ICT in Delhi School Education System*

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Abstract

The IT initiatives of the Directorate of Education, Government of NCT of Delhi entail a comprehensive action plan to usher in ICT enabling governance and academic innovations by addressing issues that have a direct or an indirect bearing on classroom teaching, students performance and accountability of teaching staff including office personnel. The project includes interventions such as computer aided learning in multimedia classrooms, admission of students and tracking their details, school information including geographical boundaries, student feedback, inspection of schools, assessment of classroom teaching, attendance of students online through various web based modules, continuous and comprehensive evaluation of student's performance.

The initiatives also include interventions for personnel and office management in the Directorate such as Employee information system, transfer posting module, finance module, library management, infrastructure module, file track, processing of vigilance cases, processing of court cases, and maintenance of electronic documents including Annual Confidential Reports, etc. As an outcome of these initiatives, there has been perceptible change in both administrative and academic output of the Department with human intervention and discretion being minimized resulting in a fair, transparent, accountable and responsive system.

The most important aspects of the ICT implementation are the following:

- The entire work flow of the Department has been woven into the system such that the users have to work through the system for producing deliverables like mark sheet of a child, rather than entering a data arrived at after a process has taken place.
- The implementation of a particular module is always complete. There has never been a pilot. All the users use the system simultaneously.
- The system is a product of an in-house process having organic growth. The needs are identified, solutions mooted, the simplest possible system implemented, tested and fine-tuned and further complexity introduced gradually till the system becomes complete. As a result, the system has started delivering perceptible results within a few days of its implementation.
- It is conceded that the web based system is not a technical marvel. Any perfection in terms of internationally laid norms is never claimed. But it is ensured every time and at every level that the system delivers the results it is meant for.
- The system has been pro-actively accepted by all the stakeholders. In fact, the Teachers Union claims that Computerization has been achieved as a result of their tireless efforts.

^{*} CSI Nihilent e-Governance Awards 2006–07, Special Jury Award.

• There is a definite and unprecedented improvement on all the parameters upon which a School Education System can be evaluated.

1. Introduction

Project conceptualization

The Department of Education in Delhi, has a Herculean task of managing around 1000 schools with 40,000 staff to cater to about 11 lakh children with the sole aim to provide quality education in the government schools. The sheer extent of numbers to be provided this facility has its fall out on the effort required to ensure reasonable level of performance in all schools. There has been a variation in performance varying from 'par excellence' to 'below par'. A prime indicator of achievement for the department could be CBSE results where pass percentage in various schools could be a measure of success and failure.

Obviously, the better ones always perform whether the system exists or not. There were geniuses like Thomas Edison and Albert Einstein who became great scientists without the help of a good schooling system. However, average students are likely to fall below par in the absence of a systemic support. The success of a large system, thus, lies in not letting the performance fall below a prescribed minimum standard and to assist the brilliant ones in realizing their full potential.

'When the then Director joined the department, during initial exchange of pleasantries as a prelude to delving into finer issues, he enquired about the number of schools from his subordinate officers. To his utter surprise, the response varied from 980 to 1050.'

This stemmed the urge to delve into further details such as:

- 1. Number of teachers and number of students
- 2. The quantum of facilities available to them
- 3. Extent of PTR (Pupil Teacher Ratio) in each schools as it would have been an exercise in futile in absence of accurate information
- 4. A systemic methodology to assess performance of teachers
- 5. Ensure timely attendance of all officials, and to reduce truancy
- 6. To bring in accountability and transparency by evolving objective parameters against which the performance can be measured
- 7. To ensure equitable and timely distribution of available financial and manpower resources
- 8. To be able to plan for the required infrastructure well in advance and with accuracy
- 9. To ensure timely training to all the teachers
- 10. To introduce new and state of art techniques for education like computer aided learning, etc.

Each of these parameters which have a direct bearing on performance of schools is extremely important and pertinent but cannot be addressed at the systemic level if the number of schools is also not known accurately.

Appreciation of the problem and crystalization of the ideas to solve them

Keeping in view of the points of reference mentioned above, it was felt necessary that the entire system should facilitate correct decision making by enabling and ensuring real time collection and updation of data and have at least the following features.

- 1. The Information System should be web-based so that any user from any location can have access and use this system. Besides the changes/ alterations in the programmes can be effected through a change in the central server only. There should be no need to change the software in each and every school.
- 2. Not only the data should be fed into the computers but the workflow should be embedded into the Information System so that the officials can transact business through the Information System, not merely entering transaction details after it has taken place. These two features could enable a real time updation of the data.
- 3. Every transaction should be followed by printing a report to be used in regular file work undertaken in various offices of the Department so that both the manual system and the IT based system should not entirely substitute each other but both the processes should be interwoven in such a manner that the best of both the systems can be used for the over all benefit of the Department.

For example, if an employee joins any school on the web-based system, a Joining Report should be printed out indicating all the particulars. Not only the report should be printed but it should be made mandatory to use MIS generated Joining Report to be used as official Joining Report for all official purposes hitherto being used for preparation of salary or keeping record of postings in the personal file of the individual.

4. There should be some enforcement mechanism. Every major transaction of the Department should be carried out through this Information System so that the people are forced to use this system. For example, if the salary bill is prepared through this system, personnel have no other alternative but to enter their employee details, salary details etc. in order to get their name included in the salary bills of the Branch/School.

In a nut shell, the proposed the web-based system should not only enable and ensure the entry of correct data in real time, but the system should automatically ensure that not so diligent employees, who lack the drive to work except under coercion, also fall in line.

2. Project Vision, Stakeholders, Objectives and Services

Project Vision

To provide enabling systems for quality, child-centred education.

Stakeholders

- Students
- Parents
- Public
- Teachers and other employees
- Administrative machinery

Objectives

- Universal enrolment
- Reduced drop out
- Improved quality of education
- Joyful learning
- All-round development

Services

Services to students

- i) Online admission
- ii) Online attendance
- iii) Online mark sheet including all the units tests and terminal exams
- iv) Online SLC
- v) Student feedback
- vi) Computer aided learning
- vii) MIS mail
- viii) Online CAL content.
 - ix) CAL content in school library computer.
 - x) Online syllabus
 - xi) Issue of library books online.

Services to parents

- i) Online admission
- ii) Unique ID and tracking of every child in the school system.
- iii) MIS mail
- iv) Online school information.
- v) Online circulars and orders
- vi) Mail to minister
- vii) Computerized mark sheets for their wards.
- viii) Online attendance report of teachers and students

Services to the Public

- i) About us— details of all schools in delhi with phone numbers .
- ii) About the department
- iii) Act and rules
- iv) Telephone numbers of officers
- v) Right to information act
- vi) Public circulars
- vii) Website feedback
- viii) Current events
 - ix) Important links to other government and educational institutions
 - x) Online attendance report of teaching and non-teaching staff
 - xi) Tenders- departmental purchases.
- xii) Search link

Services to teachers and other employees

- i) Online attendance
- ii) Timely emoluments through online payroll module
- iii) Online request facility for transfer to a desired school
- iv) Online transfer, posting, relieving and joining
- v) Optimal and transparent posting based on GIS data
- vi) Online data correction request facility
- vii) Online weekly syllabus and other guidelines
- viii) Internal MIS mail
- ix) Online salary slip
- x) Online marksheet management.
- xi) Online availability of week-wise syllabus
- xii) Online circulars and orders
- xiii) Online seniority list
- xiv) Online annual confidential reports
- xv) Online ACP (Assured Career Progression) scheme.
- xvi) Online monitoring of vigilance cases

Services to administrative machinery

- i) Online finance management module covering all the transactions right from allocation to disbursal of every rupee spent by the department
- ii) Online infrastructure management module
- iii) Online file track module
- iv) Online court cases monitoring
- v) Online module for extraordinary repairs
- vi) Result analysis and performance evaluation
- vii) MIS mail for all communications
- viii) Collection of any desired information online
 - ix) Library module for monitoring of issuance of books to children

5. Public Private Partnership (PPP)

The programme is funded solely by the Government. All the developmental work has been done in-house by hiring contractual staff. The department has its own internal informal audit process. As there is no external service provider, the question of SLA does not arise. However, there are fixed timelines and frequency for different specific activities that have to be strictly adhered to. For example, there is a definite date/cut-off date for declaration of results and distribution of mark sheets, admission of students, applications for transfers, submission of payroll, writing of ACRs etc. that can not be extended at any cost. So the SLA is self-defined and implemented.

6. Necessity/Needs

- The ground situation was analysed on all parameters in finest possible details and overall strategy was evolved to improve the ground situation drastically. The analysis led to the conclusion that vision and will power combined with adequate support of ICT backbone can achieve the desired objectives.
- It was clear at the very outset that IT is an efficient tool that can help in the following:
 - To provide accurate and timely information about the system on desired parameters, benchmarks and bottlenecks and serve as decision support system
 - To implement transparency in all aspects of the functioning
 - To revolutionize communication at all levels
 - To shorten the response time
 - To reduce the digital divide
 - To re-engineer the government process
 - To simplify the logistics
- At the same time, it was also recognized that IT is only a tool and per se can not substitute for vision, good governance, strategizing, motivation, will power to implement reforms, team work, introduction of new ideas etc. in the actualization of true potential of the system.

In light of the above, different strategies were formulated for the problems keeping in view the desired objectives defined above. The following steps were taken in formulation of each strategy.

- 1. Analyze the data
- 2. *Identify* the problem areas from the above analysis (it is very important first to ensure accurate and timely data and then to believe in the findings even if it goes against the conventional wisdom). As the problems identified in the table of strategies below, examples 1, 2 and 5 were not in common knowledge and the findings did not tally with conventional wisdom.

- 3. *Workout the probable solutions/interventions,* then select and execute the one which has the maximum impact with minimum disturbance, something akin to keyhole surgery.
- 4. Assiduous monitoring and follow up of the intervention, often allowing for mid term correction, if required in light of new findings, continuously emanating/being collected in real time from the online application.

The table given below will bring about some of the examples of the strategies chalked out and implemented.

Strategies

Table 1

Sl.	Problem identification	Intervention	Outcome
1.	The low result in CBSE Class- X and XII examinations could be primarily attributed to bad performance in mathematics. Extrapolation techniques bring out the fact that if the result of mathematics is brought upto level of English, an equally tough subject for first generation learners, the overall result will increase by 12%.	 All maths teachers graded in three categories Red-, Green- and Yellow- based upon the performance of their wards. Secretary and Director Education talk to all of them bringing out the seriousness of situation. Academic training imparted to all the 	Result increased by an unprecedented and unthinkable 11.7% in Class-X in year 2006. In year 2007, it was 17.39%. The previous best increase being in the region of 4-6%.
		maths teachers by subject experts	
2.	 Co-Ed. Schools perform significantly better than single sex schools. Single shift schools perform significantly better than double shifted schools. Large schools in terms of enrolment perform significantly better than that of the smaller ones. 	<i>Merger</i> of two single sex schools running in two shifts in the same building. This effectively made the schools co-ed, single shift and had a large enrolment.	Result of the merged schools went up by almost three times from 27.65%(2005) to 50.94%(2006) to 77.02%(2007) in two years.
3.	There were complaints of teacher absenteeism.	<i>Online attendance</i> for teachers was introduced.	Attendance of teachers can be verified at any given point of time either for individual teacher or in aggregates.

Sl.	Problem identification	Intervention	Outcome
4.	There was a fear that in lower classes less attention might be paid due to importance given to board results everywhere.	Performance of all the children was monitored by way of <i>online mark</i> <i>sheet</i> generated by entering the data of classes VI onwards. This empirical data was collated <i>to evaluate</i> <i>performance teacher-</i> <i>wise, class-wise, zone-</i> <i>wise, district-wise etc.</i>	One example of teacher attendance for a day is shown in the forthcoming pages. <i>Pass percentage</i> of all the classes improved substantially except class VII. The reason of which was found out to be one of the papers being extraordinarily tough. It fixes the accountability on the supervisory officers at all levels.
5.	It was found that when children came to join Class VI in a Delhi Government School for the first time (from Municipal Schools), they faced <i>lots of inconvenience</i> <i>in obtaining admission</i> and as a result many of them even dropped out. Secondly, there were allegations of favoritism in the matters of admission in sought after government schools.	Government and MCD Schools were mapped in Parent-Feeder School relationship in GIS map. The data in respect of the batch passing out of Class-V from MCD was obtained in advance. The same was entered into the database. Once the database and mapping was ready, the admission was online and automatic, only the child has to present himself in the parent school and complete the minimal formalities. For children other than feeder schools, provision for online application and school allocation was made. The parent schools were made centres for online application.	 In the first year of operation, the enrolment of Class-VI increased by almost 14% over the previous year. Innumerable man days (estimated to be more than 5 lakhs) of parents were saved because they did not have to make repeated rounds to the school for obtaining admission. Since most of the parents are daily wage

Table 1 (Continues...)

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Sl.	Problem identification	Intervention	Outcome
		The onus of taking admission was shifted from student-parents to Heads of Schools of Parent and Feeder Schools. The Heads of Schools were asked about children who did not take admission.	 earners, this meant a lot for them. 3. Admission to preferred schools was on the basis of <i>merit</i>. 4. Discretion done way with resulting in <i>transparency</i>. 5. Accountability of HoS was fixed in case the child was not admitted
6.	It was found that <i>children fail</i> <i>in Class-VI in massive numbers</i> , failure rate being more than 50%. On further research, it was found that only 33% of the children had the competence level expected of a class V child at the time of joining Class VI.	 A bridge course was conceptualized with the following attributes: a) It should cover all the important topics from Class-I to V. b) It should take much less time and at the same time be more effective than the conventional methods of teaching. c) It should be developed by the own teachers of Delhi Government because they know the strength and weaknesses of their children the best. 	not admitted. A multimedia bridge course called ' <i>CALtoonZ</i> ' was made. This resulted in a) 7.51% <i>reduction</i> <i>in drop out</i> <i>rate</i> in CAL Schools compared to 5.71% reduction in drop out rate in non-CAL schools. b) 16.58% <i>increase in</i> <i>enrolment in</i> <i>Class VII</i> of CAL schools compared to 14.34% of non-CAL schools.
7.	The distribution of available teachers in the state was uneven inter district average deviation from mean in the PTR(Pupil Teacher Ratio) was 3.92 and inter zonal deviation was 4.55.	A choice based computerized transfer system combined with GIS based posting of new recruits, both of which ensures the	1. The average deviation for districts reduced from 3.92 to 2.41 and for zones

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Table	1	(Continues.
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Sl.	Problem identification	Intervention	Outcome
		minimum ITA(Index of Teachers Availability) with the most convenient postings for the teachers. The programme does billions of calculations and ensures optimal postings. So much so that the concept of rural posting or difficult posting has been done away with, and even then has resulted in better distribution of available manpower	reduced from 4.55 to 3.13. 2. The discretionary powers for transfers and postings have been done away with, resulting in absolute transparency.
8.	It was found that Department of Education was such a large system that <i>communication</i> <i>was very slow</i> and at many times even failed to reach the destination.	<i>MIS Mail</i> was developed in which all the employees and branches of the department were allotted internal e-mail IDs (their branch id or employee id was their mail id).	This facilitated real time communication between employees and branches. The branches can and do send the circulars/ communication either in bulk or individually to intended school/branch/ employee. There is no question any time lag or failure to reach the destination.
9.	Distributing around Rs.1500 crores to 1100 DDOs under more than 100 Heads and then continuous monitoring and reallocation of the funds led to <i>inefficient financial</i> <i>management</i> . The plan schemes involving Uniforms, Scholarships etc. <i>could not be monitored</i> <i>efficiently.</i> It led to surplus funds at some places combined with deficiency at others.	Online Financial Management system was introduced which lent itself to real time and accurate allocation of funds based on data, reallocation based on real time expenditure reports, in time provision for monitoring of plan funds like Uniform, Scholarships etc.	Accurate and efficient financial management system leads to almost 100% utilization of Plan Funds and in time.

Table 1 (Continues...)

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Table 1 (Continues...

Sl.	Problem identification	Intervention	Outcome
10.	Management and <i>maintenance</i> of huge infrastructure was not at the desired levels and were always an issue. The situation was exacerbated due to involvement of schools, different level of branches and an external agency i.e. PWD. This often resulted in blame games without any tangible results.	Online EOR (Extraordinary Repairs) track system was implemented. It basically tracks the request for EOR from the Principal to the PWD via the defined channel. Responsibility for delay at every level could be fixed. In fact, at every quarterly meeting of zonal and district officers, online EOR sanctions are discussed upon and suitable directions are given.	The sanctions for Extraordinary Repairs increased from <i>Rs.14 crores</i> to <i>Rs.50 crores</i> to around <i>Rs.100</i> crores in first and second years of implementation of online EOR track system.
11.	Sometimes the <i>problems of</i> <i>citizens</i> could not be brought to the notice of the Minister of Education or Officers of the Department.	Online Feedback system for the citizens has been made available.	Communicating with the Minister of Education or Officers of the Department has become very easy.
12.	Sometimes, <i>information</i> required for the public is <i>not</i> <i>easily accessible</i> .	All the relevant information have been <i>put online</i> for the public including the school information, their location, courses, map, acts and rules, tenders, circulars atc	The effective communication has led to <i>transparency.</i>
13.	Some important documents were misplaced/lost and led to delays/inefficiencies in decision making. For example, unavailability of ACRs lead to delays in promotion.	Digital record keeping has been started with online ACRs being implemented currently. The ACRs thus written and kept shall be authenticated by Digital Signatures at every level. This is being done in conformity with the IT Act of India.	All ACRs in the current year have been filled online. This online generation and upkeep of digital records is going to be extended to almost all the records and would lead to paper less office
14.	It was found that <i>libraries in</i> schools were not being optimally utilized.	An online Library Management System has been implemented.	The quantity and quality of the books

Sl.	Problem identification	Intervention	Outcome
		The books are to be issued and returned using this module only. All the Librarians have also been given training in operation of the modules. All the Librarians have also been provided with computer and internet connection.	being issued to children is going to be monitored at every level starting from the Principal up to the Director of Education at the time of their convenience.
15.	It was found that in <i>cultural</i> <i>events,</i> children of Delhi Government Schools were not participating in adequate numbers.	Adequate emphasis on training by choreographers and suitable costumes was provided to the children of Delhi Government schools.	At Republic Day Function at Rajpath, <i>this</i> <i>year, four out of</i> <i>five participating</i> <i>schools belonged</i> <i>to Delhi</i> <i>Government.</i> Out of this, one school won the second prize in the exhibition.
16.	Last year for the first time CBSE introduced a <i>written</i> <i>examination based upon the</i> <i>prescribed practicals</i> to be done by the students. This exam had a weightage of 20 out of 100 in the Science paper.	First a <i>massive training</i> for teachers was organized and then a <i>campaign</i> to ensure that every child does the practicals, was launched.	No child studying in Delhi Government schools failed in the said examination introduced for the first time. A few students belonging to public schools had failed although
17.	<i>Extra-curricular</i> activities did not find due weightage.	All schools were required to publish school magazine, send two teams at zonal sports meet, have facilities for at least two sports, one picnic inside Delhi and one tour outside Delhi.	For the first time, in the history of Delhi, may be even in the country, all the Government Schools published School Magazines. All schools went for tours and all schools prepared

Table 1 (Continues...)

Sl.	Problem identification	Intervention	Outcome
			teams for zonal sporting events.
18.	It was found that some special talent was found in localized areas, for example natural swimmers were found in Munirka village where Tokas families live. Similarly, very good wrestling talent is found in Najafgarh and Bawana areas.	All the swimmers are provided training in R.K.Puram, Sector-6 Government School and the Wrestlers are nurtured under the personal supervision of Shri Satpal, DDE (Sports), Arjuna Awardee, and Gold Medalist in Asiad 1982 games.	Two players won Bronze Medals in Doha Asian Games. Delhi School children won 26 Gold Medals in Wrestling in National School Games. Delhi won the team championship in National Sports Festival for Swimming.
19.	Sometimes bottlenecks were found in implementing the projects due to inflexibility and constraints of government functioning despite having adequate funds.	Public Private Partnership was employed in such areas. For example, for Pilot Project of CALtoonZ, EandY Foundation under their CSR activities provided the entire hardware including Computer, Television, Furniture, Audio recording etc. costing around Rs.1.5 crores for the 200 CAL schools.	The pilot project has taken off very well and buoyed by the success of the pilot, the hardware has been provided by the Government to all the schools. The backing of one of the topmost consulting and audit firms in the world, with funds, instilled enough confidence in the people working on the project about viability of the project.
20.	Instances of eve teasing and harassment of girl students is often found outside the schools.	Training in Self-Defence has been imparted to all the girl children belonging to Delhi government schools by experts from Delhi Police.	Confidence levels in the girl students have increased.

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Table 1 (Continues.

SI.	Problem identification	Intervention	Outcome
21.	There were issues in security and sanitation in the schools.	Private round-the- clock security has been started in all the government schools.	Much improved security and sanitation conditions in the schools.

Table 1 (Continues...

7. Project Plan

The most radical process engineering was done in case of online admission of students where the onus of admission was shifted from the parent/ students to the Heads of Schools and the child coming to a school was admitted even before he showed up in the school.

Since Director of Education himself has all the powers for regulating the education system and almost no financial transaction from public are required, legal framework was never a problem.

The architecture is web based N-tier architecture. The front end is .NET and the back end is SQL server. All the required software is also used. Server farm is located at NIC data centre, Lodhi Road, Delhi. The same is maintained by the experts from the Department of Education through Remote Desktop Facility

8. Milestones

Target-surpassing in terms of quality and quantum of results and timeliness

Some of the achievements are depicted below graphically.

Fig. 1



Increase in Class-X CBSE Result

Fig. 2

Fig. 3



Fig. 5

Teachers Attendance Report available on desired criteria

🗿 AttendanceReport - Microsoft Internet Explorer 📰 🔲 🔀		
File Edit View Favorites Tools Help		
🚱 Back + 🜍 - 😹 🖉 🏠 🔎 Search 👷 Favorites 🧐 🔗 - 🌺 🖾 + 🗔 🎎		
Address 🗃 http://edudel.nic.in/mis/eis/attendance/attendanceReport.aspx.		
Employees Attendance Report		
This page displays the attendance of is the employees in the Govt. schools of the DOE. This is a unique attempt by the Department for fairplay, transparency, , as the 'Attendance Register' of almost the whole of the Department is put on public display. The Employee Attendance Report also facilitates an objective inspection, as the attendance of all the schools are on display for the purview of the officers of the Department.		
Each Govt. school under the DOE submits the attendance of its employees online everyday, specifying the number of employees on leave, on duty, absent, suspended, other leave or vacation. It also specifies the nature of leave taken. The attendance is marked daily, all the data on this page is in real time.		
The page displays attendance under 8 headings/ Links. On clicking link1, the attendance of all the Govt. school under DOE is displayed.On clicking link 2, the attendance of all the districts is displayed. On clicking link 3, the attendance of all the zones is displayed.On clicking on link 4, the attendance of the desired school can be displayed. Link 7 displays the attendance of 50 schools whose attendance is the least as per the date. Link 8 displays the schools that have not marked the online attendance. Both link 7 and 8 can be accessed only after filling in the data of the attendance required.		
1. All Schools		
2. <u>Districts</u>		
3. Zones		
4. Desired School		
s. <u>Morning Schools</u>		
6. <u>Evening Schools</u>		
7. Bottom 50 Schools where present percentage is less Select V Date		
8. Schools not marked online attendance 🔤 🖉		
Internet		





Teachers' attendance on 01.09.2007 as taken online







Govt. School SKV, Shakti Nagar No.1 students performing at Rajpath



Fig. 8



Fig. 10

National e-Governance Awards for the years 2005, 2006, 2007 for IT initiatives



9. Project Management Structure

Fig. 11



10. Implementation

Strategy for pilot to roll out

As a matter of policy pilots are not resorted to. Simple module is mooted and implemented through out the State. The complexity of the modules may increase in newer version and newer modules are gradually added.

Capacity building

Initially all the Principals and Office Staff received around 5 days of training each, after that, this year, around 1100 teachers were given training of 13 days each in operation of computers, web based systems and Computer Aided Learning Modules. Besides, around 1000 trained IT Assistants get a refresher course of two days each every year. It means the Department imparted IT training of around 22000 man-hours in this academic year itself. And the icing on the cake is every training is conducted in-house and no

external resource persons or hardware is hired from outside. So, there is a large extent of capacity building being undertaken in the Department which is an ongoing exercise.

Every newly recruited Principal undergoes an IT Training Programme of 5 Days before joining his new assignment.

This year all the officers were trained.

However, the matter of fact is that almost everybody in the Department has become quite used to the online functioning and if one gets used to this the flow is so logical and based on common sense that no specific training as such is required.

11. Evaluation and Measurement

All the systems are evaluated in terms of ultimate goals of the department. The results achieved have been mentioned in *Strategies Table* under the heading *Necessity/Needs*.

12. Issues and their Solutions

Lessons learnt

The most critical factor deciding success and failure has been found out to be enforcement mechanism. Employee Database could be perfected only after the salary was paid online. Otherwise, even after tireless efforts of six months or so could not have an impact. Similarly, student database could be perfected only after mark sheets are issued online. Financial discipline could be enforced to through an invented mechanism of sanction and disbursal orders that are not otherwise procedural requirements. Extraordinary Repairs could be enforced through sanctions tracking system. But the infrastructure, library etc. don't have a perfect enforcement mechanism and as such can not be said to be a perfectly working system.

Replication in other states

The system being online and the educational system being almost the same in the entire country, the system is entirely replicable.

Not only inter-state but inter-department replicability is also feasible, the functioning of government departments being the same all over the states and country. As an example, the Personnel Management Information System (PMIS) initially implemented by PWD, Delhi and later extended to CPWD in the entire country, was designed, constructed and implemented by the Department of Education for PWD, Delhi, in the first place.

Road ahead

Working towards paper less office (lessening the paper work) by electronic maintenance and authentication of records by means of Digital Signatures as per provisions of IT Act, 2000. The Department has already procured digital signatures for all the officers including Principals from MTNL for the purpose. Implementation of Computer Aided Learning in all the Classrooms and for all the classes in Delhi Government Schools.

13. Status and Results

Present status

Mentioned in Strategies Table under the heading

14. Specific Achievements during the Year 2006-07

Implementation of Online ACRs, implementation of Library Management System, implementation of Digital Signatures, ACPs, Extraordinary Repairs Module and complete implementation of Vigilance Module.

15. Future Plans for Readers Seeking More Information on Project

As almost all the administrative functions possible have been taken care of by the systems, the road ahead lies in consolidation as well as implementation of Computer Aided Learning in every classroom of Delhi Government Schools as there are only 10% classrooms have the necessary infrastructure and the Department has content only for Class-VI and X. We are developing content for all the classes. In the area of MIS, maintenance and consolidation, in itself is a huge task.