
      i. Parent is informed of assessment results when results are published by SMS
   c. Dashboard
      i. Principals and block/district/center users are able to see information as required

Figure 7: Report Cards Application

7. Application: Curriculum Management
    a. Data Entry
        i. Curriculum taught to be recorded on a daily basis
    b. Dashboard
        i. Principals and block/district/center users are able to see information as required

Figure 8: Curriculum Management Application

7. Dashboard - Buzzyears

A dashboard is "an easy to read, often single page, real-time user interface, showing a graphical representation of the current status (snapshot) and historical trends of an organization's key performance indicators to enable instantaneous and informed decisions to be made at a glance.

It allows management and organisation users to monitor their school performances such as student strength, HR dashboard, student attendance, teacher's attendance and students academic performance at a glance.

The dashboard has two sections,

1. <u>Block Level Charts</u> : This dashboard will allow user to select a block and then they will be shown charts for schools in that block in a comparitive report.

2. <u>School Level Charts</u> : This dashboard will allow user to select one school in a block and see charts for it in an informative report.

Included below are snap shots of some of the graphical represenation of reports that are visible to the administrators on their Dashboards for easy access and analysis of data. The reports backing these widgets have been defined as per the reports shortlisted in the Scope.
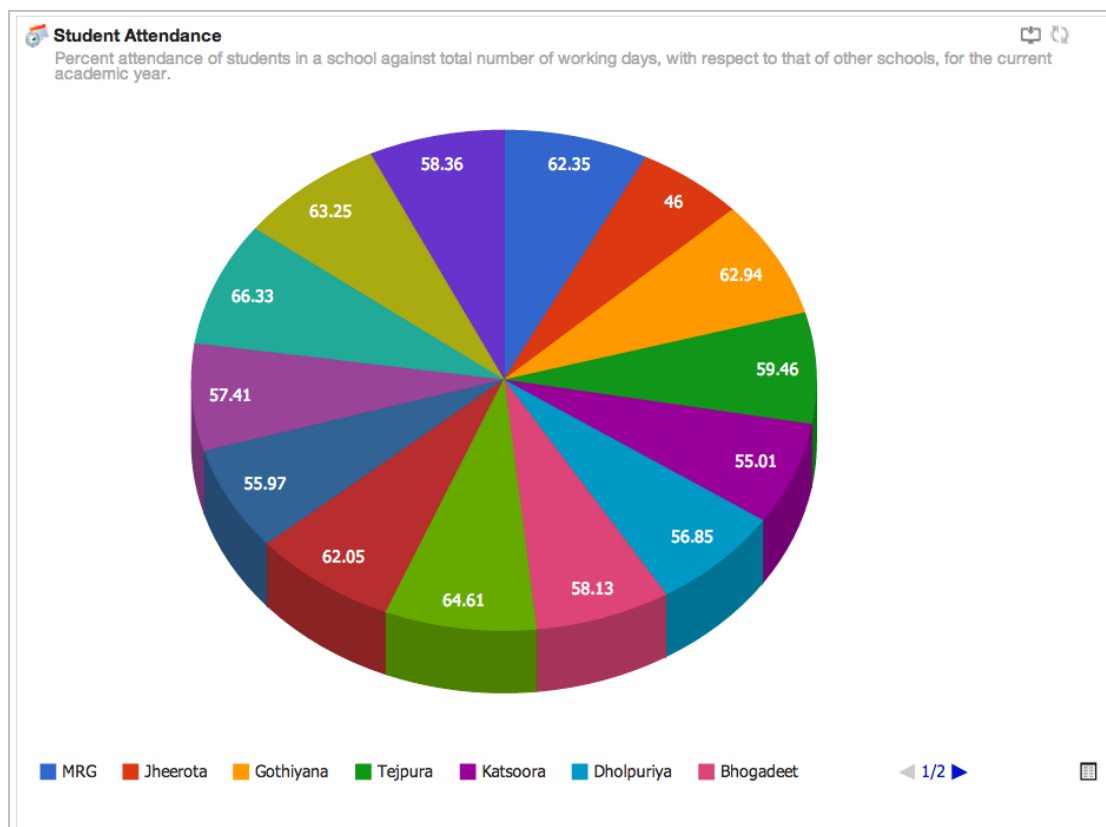
Figure 9: Student Attendance Widget from Dashboard
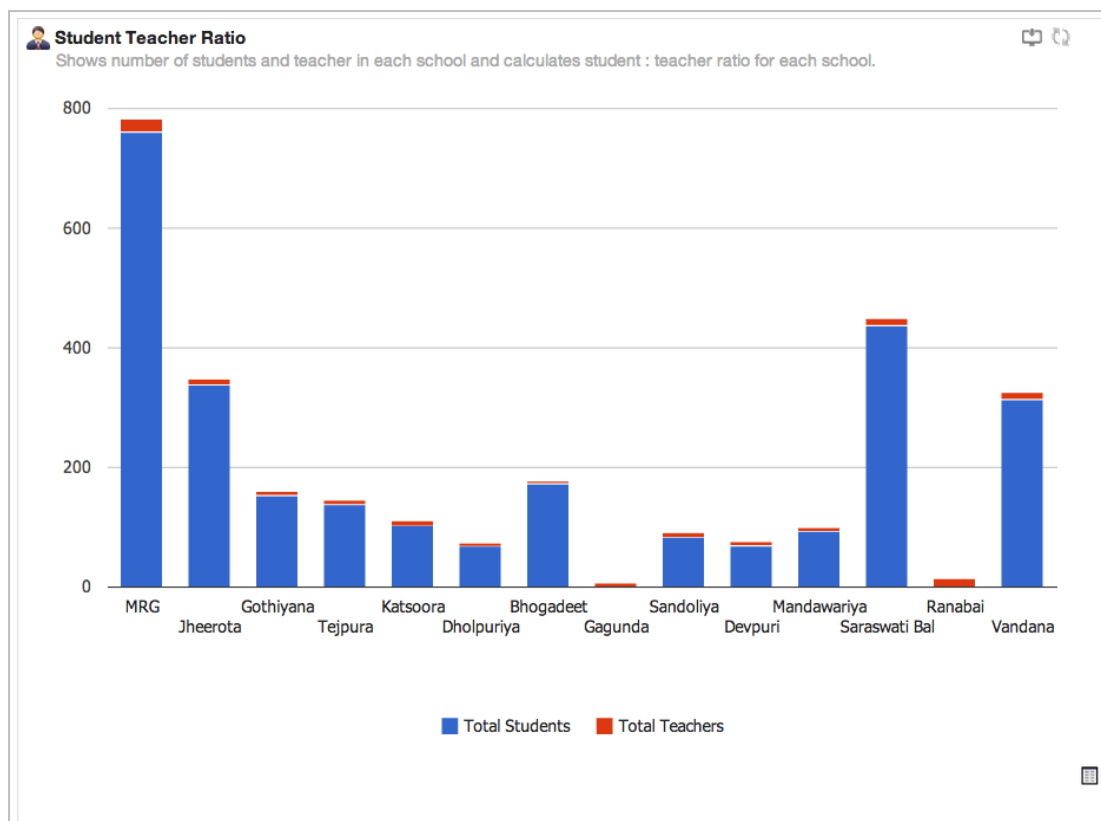
Figure 10: Student Teacher Ratio Widget from Dashboard
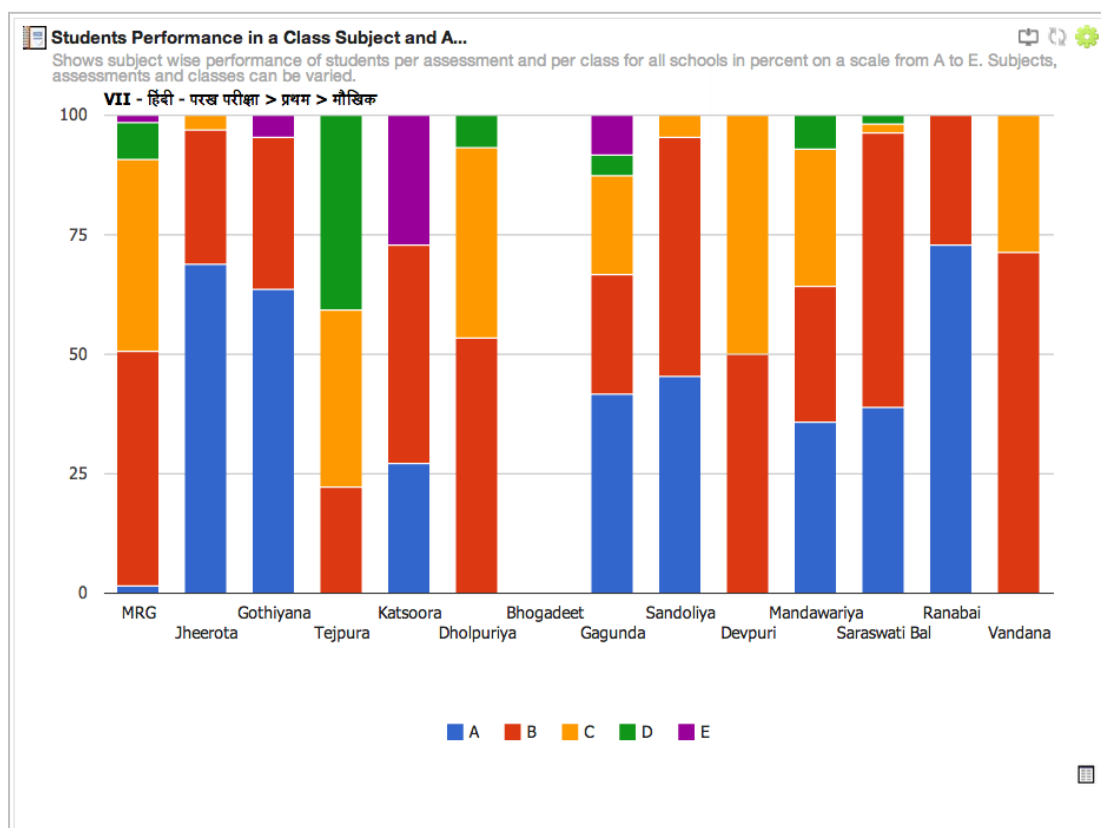
Figure 11: Student Performance in a class and Subject Widget from Dashboard

Students Count Marks and Attendance Relation

Shows correlation between type of school, number of students, student attendance and grades of students, along with details for all schools in the block.

MRG
Student Attendance: **62.35**
Marks: **71.58%**
Type: **Private**
No. of Students: **624**

School	Student Attendance	Marks	Type	No. of Students
MRG	62.35	71.58%	Private	624
Jheerota	46	57.45%	Gov	337
Gothiyana	62.94	71.44%	Gov	149
Tejpura	59.46	75.73%	Gov	134
Katsoora	55.01	64.19%	Gov	100
Dholpuriya	56.85	72.84%	Gov	67
Bhogadeet	58.13	0%	Gov	151
Gagunda	64.61	72.21%	Gov	93
Sandoliya	62.05	78.02%	Gov	84
Devpuri	55.97	72.34%	Gov	61
Mandawariya	57.41	79.48%	Gov	75
Saraswati Bal	66.33	71.74%	Private	396
Ranabai	63.25	72.35%	Private	155
Vandana	58.36	78.6%	Private	274

Figure 12: Student Count, Marks and Attendance Widget from Dashboard

Total Students

Shows student strength of all schools with breakup of number of boys and girls in each school.
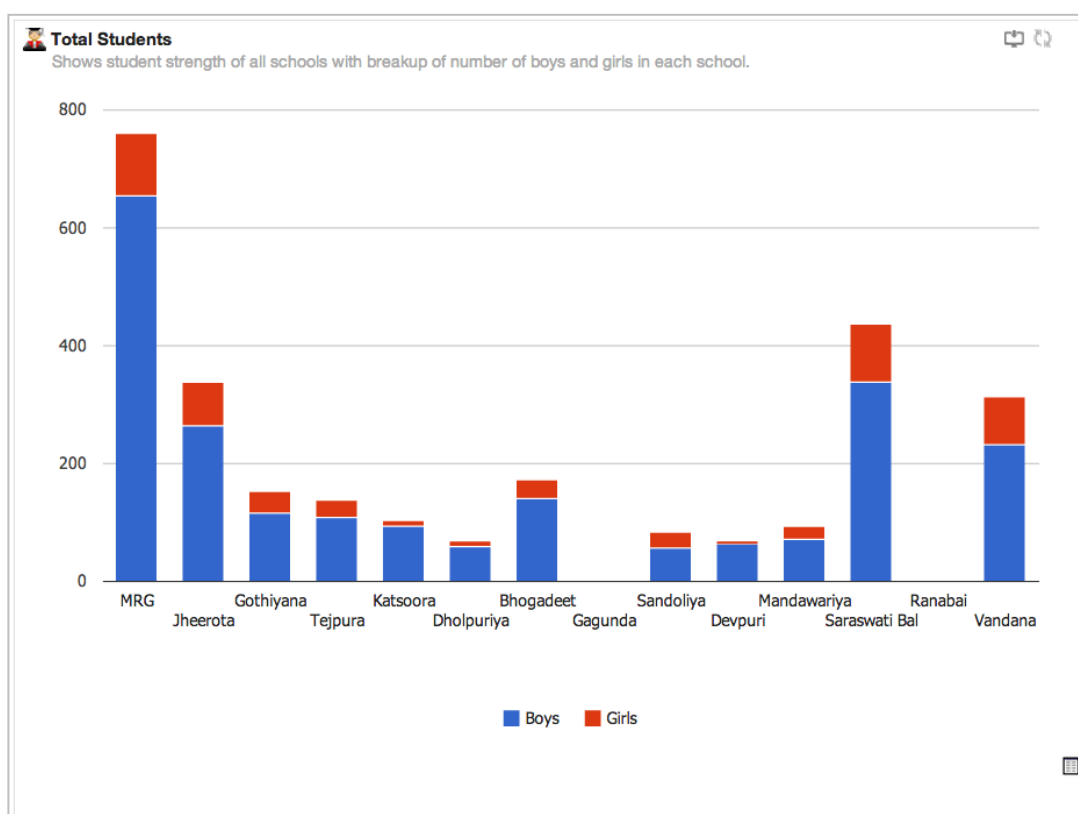
Figure 13: Total Students Widget from Dashboard

8. Application Screens – ATSI

Staff Records

Student Records

Staff Attendance

Timetable

Student Attendance

Marks Entry

9. Dashboard – ATSI

The following are a few dashboards generated in the ATSI solution:

Teacher Pupil ratio

Purpose – The purpose of this report is to capture the Teacher student ratio of the schools. Ratio is the function of (Total Number of Students / Total Number of teachers). Lower the ratio, better the teaching quality.

School wise Teacher Pupil ratio   **Overall–**
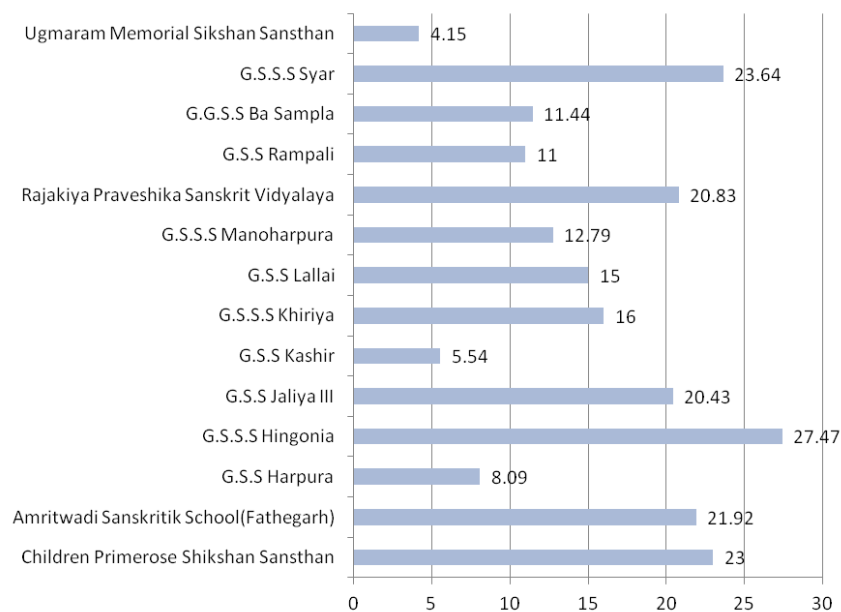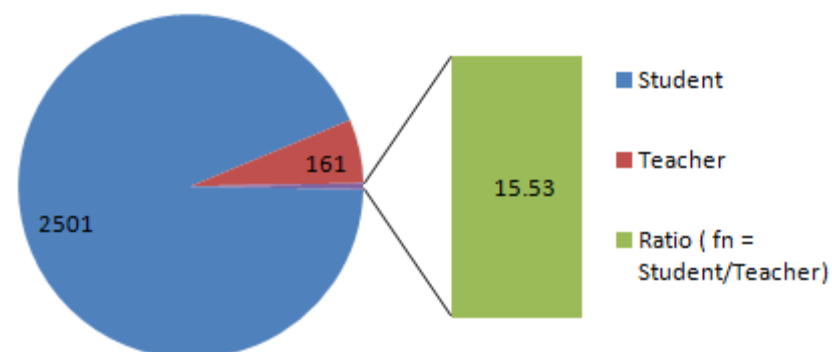
Computer Student ratio

Purpose – The purpose of this report is to identity the most recent student computer ratio. Ratio is the function of (number of students / number of computers). Lower ratio is desired.

School wise Teacher Computer ratio

Ratio (fn = Student/Computer)

School	Ratio (fn = Student/Computer)
Ugmaram Memorial Sikshan…	9
G.S.S.S Syar	52
G.G.S.S Ba Sampla	25
G.S.S Rampali	35.2
Rajakiya Praveshika Sanskrit…	25
G.S.S.S Manoharpura	35.8
G.S.S Lallai	30
G.S.S.S Khiriya	35.2
G.S.S Kashir	14.4
G.S.S Jaliya III	28.6
G.S.S.S Hingonia	82.4
G.S.S Harpura	17.8
Amritwadi Sanskritik…	52.6
Children Primerose Shikshan…	42.71

Pie chart values: Student 2523, Computer 73, Ratio (fn = Student/Computer) 34.56

Designation wise Staff Distribution

Purpose – The dashboard depicts the designation wise staff distribution for the schools -
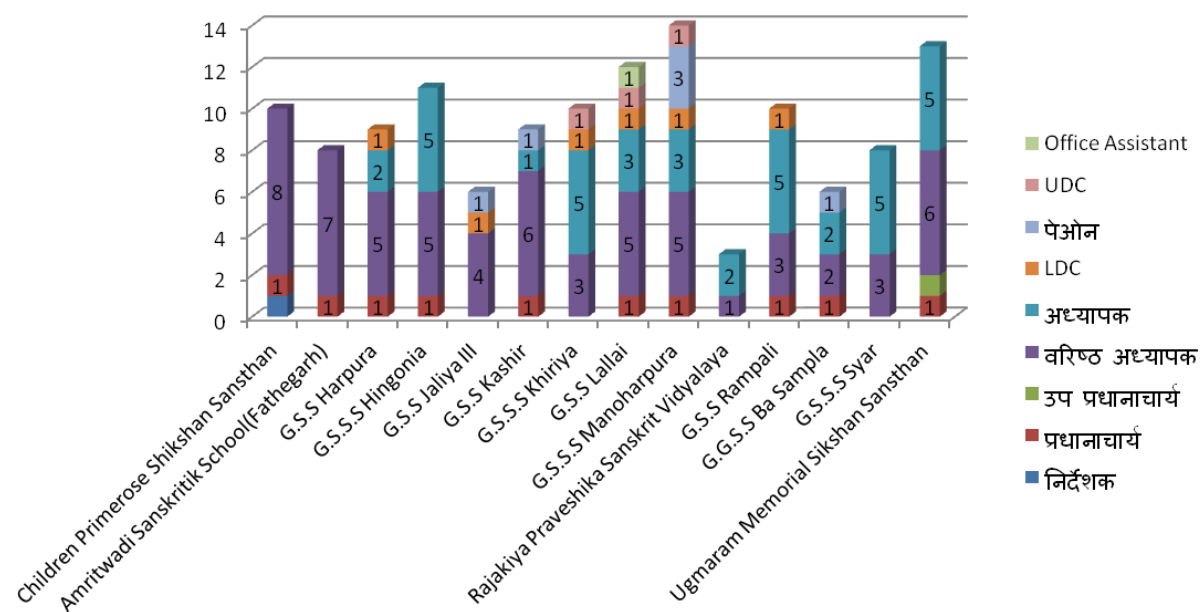
Subject Teacher Deficits -

Purpose – The "Subject - Teacher Gap" dashboard represents the number of the subject teacher deficits against the requirement.

Overall –
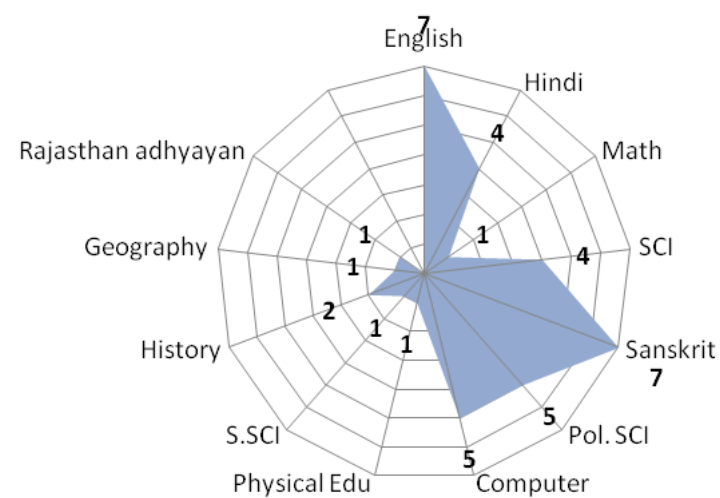
Administrative Dashboards

This section of the report captures various dashboards pertaining to the administrative functioning of the schools at individual and cumulative levels. Infrastructure dashboards capture the analysis of the following areas -

- Enrollment – Class wise
- Enrollment - Gender wise
- Student Attendance – Class wise
- Teacher Attendance

Enrollment – Class wise

Purpose – The purpose of the dashboard is to depict the Computer literacy of the teachers. Literacy ratio = (Number of Computer literate teachers) / (Total number of teachers). Desired ratio is 1. Higher the ratio better.

A. <u>School wise Student Enrollment</u>
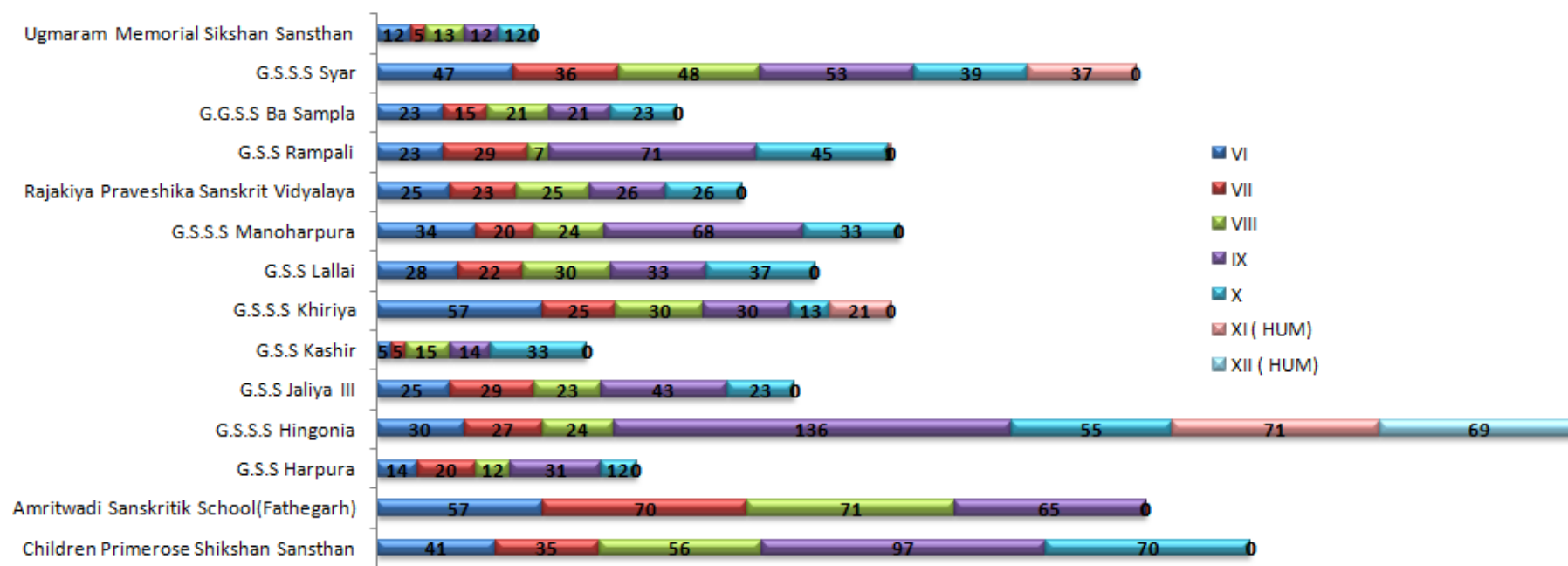
Overall –
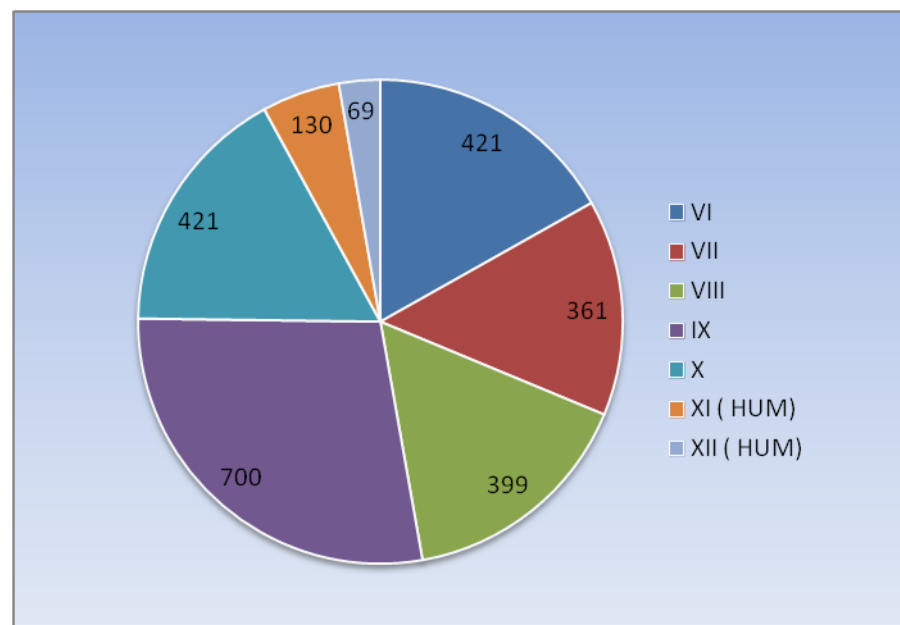
Enrollment - Gender wise

Purpose – The purpose of the dashboard is to depict the gender wise enrollment for schools and cumulative overall.
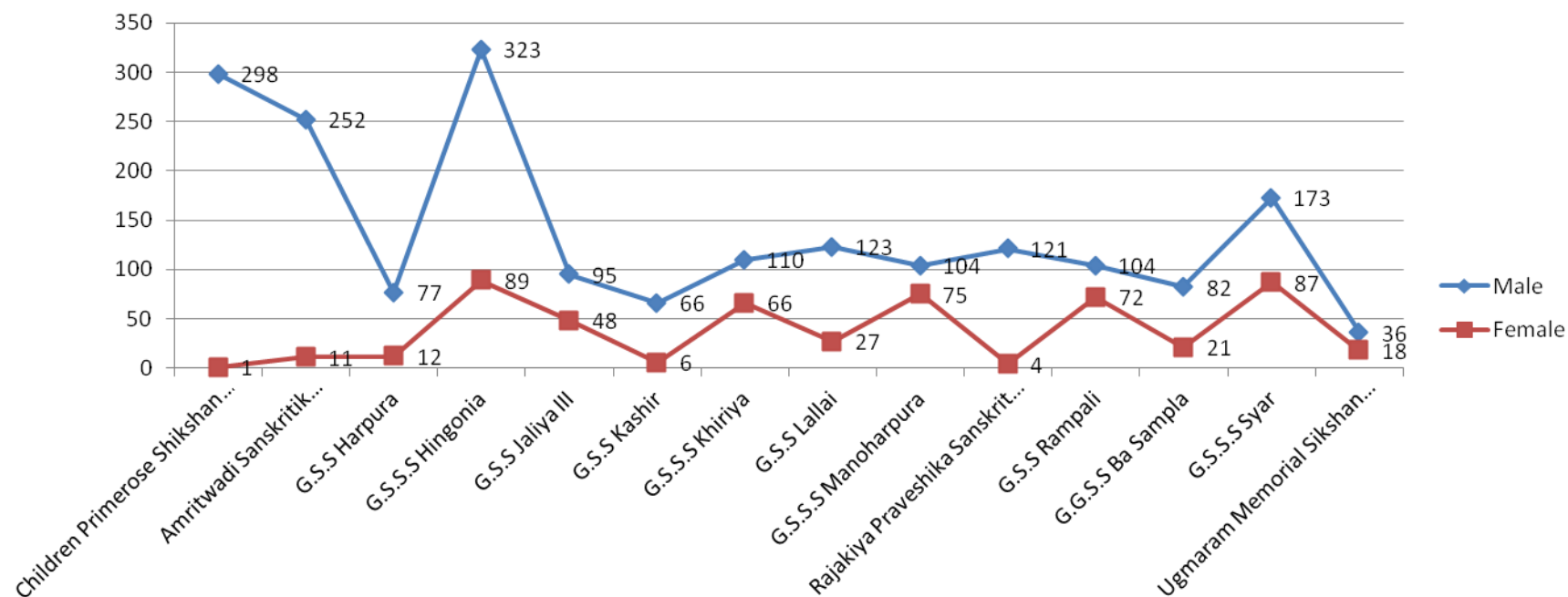
Overall -
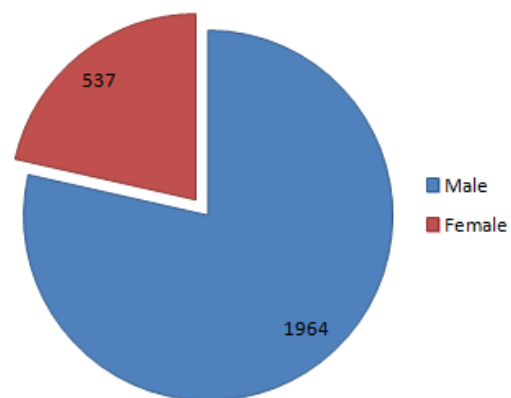
Staff Attendance for Dec 2013

Purpose – The dashboard depicts the staff attendance ratio. Attendance Ratio = total attendance / # of working days * total # of staff)

Attendance Ratio
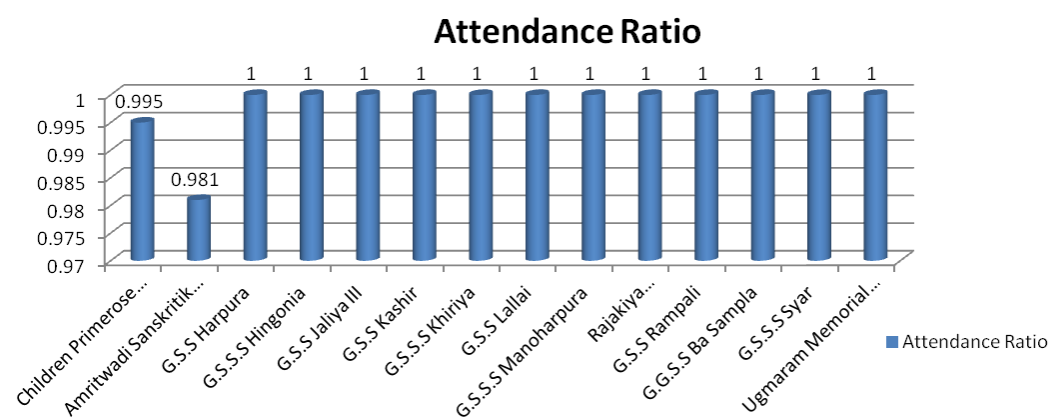
10. Learnings and Suggestions

1. So far, only one person per academy has been trained into the use of software. Going forward we should strive to train all the teaching staff to be able to use the software and to access online content.

2. Teacher training to be reoriented towards use of improved methods of teaching using technology. Refresher courses to be conducted for teachers on regular intervals.

3. Electricity to be made available in all the schools to ensure efficient and uninterrupted use of technology.

4. Improve the supply of Internet to increase efficiency. It is still intermittent and cannot be accessed on a regular basis.

5. Sufficient number of computers in the lab so that teachers can enter their marks on regular basis and generate digital report cards.

6. Senior students to be encouraged to use the Internet to access content during school hours.

7. Lab/library should be open to students even after school hours for them to get the required information from the net.

8. Integrate the platform to provide academic content. This will enable us to scale up to distributing digital and relevant content to the schools. State can record lectures of the better teachers in the State and make them available to other schools through Web Conferencing.

9. Introduce web conferencing as a pilot in the schools. This will help us relay information / telecast to multiple schools at the same time at marginal costs as compared to VSAT.

10. One data card per school to be given in the safe keeping of the Principal so that emergencies can be handled.

11. There is no UDC/LDC/Office Assistance for some of the schools. Some of the operational data entry (e.g., Staff Attendance etc) should be undertaken by UDC/LDC/Office Assistance. Support team and teachers are doing it currently. But this can be the process moving ahead as this is not expected from teaching staffs and may impact on the motivation.

12. Lessons Plans should be made compulsory to be fed into the software.

13. It will be good to know the reports that the administrators would like to access as then the dashboard can be customized accordingly.

11.   Conclusion

While non-availability of computer-literate teachers, lack of UDC/LDC/Office Assistance for some of the schools for carrying out operational data entry (e.g., Staff Attendance etc), connectivity and power were the challenges on the ground, the introduction of applications in schools has resulted in bringing about a change in an old administrative process to a new one. Teachers and school administrators have enthusiastically adopted the new system as it helped them to make their operation processes more efficient and smooth and gave them access to their data at a click.

The PoC has successfully demonstrated the feasibility of implementation of the services proposed as part of the School Education MMP and the potential utility of such services to the end stakeholders.