Impact of E- Governance in education Sector

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Abstract: Electronic Governance (e-Governance) is the use of Information and Communication Technologies (ICT) for the planning, implementation, and monitoring of government programs, projects, and activities. E-Governance is expected to help deliver cost-effective and easy-to-access citizen services, and improve processing of transactions both within the government, and between the government and other agencies. The National e-Governance Plan (NeGP) which is the flagship e-governance programme of the Central Government, was approved by the Government of India in May 2006 comprising with 27 Mission Mode Projects (MMPs) at the Central, State and Local Government level. But the number of mission mode projects is going to be 30 which are under process on the cabinet where education sector is one of them. Under the NeGP, the state ‘Mission Mode Projects’ are Land Records, Road Transport, Property Registration, Agriculture, Treasuries, Municipalities, Gaon Panchayat, Commercial Taxes, Police ,Employment Exchanges, WCD&SW, Cooperation. By inclusion of education in the State level MMPs of NeGP, the concept of effective governance of education sector is thoroughly innovated; for effective handling of new challenges confronting the education sector. Educational e-governance can facilitate in improving transparency, providing speedy information dissemination, improving administrative efficiency and public services in all aspects of the education. It is beyond doubt that for the quantity and quality of output of our education system to substantially improve, there is no option but to introduce egovernance in this sphere. The application of ICT for governance is somewhat poor because of which the NeGP is setup, but it is furthermore poor in the education sector which is one of the key pillars for the rapid growth of economy of the country. The challenge is therefore to bring egovernance into educational sector. This research aims at bringing ICT for e-governance of the education sector.

Keywords—E-governance, NeGP, MMP, ICT
1. INTRODUCTION

Since the Beginning of the 21st Century, Technology comes in the way into learning and teaching environments. As the technological advancements has been introduced, the need for literacy levels on the use of technology also been increased. The IT field has also been introduced in the field of governance called “E Governance”. The IT based E-Governance has also been introduced in education section. The implementation of E-governance in education has led to big innovations in this sector.

Advancement of information technology in education has improved research. There are many online libraries that assist teachers and students with comprehensive reading materials. Teachers and lecturers are also able to post their work online for their students to read. The incorporation of information technology in education has brought so many positive changes. More academic systems should embrace technology because it makes teaching more effective and aids in practical learning. Students should also embrace it because in the future, most of the jobs will be technologically based. With time, everyone will see the significance of information technology in education.

The application of Information Technology (IT) is fairly widespread by now in India in the private sector. However, when it comes to public governance, India has been a laggard in the utilization of IT. The common man has benefited from the e-governance measures implemented so far. Perhaps the best example in India of how e-governance can lead to order out of chaos and put paid to the machinations of the ungodly is the replacement of the old ballot system by electronic voting in elections. Despite these advantages, e-governance has not yet made much headway in government in India.

The slow start off the block, particularly of e-governance, is that it enables transparency and cuts down avenues of corruption. Implementing e-governance in any sector and that too relating to education sector will enable effective monitoring of academic standards. The amount of investment by the Government in the Information Technology is not enough and which is accounted only 15 per cent of India's $12 billion domestic IT market. Out of 30 "Mission Mode
e-governance projects" totaling $6 billion in IT spends that were drawn up by the center back in 2006, only three have been awarded so far.

In this circumstance it is the time to analysis the importance of e-governance in educational sector. Today, there has been an increasing gap between what has been imparted to students' curriculum and what has been really demanded. Both UG and PG level needs reforms with regard to curriculum, teaching, learning the evaluation so as to meet the every changing needs of the world.

1.1 E-governance vision and mission
Establishing a Networked environment for greater transparency and accountability in delivery of public services to facilitate moral & material progress of all citizens [1] [9].

The purpose is to:
• Make government more efficient by increasing the accountability and transparency of government
• Deliver information and services to constituents more conveniently, allowing more to be done for more people
• Increasing citizen participation in governance The point essentially is to Deploy Information and Communication Technology (ICT) to drive efficiency and transparency in the system and improve the quality of public service delivery.

1.2 E-governance components
The main components of E-governance are
• Government to Government Communication (G2G)
• Government to Business Communication (G2B)
• Government to Citizens Communication (G2C)

The basic requirements of e-governance components are
• High and affordable Information and Internet infrastructure within Government Ministries, private sector and citizens
• Extensive ICT Human Capacity development in Government, Private sectors and citizens
• Legal Framework that recognizes and supports digital Communication
1.3 E-governance model

![Diagram of E-governance model]

Figure 1: E Governance Model

2. NATIONAL MISSION ON EDUCATION THROUGH ICT

Under this Mission, a proper balance between content generations, research in critical areas relating to imparting of education and connectivity for integrating our knowledge with the advancements in other countries is attempted. For this, what is needed is a critical mass of experts in every field working in a networked manner with dedication. Moreover, the ICT can be utilized as a tool in education to enhance the current enrollment rate in Primary and Higher Education. It will be a great opportunity for all the teachers and knowledgeable learners in the institution or organization to enrich their collective wisdom through this holistic approach. The Mission is also necessary to sustain a high growth rate of economy through the capacity building and knowledge empowerment of the people and for promoting new, upcoming multi-disciplinary fields of knowledge. In order to enhance our knowledge resources and to maintain the competitive edge in the world, a system of identification and nurturing of talent and lifelong learning Knowledge modules based on the personalized needs of the learner would need to be
delivered to him /her at the right time with the right content interactively to take care of his /her aspirations. [14]

Such a system would have to be developed in a cost effective manner over a period of time, integrating, and the following objectives:

- Effective utilization of intellectual resources, minimizing wastage of time in exploring opportunities or desired objects of knowledge appropriate to the requirement.
- Certification of attainments of any kind at any level acquired through formal or non-formal means in
  conventional or non-conventional fields.
- Any-time availability of desired knowledge at appropriate levels of comprehension to all for self-paced learning.
- Platform for sharing of ideas and techniques and amalgamating of knowledge resources.
- Systematically building a huge database of the capabilities of every individual human resource over a period of time.
- Nurturing of scholars and learners.
- Support to all the learners or workers for any of their perceived learning needs.
- Extensive leveraging of the advancements in the field of ICT for taking the resources to the door steps of the learner.
- Providing e-books & e-journals, utilizing the repository of contents generated so far and the automation of evaluation processes. Creating a high impact brand for e-Journals in leading disciplines with a provision for good incentive-based payment to the researchers publishing their high quality papers in these e-Journals.
- Improving teachers’ training and course curriculum.

4. OBJECTIVES

- To expand the higher education sector in all its modes of delivery to increase the Gross Enrolment Ratio (GER) in higher education to 15% by 2011-12 and to 21% by XII Plan and 30% by the year 2020[18].
- To expand institutional base of higher education (including technical, professional and vocational education) by creating additional infrastructure in existing institutions,
establishing new institutions and incentivizing through state governments and Non-Governmental Organizations / civil society. [20].

- To provide opportunities of higher education to socially deprived communities and remove disparities by promoting the inclusion of women, minorities and differently-abled persons.
- To remove regional imbalances in access to higher education by setting up of institutions in un-served and under-served areas.

5. BENEFITS OF E-GOVERNANCE IN EDUCATION SECTOR

- Departmental Efficiency increased and reduced duplication
- Quick and easy preparation of reports
- Reduced Harassment of Students
- Faster and easy process of online information and submission of forms & payment
- Easy connectivity of stakeholders, such as, management, faculty members, students and administrative staff, leading to enhanced efficiency and in service delivery
- Easy access to information by all
- Reduction in transportation costs, time, space and manpower

6. DIGITIZATION AND ELECTRONIC BOOKS MANAGEMENT

Considering the impact of IT in every discipline, new technologies are emerging even in the library systems, giving way to e-books (electronic books), as well as digital knowledge centres and their access mechanisms. Online catalogues, full-text search and retrieval facilities, automated record keeping, computer-based decision-making and so on. A digital library could provide access to an unlimited number of copies at the “touch of a button”. A text or monograph, which is available in an electronic form that can be obtained electronically, with the help of ICT it is also easy to carry large number of e-books in pocket PC at one time. The main benefit of digitization service is that it cuts down the requirement of papers, saves office space and cuts down the time needed to process the same information. With this service, we can convert the physical data in form of papers, thesis, research papers, magazines, books, records, forms, mark sheet, survey data and others into the digital format which is readable by all computers and is
easily processed by users.

- Use of scanner and other software tools to scan a page/file in to the computer and converting the scanned data in to readable/editable characters. Software includes OCR software. OCR stands for Optical Character Reader; they can read the data from image files.
- Use of computer typists/data entry operators as they are called to punch in the data on to a desired file format. (MS Word, Excel, Access etc) Both or either can be used for successful digitization works.

Digital data can be easily stored, backup copies can be maintained as well as distributed quite easily. Hence, with our digitization services the cost of further digitization goes down enormously. This also ensures faster and simple sharing of the data.

The Developing Library Network (DELNET), promoted by the National Informatics Centre, Department of Information Technology, Ministry of Communications and Information Technology of the Indian government, is an example of e-governance in the field of library and information science.

The aims and objectives of DELNET are:
- To collect, store, and disseminate information from member libraries;
- To coordinate efforts for suitable collection development and reduce unnecessary duplication;
- To promote resource sharing among the member libraries through the development of a network;
- To create new systems in the field of library and information science;
- And to apply the results of research, offering technical guidance to member libraries, facilitating and promoting delivery of documents manually or mechanically, etc.

DELNET has actively engaged in the compilation of various union catalogues of the resources available in member libraries: it has also created the union catalogue of books, union list of current periodicals, union catalogue of periodicals, CD-ROM database, a database of Indian specialists, a database of periodical articles, a union list of video recordings, an Urdu
7. WIRELESS CAMPUS (WI-CAM)
In present scenario, campuses and educational institutes require connectivity for an expanded array of wireless computing devices and student services. Our Wireless campus (Wi-Cam) solution offers an innovative, holistic approach to campus communications that takes advantage of emerging technologies. Our Cost-effective solution shall transform your campus into a future-ready, wireless-friendly environment.

Benefits of Wi-Cam:
- Greater Campus Safety.
- Improved Campus Communication.
- Anywhere Access to Academic Tools and Resources.
- Fully Hosted System.
- Students and Staff Access the Features Through the Web.

8. DISTANCE EDUCATION SYSTEM
Since traditional education system was unable to cope with the current needs, therefore, Distance Education System took birth to cope with the current and future needs of the educational Development. The use of ICT has extended the scope of offering educational programmes at a distance. The off-campus delivery was an option for students who were unable to attend the classes regularly. Today many students are able to make this choice through technology – facilitated learning setting. This helps in time and cost saving and extending courses of choice to students of different backgrounds, cultures and perspectives. Learners are free to participate in learning activities at their convenience through online technologies. Eminent teachers form different parts of the country and abroad cab be utilised for teaching at their convenience through mobile technologies and seamless communication technologies that support 24*7 teaching and
learning like NPTEL (National Programme on Technology Enhanced Learning, India 2007), EKLAVYA Technology Channel, India, 2007, etc.

9. PROPOSED EDUCATION GRID

- Vision & Opportunity

VISION--“Enable, Educate and empower every students and Community through Knowledge.

- OPPORTUNITY

From literature we observe the following easy available resources

- Broadband connectivity even in remote area.
- Open resources like open courseware and web accessible resources, open database etc.

The proposed Educational Grid shall use the available resources in order to make the information available to the common people through this grid. Competent teacher, learner or institution who seeks knowledge empowerment can utilize this grid and also as a tool for dissemination of information.

Education grid

The proposed educational grid has the following areas for promoting knowledge and information. The education grid will be governed by quality management of Content, supported Learning and Teacher Training Processes.

1) The Grid provides a Network supporting the various services as shown in the figure2.
2) Resource Centres in various institutions.
3) Develop and maintain pedagogically sound refereed courseware in identified subjects.
4) Subject specific Portals as Course Knowledge and Collaboration Space.
5) Develop & Deploy Scientific & Computer Portals backed by PG Schools
6) Introduce an IT facilitation layer in the University/Higher Education System.
PROPOSED GRID MODEL

STANDARDS
- Educational process
- Improvement

LEGISLATION
- Government to citizens/students/institution
- Easy Access
- Quality Education
- Multichannel Service Delivery

SECURITY
- Best Practice database
- Enhanced capacity for information analysis

Vision
To transform educational service through the use of ICT and Multimedia

Figure 2: Proposed grid layout

Figure 3: Context Model
Indian education sector happens to be the third largest sector globally. Government of India has taken many steps for encouraging more and more usage of ICT in the education sector. To strengthen this move, the proposed grid ontext model provides multiple policies and programs along with the existing standards of educational process in a web based portal in a secured environment. The security is strengthened through the usage of best practice database. The purpose of the model is to transform the educational service through the usage of ICT and multimedia by means of a service delivery portal having easier access for imparting quality education. The service delivery portal shall adhere to the available legislations for such purposes.

SAMPLE DATABASE ARCHITECTURE

![Database Architecture Diagram]

Figure 4: Database Architecture
The web portal will facilitate the various educational institutions, government as well as the people who are directly or indirectly related to this model by means of sharing of resources and learning environments, and opening up classrooms as well as the promotion of collaborative learning and a general move towards greater learner autonomy.

The sample database architecture described above demonstrates the various levels of architecture of all primary schools and also provides a way of sharing resources among various schools. The first level is concerned with all the dissemination of government rules and regulation and manipulation any required in the next level. The second level describes the name of various schools and associated authorities along with their information stored in the database. The level-3 and level-4 describes the various resources shared among all the schools, which includes teachers, staffs, students and other infrastructural resources that are stored in the databases and are being maintained by the various resource centers as described in the grid layout under the district level authority. Students and teachers enjoy the facility to share information wherever they are in the school. Strategically placed television monitors provide details of time-tables, projects and assessment, meal-time menus and a host of other useful up-to-the-minute information. Resources can also be accessed outside the school. Education website offers educational materials for all ages from pre-school to adult and continuing education. ICT in the classroom also change the role of the learner, enabling students to exert more choice over how they approach study, requiring less direction from teachers. Students can be able to direct their own studies to a greater extent, with the teacher acting as a guide or moderator rather than as a director.

CONCLUSION

This paper is an approach that encompasses policies, processes and proposed model designed to provide its services in the education sector wherein it facilitates a better opportunity for the educational institution to grow and prosper. E-governance initiates several programs and policies which promote the usage of ICT in education. It predicts that there are many benefits for both the students, learner and the teachers, including the promotion of shared working space and resources, better access to information, the promotion of collaborative learning and radical
new ways of teaching and learning. E-governance and education is an institutional thinking that seeks to entrust in building, managing and sustaining students, teacher, learner and others for achieving the larger benefits of e-government system. The probable benefits are: for service users in terms of reduced cost of transmitting information and resources accesses, lesser time and cost for services; for service provider, reduced processing time, error rates, complaints; and for government, improved service consistency and equality; and finally, the benefits lead to enhance the outcomes, as well as the performance criteria e.g. better informed students or learners leading to improve delivery of objective, etc.

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