

# Study of Process and Obstacles in digitization in Education Department, Haryana : Technical Perspective

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## ABSTRACT

The process of digitization and various challenges and problems associated with the implementation of information technology for digitization in education department that have been focused upon in this paper are Infrastructural factors, Economic factors, skill factors, manpower factors and technological factors. We will study and review how the information flows between various units of Education department. Among the major problems associated with implementation of information technology for digitization, the focus will be laid on technical, managerial factors, Human and Administrative factors, and Economic factors. Further, the paper based on various case studies and onsite observation in education department, Haryana derives important conclusions. We will focus on what are benefits in different scenarios after digitization. Shortcomings or limitations and obstacles in process of digitization are also examined. We will also try to provide pertinent suggestions to ensure the smooth growth and effective implementation and application of information technology for digitization work in the education departments.

**Keywords:** Email, Digitization, Email, Bandwidth, MIS, EDUSAT

## I. INTRODUCTION

In education department of Haryana, information moves from state headquarter to districts (District education officer office), districts to block offices (Block education officer's office and Block Resource Coordinator office), from block office to Cluster school/head schools (Its responsibility of cluster schools to collect data from its associated/concerned schools and consolidated data to send to BEO office). And in the reverse direction as reply from schools to Block education office (BEO), BEO office forwards the consolidated report of complete block to district education office (DEO), complete report of district consolidated at DEO office and send to state headquarter. Information technology or usually abbreviated as IT, is often used as an extended synonym for information and communication technology (ICT). But is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users/personnel of education departments to

create, access, store, transmit and receive, and manipulate information at various workplaces in department. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions.

The main purpose of IT in education department means implementing of IT and electronics equipment and tools in transferring and receiving information (school level as well as higher level i.e. block or district level and even at state headquarter) and learning process as a media and methodology. The purpose of use IT in education department is to digitize the manual work with the use and workings of computers and related tools i.e. scanner, printer, and internet connection. IT has also enabled speed up of work through use of networking as IT has introduced online and instant access to information. Various schemes and projects are launched by state government to transit from traditional method to modern method used for communication as well as study. Some of these projects or schemes are MIS, Smart Classrooms, EDUSAT program etc.

“The spread of Information and Communication Technology (ICT) has revolutionized the access to education in general and the Distance Open Learning (DOL) in particular. ICT’s role in the expansion of DOL need not be overemphasized. It is common knowledge that every Distance Teaching Institution is fast adapting itself to technology based teaching and learning in order to keep abreast of the changes taking place in educational technology”.

(<http://depfolang.kubsu.ru/ramanujam.html>)

## II. PROCESS

Few years back (before 2013), communication between various departmental units were using traditional hard copy method. As the growth of information or data increased with time and fast and time bound disbursement and collection of data was demanded, need of transition from traditional hard copy method through manual transportation to electronic communication was aroused. These days various departmental activities related to students, study, faculty and infrastructure are being carried out electronically. The process how the information transmitted in various units of department is briefly explained in introduction. Different portal are created for different tasks i.e. scholarship portal for stipends etc, portal for award and prizes for teachers as well as students like inspire award portal for science students, online enrollment and exam form for board examination, MIS ( management information system) for students as well as staff. Extra curriculum and co- curriculum activities related data are collected from schools through emails of by capturing data through drive sheets. Smart class rooms are designed with large LED screen and multimedia equipments in schools to help and adopt modern method of teaching. Students can be taught with audio visual aid in these class rooms. EDUSAT (educational satellite) rooms are also provided in schools. With the help of EDUSAT, students can learn lessons on various subjects by the experts online. Various factors that affect the implementation and digitization in Education department are discussed below in subsequent sections.

## III. TECHNOLOGICAL FACTORS

This is one of the most important factors in implementation of information technology for digitization of department. In very small time, technology becomes the determining factor in the

growth of IT in education department and any other society. But there are some very important issues that are to be addressed for the application of ict. Some of them are discussed below.

Power Supply-in the villages and rural area, power supply is a major issue. There are uncertain, undeclared power cuts. Proper power supply is required to be maintained for the smooth running of systems and programs.

Inadequate computer resources-as discussed earlier, in the remote locations maintaining correct ratio of students, staffs, infrastructure (for which data is to be processed) and systems in the educational institutes is a big challenge to be addressed.

Shortage of faculty- in a large no of schools, there is no trained staff for working on computer, so resources are being wasted and teaching staff and students are lacking in knowledge of it.

Outdated tools- printers, scanners and other tools available in the school are too old to match with current technology. So these are either of no use or become very difficult to use. Computers sets are also become obsolete as their configuration is very old, having very less RAM, limited size hard disk, slow speed cpu etc.

Outdated software- operating systems and other application software’s (like older version of MS Office 2003 is in use) are not regularly updated. Syllabus content on smart classroom computer are also not updated regularly.

## IV. SKILL FACTOR

Technical and IT skill is also a very important factor in implementation of IT in Education department. Due to untrained and unskilled employees at school, block and district and even at state HQ, there are lot of problem which occur in department work.

Untrained/Unqualified faculty – A survey report conducted via on site observation in Haryana state shows there are total around 3118 cluster school/head schools which report to BEO office directly via emails to send and receive information. On average 48 emails per month are sent to cluster schools from BEO office. Information demanded by state HQ in a format are sent

to district HQ then district HQ forwarded to Block, further to schools. The format in which information/data is to send is generally received in pdf or jpeg format. Size of pdf or jpeg file may ranges to 100 kb to 2 MB or sometimes even more. While data required by upper offices is collected in generally spreadsheet/Excel format. So schools have to prepare a spreadsheet program to feed data and send to BEO office. In this process following are shortcomings of this-

1. Waste of bandwidth- if the format in which information is required is send in excel/spreadsheet format or sometimes in word format, is send directly in excel or word format, wastage of bandwidth can be avoided as a spreadsheet file have generally 10 kb to 20 kb size while pdf or jpg file are of larger size i.e. 100KBs to MBs. However HQ office send only scanned copy of file either in jpg or pdf format.
2. Waste of manpower – Because duplicity in work, same work is done by all schools, i.e. preparing of Excel or word sheet by all schools instead of one person at head office.
3. Wastage of other resources i.e. computer, electricity etc.
4. Delayed access to data or information- For example, Education department, Haryana constituted a platform named as MIS as a sole source of data or information related to students as well as staff. But different types of information demanded by different offices, rather than accessing information from MIS, schools are consulted time to time. There are also some reason for this, i.e. less awareness about MIS to the officers, Lack of knowledge how to access data from MIS, Inaccuracy of data on MIS as there are still some errors/ faults in software, sometimes poor response from server etc.

Other shortcomings are

Due to untrained or unskilled staff, there is lot of redundancy in work, for example same type of information or data is demanded by block or upper level from schools, however these information most of time is already available in these offices, but due to lack of skill of training same information is demanded by officers in these offices at higher level.

Lack of training for staff- there is no skill improvement or any personality development for staffs who are

working as computer teachers in schools program for staffs.

Lack of maintenance and support staff- If any equipment i.e. printer, operating system or any other is not in working state then it will take long time to repair them. So the fluency is disturbed that is not good thing.

One would be justified in applying the Bates criteria for media selection as an appropriate parameter for selecting appropriate technology for educational purposes.

With regard to the acceptance of a particular technology, the factors such as access, cost, teaching functions, interactive ness and user-friendliness, organizational issues and speed afforded to change are important issues. In the case of Media selection, Bates regards Novelty of a media as the least important criterion on which a particular media should be selected or rejected. However, in the case of many third world countries, it is novelty of a media that attracts the attention of policy makers. For example, in the late 70s and 80s, the novelty of TV as a medium influenced the UGC to initiate the Country-Wide Class room program for the benefit of the college students. However much care was not taken to ensure whether, the program could generate enough interest in the student community to make the program a success. Moreover, at the time of its initiation, access to TV sets was also a major problem. Even today the tele-density in India stands at a low 80 per 1000. The end result was that UGC's CWC generated a utilization rate of less than 10%.

Apart from the factors mentioned above, once a technology is selected, there are certain other factors that need the concern of policy makers. Handling of New technology needs care and technical proficiency. For this training is an important aspect. Many developing countries lack enough personnel to train manpower in new technology. Moreover, constant retraining of manpower to acquaint them with changing technology is also important. These often act as constraints before the smooth growth of digitalization of any department.

## V. INFRASTRUCTURAL FACTORS

Computer labs were established in school way back, but their maintenance work was not performed properly as result these labs are in poor conditions. Softwares are not updated since a long time in schools. In school Education department Haryana, the lack of appropriate infrastructure for enabling the use of IT for data processing is a serious bottleneck especially in rural areas. Here are some major problems to be addressed for smooth implementation of IT in school education department are-

Availability of proper equipment and tools necessary for online work- In rural Part of Haryana, it is observed that there is lack of proper computer resources necessary for data processing about school, students, staff i.e. non availability of ups, or limited number of computers in schools etc, or no proper arrangement of power supply to the schools or computer labs etc are some of common problems in most of schools due to which lot of school work suffer which should be done on computer. And staffs do not take much interest in learning icts. In some schools especially Primary and middle schools, there is equal to no computer in school, now you can imagine how digitization of schools and department can take place. Even at high schools, there is no separate computer for office work than computer labs for students. EDUSAT rooms and smart class rooms are not in good conditions due to lack of maintenance and proper technical staff for operation and care taking.

## VI. ECONOMIC FACTOR

Another factor that influences the digitisation process is economic factor. In digitization of Education department in backward and rural field schools and offices, cost is an important factor that guides the methods and techniques of Communication in that region. Education boards/universities often lack the initial allocation as well as matching funds to make feasible investments in ITs. But due to greater amount or data processing work and ever changing dynamic nature of technologies, often acquire costly infrastructure for proper implementation of information and communication technology. Due to lack of support staff, batteries of inverters not regularly monitored, due to which UPS are not in working conditions. Without UPS backup, systems resources like motherboards and other parts get damaged, RAM chips effected greatly.

That eventually results in no functioning labs, smart classrooms and ESUSAT rooms.

Most Educational institutes are constrained by resource scarcities. Even where the importance of ITs is recognized, allocation for the development of these is at best paltry. Internet connection cost and monthly bill is also high which some privately managed schools unable to afford and in government schools there is no separate fund available for internet connection. Due to this, many of them are forced to depend on mostly traditional means of working i.e. file and paper work. These are limited in their efficiency. It is to be noticed that a large number of fake admission in schools are detected after digitisation of student data on MIS. Corers of rupes are saved in various schemes like Mid-day-meal and scholarships.

## VII. CULTURAL FACTORS

Most of government schools are Hindi medium schools in Haryana, and course content related to computer is in English. Language is one of the major factors that affect (to a large extent) the use of IT for digitization of all data and functions of department by the faculty as well as students in rural areas. This hinders transfer of technology. Educational programmes, computer software and the printed texts are generally available only in English. The ministerial staff in rural areas schools are efficient only in their local language and English is considered s one of the toughest subjects. As such, such things may fail to impress working employees.

With regard to cultural patterns, there are two groups of policy makers. Policy makers can be Pro-implementation or Anti- implementation. It is precisely the cultural moorings of a society that makes people either in favour of implementing technology or to reject it. Japanese have over the years built up a reputation of being quick to adapt and implement new technology. This can be linked to the way in which a new culture of receptivity to new ideas was built up after centuries of stagnation when commodore Perry forced the Japanese to open up their society. Again, in recent times it has been seen that the culture of class room teaching and learning has been so strongly built into the psyche of the teaching community that they often exhibit resistance in the way of implementing technological change that forces a change in the role of the teachers and staff from

being a store house of all learning to a manager of the teaching-learning process.

### **VIII. CONCLUSION**

Various initiatives taken by state government to digitize departmental activities are appreciable. But still lot of work is to be done in order to proper implementation and functioning of digitized platform. To meet these challenges various remedial steps may be taken. Different factors need different type of steps to be taken. These include acquisition of personals, training of staff and faculty, proper arrangement equipments and machines, maintenance of these machines and regular updating in system and application softwares. Proper testing of application software is an important aspect because lot of thing depends on quality of software. Beta testing is big issue when performed on untrained or less skilful staff.

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