



INFORMATION & COMMUNICATION TECHNOLOGIES (ICT)

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1 DEFINITION

ICTs stands for Information and Communication Technologies and are defined, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.” These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony¹.

The term, information and communication technologies (ICT) refers to forms of technologies that are used to create, store, share or transmit, exchange information. This broad definition of ICT includes such technologies as: radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail.

Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services¹.

ICTs can be divided into two components¹,

Information and Communication Infrastructure (ICI) which refers to physical telecommunications systems and networks (cellular, broadcast, cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and

Information Technology (IT) that refers to the hardware and software of information collection, storage, processing, and presentation.

For specific to Education Delivery, Information and Communication Technologies are defined as all devices, tools, content, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realising the goals of teaching learning, enhancing access to and reach of resources, building of capacities, as well as management of the educational system².

These will not only include hardware devices connected to computers, and software applications, but also interactive digital content, internet and other satellite communication devices, radio and television services, web based content repositories, interactive forums, learning management systems, and management information systems.

These will also include processes for digitization, deployment and management of content, development and deployment of platforms and processes for capacity development, and creation of forums for interaction and exchange².

2 NEED

India has the world's largest school system with more than 1.12 million schools spread over 604 districts across 35 States and Union Territories³. The National Policy on Education 1986, as modified in 1992, stressed upon employing educational technology to improve the quality of education.

The policy statement led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) paving the way for a more comprehensive centrally sponsored scheme – Information and Communication Technology @ Schools in 2004².

Ministry of Human Resource Development, Government of India initiated a process to implement such a scheme termed ICT@Schools across the country.

The ICT @ Schools scheme was launched in 2004 with a view to provide opportunities to students to develop their ICT skills as well as use ICTs to aid the teaching learning process.

ICT@Schools is an umbrella scheme designed for overall development of schools through computer literacy as smart schools, installed with ICT peripherals including establishment of ICT lab, provision for hardware, software, associated infrastructure with trained teacher faculty and the subsequent overall maintenance and improvements thereon of the scheme.

The scheme is currently being implemented in all states and union territories of India in government and government-aided secondary and higher secondary schools.

The scheme also aims to set up SMART schools in Kendriya Vidyalayas and Navodaya Vidyalayas, both central government school systems, to act as "Technology Demonstrators" and to lead in diffusing ICT skills among students of neighboring schools.

Under Information and Communication Technology in School scheme, the Union Government would provide 75% of financial assistance to States and the balance 25% of funds would be contributed by the State Governments⁵. The Government of India has released funds to the tune of USD 68 million to the state governments for the implementation of ICT @ Schools scheme⁴.

The ICT Policy in School Education aims at preparing youth to participate creatively in the establishment, sustenance and growth of a knowledge society leading to all round socio-economic development of the nation and global competitiveness¹.

3 BENEFITS

1. ICT can be beneficially leveraged to disseminate information about and catalyze adaptation, adoption, translation and distribution of sparse educational resources distributed across various media and forms. This will help promote its widespread availability and extensive use.
2. There is an urgent need to digitize and make available educational audio and video resources, which exist in different languages, media standards and formats. Given the scarcity of print resources as well as web content in Indian languages, ICT can be very gainfully employed for digitizing and disseminating existing print resources like books, documents, handouts, charts and posters, which have been used extensively in the school system, in order to enhance its reach and use.
3. ICT can address teacher capacity building, ongoing teacher support and strengthening school system's ability to manage and improve efficiencies which have been difficult to address so far due to the size of the school system and the limited reach of conventional methods of training and support.
4. Using computers and the Internet as mere information delivery devices grossly underutilizes its power and capabilities. There is an urgent need to develop and deploy a large variety of applications, software tools, media and interactive devices in order to promote creative, aesthetic, analytical and problem solving abilities and sensitivities in students and teachers. ICT can be effectively used to address these issues².

Benefits of ICT in education to the main stakeholders¹⁶.

Student

- Increased access,
- Flexibility of content and delivery,
- Combination of work and education,
- Learner-centred approach,
- Higher quality of education and new ways of interaction.

Governments

- Increase the capacity and cost effectiveness of education and training systems,
- To reach target groups with limited access to conventional education and training,
- To support and enhance the quality and relevance of existing educational structures,
- To ensure the connection of educational institutions and curricula to the emerging networks and information resources,
- To promote innovation and opportunities for lifelong learning.

4 PRE-REQUISITES

To devise, catalyse, support and sustain ICT and ICT enabled activities and processes in order to improve access, quality and efficiency in the school system, the following requisites are essential so as to create a suitable environment for the effective realization of the ICT scheme².

- an environment to develop an ICT knowledgeable community
- an ICT literate community who can deploy, utilise, benefit from ICT and contribute to nation building
- an environment of collaboration, cooperation and sharing, conducive to the creation of a demand for optimal utilisation of and optimum returns on the potentials of ICT in education
- universal, equitable, open and free access to state of the art ICT and ICT enabled tools and resources to all students and teachers
- development of local and localised quality content and enable students and teachers to partner in the development and critical use of shared digital resources²
- development of professional networks of teachers, resource persons and schools to catalyse and support resource sharing, upgradation, and continuing education of teachers; guidance, counseling and academic support to students; and resource sharing, management and networking of school managers and administrators, resulting in improved efficiencies in the schooling process
- research, evaluation and experimentation in ICT tools and ICT enabled practices in order to inform, guide and critically utilise the potentials of ICT in school education
- wider participation of all sections of society in strengthening the school education process through appropriate utilisation of ICT²

5 CURRENT CHALLENGES

- **Professional Challenges:** One of the challenges that face us in this scenario of a paradigm shift from teaching to learning is the professional competence of the teacher. Traditionally teachers have been visualized as repositories of knowledge which they transmitted to the students. Today technology has changed this completely. It is very much important that such a change management is widely accepted by all the concerned¹¹.
- **Infrastructure Challenges:** Investment in infrastructure is one of the major challenges in education today. We need to address the following issues when investment matters are raised:
 - Is the technology investment essential to support instructional and educational goals?
 - How do we address the issues of equity? Are all the stakeholders' needs for technology supported without bias to the rural / urban learner the economically deprived learner the differently abled learner?
 - Investment in technology has emerged as a major priority for political leadership. Along with this policy reforms and educational reform is a precondition for major investment in education¹¹.
- **Challenges of Appropriate Content:** There is a need to develop appropriate content which will support learning, teaching and administration local and relevant/appropriate education content, keeping in mind language, culture etc.
- **Challenges of Appropriate Approaches:** Any ICT policy needs to adopt a systematic and holistic approach in which the following are addressed¹¹
 - Curriculum
 - Assessment
 - Instruction
 - Integration of ICT into the school curriculum
 - Designing a flexible curriculum model which would embrace inter-disciplinary and cross-disciplinary thinking¹¹
- **Challenges of Monitoring of Quality of Learning**
 - : Quality bench marks need to be developed:
 - for technology products used in education
 - for usage of software and hardware in schools
 - for capacity building programmes
 - for learning outcomes

6 MODELS OF IMPLEMENTATION

Build, Own, Operate and Transfer (BOOT) models for ICT infrastructure will be preferred. States would be encouraged to implement the programme through a BOOT model under which the supplier would make available the ICT infrastructure for the duration of the contract period (normally five years) on the basis of a service level agreement and assurance of a periodic payment subject to satisfactory maintenance. The release of Central assistance in that case would be spread over the contract period¹⁰.

Different combinations of possible service model are

- equipment only,
- equipment + manpower,
- equipment + manpower + software

Any of the above model can be tried out and appropriate combination, based on feasibility and cost effectiveness, adopted by the States. Based on prevailing depreciation and obsolescence norms, the State may also choose to use a Build, own and operate (BOO) model.

States will explore the possibilities of sharing the infrastructure partly or wholly with the community to extend education or train youth after school hours or similar purposes. The BOOT agency and/or the school may also utilize it for augmentation of resources. States will try out and establish appropriate community partnership models for optimum utilization of infrastructure and resources, while ensuring safety of school property.

States will evolve mechanisms for bulk purchase, rate contracts based on dynamic pricing, and school wide licensing of software in order to ensure a low total cost of operation. Upgradation of software, where applicable, will also be built into the pricing models².

In exceptional cases where such arrangements are difficult to implement, ICT infrastructure can be procured on 'Outright Purchase Basis'. The State Govt. shall be free to partner with private organizations or integrate it with other similar schemes for implementation of the 'ICT in schools' scheme including providing for maintenance¹⁰.

The implementation of the scheme will be multi-modal. The Ministry of Human Resource Development shall consider the entry of the private sector in a Build-Own-Operate or annuity modal wherever possible. The direct procurement of hardware by the State would be last resort.

The National Council for Teachers Education shall be associated with the scheme in the context of training of teachers in computer-aided learning. The Rehabilitation Council of India would play an important role in projects involving introduction of use of technology for the education of children with special needs.

7 ICT CASE STUDY-1

7.1 GOVERNMENT OF KARNATAKA

7.1.1 ICT BACKGROUND- MAHITHI SINDHU PROJECT (2001-2006)

Computer Education and Computer based education was taken up in 1000 Government secondary schools from March 2001, as a five year scheme under the “Mahiti Sindhu” Program. The programme aimed to provide free computer education to students and teachers (grades VIII, IX, and X) in 1,000 schools of Karnataka. A special emphasis was given to girls and backward class students of rural areas while selecting the schools to be covered under this project. The programme was a fully State-funded project. The Project was implemented by the Education Technology cell of the Department of State Education Research and Training (DSERT) monitoring and supervision was done through the District Institutes of Education and Training (DIETs), which acted as nodal agencies; and evaluation was conducted by the Indian Institute of Science and computer science departments of other engineering colleges of the state⁶. The entire cost of “Mahiti Sindhu” project amounting to nearly USD 40 million was funded to be spent during the project period of 5 years from 2001 – 2002 to 2005 – 2006. This project was fully financed by the government of Karnataka⁷.

7.1.2 OBJECTIVES

This ambitious project aims at giving free computer education and computer based education to the students of government schools, who come from rural and economically weaker sections of the society, thereby enhancing the quality of education being given to them.

The key deliverables of the project are as follows⁷:

- To enable the students to gain computer education and to understand its applications.
- To enhance the learning levels of the students in curricular subjects through computer aided education using multimedia software CDs.
- To introduce students to the world of opportunities, computers have to offer.
- To enable the students to understand the basics of computer programming.
- To introduce students to the communications media of e – mail and the internet.
- To train rural youth in the use of computers outside school hours.
- To provide opportunities to the entire community to use computers

7.1.3 EXTENDED MAHITHI SINDHU PROJECT (2007-2008 ONWARDS)

Mahithi Sindhu Project was extended for another 3 years and implemented from 2007-08 through public sector company KEONICS. Annual Maintenance, Delivery of Computer Education, and Training of Teachers were assigned as the main responsibilities of this agency. The entire cost of extended “Mahithi Sindhu” project total cost is USD 10 million for 3 years project period. Full grants for this project were funded by government of Karnataka⁷.

Table 1: Number of Schools under various ICT in Education Schemes – Karnataka⁷

Sr. No.	Schemes/Programs for ICT in education for Government Schools.	Year of Scheme	No. of schools	Cost in USD million
1	Mahiti Sindhu (State-funded project)	2001-2006	1000	40.0
2	Revised CLASS Project (Centrally assisted scheme)	2003-2004	150	3.0
3	11th Finance Commission Scheme (Centrally assisted scheme)	2003-2004	88	2.0
4	Extended Mahiti Sindhu (State-funded project)	2007-2008	1009	10.0
5	ICT@Schools, Phase-I (Centrally assisted scheme)	2007-2008	480	12.0
6	ICT@Schools, Phase-II (Centrally assisted scheme)	2008-2009	1571	20.0
7	ICT@Schools, Phase-III (Centrally assisted scheme)	2010-2011	4396	N.A.
	Aided Schools (2633 nos.)			
	Government Schools (1763 nos.)			

7.1.4 ICT@SCHOOLS PROJECT- OBJECTIVES

The ICT @ Schools Project is a centrally assisted scheme, which is to be implemented across the state through three phases. Objectives of this scheme are as follows⁷.

To establish an enabling environment to promote the usage of ICT in secondary Government schools in rural areas. To enable the rural students especially the scheduled Cast, scheduled Tribes, Backward class and minorities that to for girls to gain the complete knowledge of information technology and capacity building using the internet.

To enhance the learning levels of the students in Mathematics, social science, science and co-curricular activities using Information and communication Technologies.

To promote critical thinking and analytical skills by developing self learning. This shall transform the classroom environment from Teacher centric to Student-centric Learning.

To enable students to acquire skills needed for the Digital world for higher studies and gainful employment.

To provide effective learning environment for children through Information Communication Technology (ICT) tools

Capacity building of teacher for effective Teaching-Learning Process by using Information and Computer Technology tools⁷

7.1.5 ICT@ SCHOOLS PROJECT PHASE- I

The Government of India in 2005–06 has approved ICT@ schools scheme in 480 schools in Karnataka state and the first phase has been implemented in 2007–08. Two institutions Educomp Solutions and Everonn were given the responsibilities for project execution for a period of 5 years.

Project Details

Each School has been provided with a server and 09 workstations. Approximately 168,000 students of 480 schools are benefitted under this project.

The key deliverables of the projects are as follows:

- Educomp: Setting up computer facilities with hardware, software, UPS, and other accessories at 264 secondary schools in Karnataka and teacher training
- Everonn: Setting up Computer facilities with Hardware, Software, UPS and other accessories at 216 Secondary schools in Karnataka and Teacher Training.

7.1.6 ICT@ SCHOOLS PROJECT PHASE-II

ICT@ schools Phase-II scheme was implemented in 1,571 schools in Karnataka 2008–09. Only Educomp Solutions have been given the responsibility to execute the project for a period of 5 years.

Project Details

Each school has been provided with a server and 10 workstations. Approximately 314,280 students of 1,571 schools are benefitted under this project.

Educomp Solutions have signed an agreement with Department of State Education Research & Training (DSERT), Government of Karnataka, for implementation of computer-aided education in 1,571 schools in Karnataka under the ICT @ Schools Phase II for a period of 5 years.

The key deliverables of the projects are as follows:

- Supply of computer hardware, software, and connected accessories
- Teacher training

7.1.7 ICT@ SCHOOLS PROJECT PHASE-III

Under⁷ this project 2633 aided high schools and 1763 government secondary schools (in which Mahithi Sindhu Schools, 11th Finance Commission, and Revised CLASS project schools) are included. This project will be implemented during 2010-11.

The objective of third face is standardizing ICT in education for all the schools in the state. Also, the computers and other peripherals of the aforementioned projects are old and outdated and needs to be replaced.

7.1.8 KARNATAKA STATE PROFILE

Karnataka with Bengaluru as its capital has emerged as the leader in the sectors of IT and biotechnology in the country since the 1980s and became the first state in India to announce an IT Policy in the year 1997. It is the eighth largest Indian state by area⁹ of 191,791 km² with a population of 61,130,704.⁹ Kannada is the official and most widely spoken language. The State is regarded as one of the more economically progressive states in India. The state of Karnataka is divided into 30 districts, which are further divided into subdivisions, and the subdivisions are divided into blocks⁶.

About Education in Karnataka

Karnataka situated in the southern part of India is best known for its rich educational background. It houses some of the prestigious higher learning institutions in India. Bangalore, the capital city of the state is a major educational hub and attracts students from all over India and abroad. According to 2001 census report, the state has a literacy rate of 67.04%. The literacy rate of males is more than the females in Karnataka. However, the city of Bangalore boasts of a literacy rate of 83.91% which is more than the overall state literacy rate. The state government has taken up a lot of initiatives for improving the scenario of primary education in Karnataka⁸

Mid day meals have been introduced in the government and aided schools in Karnataka to increase the attendance rate of students. In order to know more about schools in Karnataka, scroll down the page.

Different Kinds of Schools in Karnataka

There are mainly three kinds of schools in Karnataka namely government schools, private unaided schools and private aided schools. The schools are affiliated either to Karnataka State Board or Council for the Indian School Certificate Examinations (CISCE). Some schools are also affiliated to the Central Board of Secondary Education (CBSE).

Number of Schools in Karnataka

There are several schools in Karnataka which provide primary and secondary education to the students. As per the survey conducted on March 2006, the state had 54,529 primary schools which included 8.495 million students. The 9498 secondary schools in Karnataka included 1.384 million students⁸.

Medium of Teaching in Karnataka Schools

Kannada and English are the primary languages which are used as the medium of instruction at the schools in Karnataka.

8 ICT CASE STUDY- 2

8.1 GOVERNEMENT OF WEST BENGAL

8.1.1 OBJECTIVE

To establish an enabling environment to promote the usage of ICT SPECIALLY IN Higher Secondary and Secondary Government Schools. Critical factors of such an enabling environment include widespread availability of access devices, connectivity to the internet and promotion of ICT literacy¹².

To ensure the availability of learning content on line and through access devices both in the private sector and by CIET,SIETs and RIEs.

Enrichment of existing curriculum and pedagogy by employing ICT tools for teaching and learning.

To enable students to acquire skills needed for the digital world for higher studies and gainful employment

To provide an effective learning environment for children with special needs through ICT tools.

To promote critical thinking and analytical skills by developing self-learning. This shall transform the classroom environment from teacher centric to student centric learning.

To promote the use of ICT tools in distance education including the employment of audio-visual medium and satellite based devices.

All efforts would be made to make the school information hub for the community. The facilities can be used outside the school hours for the benefit of the community so that the optimal utilisation of the ICT infrastructure takes place while enabling revenue generation¹².

8.1.2 IMPLEMENTATION

In 2007–08, Government of West Bengal took up the ICT@School scheme for implementation and introduced computer education in 543 government aided higher secondary schools at a cost of INR 0.4 billion (approximately USD 8 million). The state engaged full time computer teachers in these schools and encouraged computer education. In 2008–09, 2,418 more schools were brought under the ambit of the scheme with training being provided to other subject teachers to utilize ICTs in the teaching learning process¹³.

In 2008–09, under the central scheme for universalizing secondary education, the Rashtriya Madhyamik Shiksha Abhiyaan (RMSA), five states including West Bengal have been selected to implement ICTs in schools. 1,400 schools in West Bengal were each provided with 10 computers, 10 UPSs, 1 scanner, 1 web camera, 1 projector, and 1 printer at a cost of INR 0.9 billion (approximately USD 19 million)¹³.

Further, the Department of Education, Government of West Bengal, has constituted a committee with the Director of SCERT (State Council of Education Research and Training), West Bengal, as the chairman to develop strategies for utilizing media resources like TV and radio to educate

students and teachers. The Committee is in the process of formulating and evaluating strategies.

Apart from the initiatives of the Ministry of Education, the Department of Information Technology also envisages the development of education through the use of ICT. The West Bengal IT Policy 2003 envisages the following in the field of education:

Set up a state wide delivery backbone to support e-governance, ecommerce, distance education, and provide an efficient government citizen interface.

Address IT in education to produce IT professionals, proliferate an IT culture at the gross-root level, and promote specialized education institutions¹³.

There is also a focus on promoting and supporting education for IT professionals in the state to foster the growing IT Industry in the state. West Bengal IT policy 2003 was announced with the vision of bringing the state among the top three IT States of India by 2010, contributing 15–20% of the country's total IT revenue¹³.

8.1.3 WEST BENGAL STATE PROFILE

The state of West Bengal is an agriculture-dependent state, situated in the eastern part of India, sharing its border with the Republic of Bangladesh. It is one of the most densely populated states of India, with a population density of about 903 persons per square kilometer.

Administratively the state is divided into 19 districts, which are further divided into subdivisions and blocks. The capital and the largest city in the state is Kolkata, which is the fourth largest city in the country¹³.

The population¹⁴ of West Bengal is 91,347,736 with an area¹⁴ of 88,752 km²

9 ICT CASE STUDY – 3

9.1 GOVERNEMENT OF RAJASTHAN

9.1.1 OBJECTIVES

Rajasthan would leverage Information & Communication Technology (ICT) as a tool for improving governance by facilitating the electronic delivery of public services. It would also create an environment favourable for investment in the knowledge economy while at the same time taking effective steps to encourage the talent pool of the youth so as to make them employable. Resources available under NeGP and with the State Government shall be accessed for this purpose²⁰.

This Policy aims at:

- Making Government more accessible to citizens and empowering them through enhanced access to information while improving governance through the use of IT and enhancing the quality of services to citizens.
- Creating and expanding economic opportunities in the knowledge economy and attracting investments to the State for this purpose.
- Enhancing employment opportunities by developing the capability of the youth of the State and making them employable by the industry.
- Using ICT as tool for enhancing Good Governance
- Promoting economic development of the State through investments in IT & ITES Sector
- ICT for masses and especially for the youth of the State²⁰.

9.1.2 IMPLEMENTATION

ICT Phase I was started in August 2008 covering 2500 schools. All Higher Secondary schools were included in this phase²¹.

ICT Phase II was started in September 2010 covering 2000 schools. This included 1677 Higher Secondary Schools and 323 Secondary Schools²¹.

ICT Phase III is about to start covering around 2000 Schools. This would include 1863 Secondary Schools and 87 Higher Secondary Schools together with 50 Sanskrit language schools²¹.

9.1.3 RAJASTHAN STATE PROFILE

Rajasthan is the largest state of the Republic of India by area with 33 Districts. It is located in the northwest of India. It has a population of 68,621,012 and area of 342,269 km²

10 ICT CASE STUDY- 4

10.1 GOVERNEMENT OF GUJARAT

10.1.1 OBJECTIVES

The ICT Policy in School Education in Gujarat aims at preparing youth to participate creatively in the establishment, sustenance, and growth of a knowledge society leading to all round socio-economic development of the nation and global competitiveness. Main vision of ICT @ project is to provide Computer Literacy & Computer Aided Education in Secondary & Higher. Secondary Schools¹⁵.

To achieve the above, the ICT Policy in School Education will endeavor to: universal, equitable, open and free access to state of the art ICT and ICT enabled tools and resources to all students and teachers. Development of local and localized quality content and enable students and teachers to partner in the development and critical use of shared digital resources. Development of professional networks of teachers, resource persons and schools to catalyze and support resource sharing, up gradation, and continuing education of teachers; guidance, counseling and academic support to students; and resource sharing, management and networking of school managers and administrators, resulting in improved efficiencies in the schooling process. Research, evaluation and experimentation in ICT tools and ICT enabled practices in order to inform, guide and critically utilise the potentials of ICT in school education.

10.1.2 IMPLEMENTATION

To impart Computer Education & Computer Aided Learning to the students of Secondary and Hr. Secondary students of the state, Government of Gujarat intent to provide computer & peripherals to each school of the state under Central Sponsored Scheme ICT@Schools. Computers with 17" L.C.D. Monitor-(10), Computer with 17" L.C.D. Monitor & 42" L.C.D. Monitor & VGA Splitter- (1), K.U. Band dish Antenna-(1), A4 Size Scanner-(1), Dot matrix Printer- (1), 600 VA line Interactive U.P.S – (11), 16 Port Switches with Line Cabling and Electrification – (1), Plastic Model Chairs – (20) , Computer Tables – (13). Total 3650 schools are covered under this project¹⁵.

Orders were placed on M/s. NIIT Ltd. and M/s. Educomp solution Ltd. for 1870 and 1780 schools respectively. Total schools Covered 3650. Each school is visited by the school coordinator every week for Educational and maintenance support. K U Band dish antenna is provided for Educational programme telecast by the EDUSET and BISAG. Broadband internet connectivity is provided to each school through B.S.N.L. under this project¹⁵.

10.1.3 GUJARAT STATE PROFILE

The state of Gujarat is situated in the western part of India. Administratively the state is divided into 26 districts, which are further divided into subdivisions and blocks. The capital city in the state is Gandhinagar¹⁷

The population¹⁴ of Gujarat is 60,383,628 with an area¹⁷ of 196024 km²

11 BACKEND BANGALORE SOLUTIONS FOR ICT

11.1 CLIENT – EVERONN EDUCATION LIMITED

11.1.1 ABOUT EVERONN EDUCATION LIMITED.

Everonn Education Limited, a fully integrated knowledge management, education and training company is entrusted to provide turnkey solution for setting up the needed infrastructure for Governments of Karnataka and Arunachal Pradesh towards implementation of ICT@Schools (Information and Communication Technology) scheme under the guidance of Ministry of Human Resource Development, Government of India.

Everonn Education system is utilizing the software services of Backend Bangalore Pvt Ltd for monitoring the ICT@Schools scheme as envisaged by Government of Karnataka and Arunachal Pradesh for execution, control and monitoring of setting up required infrastructure and imparts training through well trained faculty. ICT@Schools is an umbrella scheme designed for overall development of schools through computer literacy as smart schools, installed with ICT peripherals including establishment of ICT lab, provision for hardware, software, associated infrastructure with trained teacher faculty and the subsequent overall maintenance and improvements thereon of the scheme.

11.1.2 ICT PROJECT OVERVIEW

Everonn Education system, the implementing agency for ICT@Schools in Karnataka and Arunachal Pradesh is covering ninety schools across the State in a phased manner for implementation of ICT@Schools.

In Karnataka for ICT@Schools, Phase-III for 4396 Schools

2633 Aided Schools &

1763 Government Schools

In Arunachal Pradesh

Phase –I – Classes 9th,10th,11th & 12th (35 Schools)

Phase –II – Classes 9th & 10th (55 Schools)

This implementation involves participation from multiple agencies involved in various fields and verticals involving skilled and unskilled labour forces, experts, consultants, educationists etc. As such it is required to have a single system of mechanism for overseeing the implementation, monitoring the progress, and analyzing achievement of physical targets of all those involved. It is required to map the progress at every level of local, district and state interface as an ongoing activity built into ICT@Schools scheme.

A system that addresses the complexity of the delivery systems is intended.

11.1.3 BACKEND SOLUTION

Evaluating an extensive review of available solutions, Everonn Education Limited implemented Backend's Project Monitoring System Software customized solution for monitoring ICT@Schools scheme. The proposed solution offers fully integrated centralized web-based enterprise level software solution for monitoring ICT@Schools projects allowing district wise summary of progress, monitoring the work flow towards setting up of the ICT labs, operations and maintenance of these labs and the feedback for immediate course of action coupled with better documentation and report generation processes.

Backend's Project Management System offers value added functionalities at each level for ICT@Schools scheme in developing its infrastructure, resources, capacity building and overall management of the scheme.

11.1.4 SALIENT FEATURES OF BACKEND SYSTEM

Implementing Backend's Project Monitoring System Software is resulting in benefits to the stake holders of the project. It had the necessary intelligence built-in and some of its features are listed below

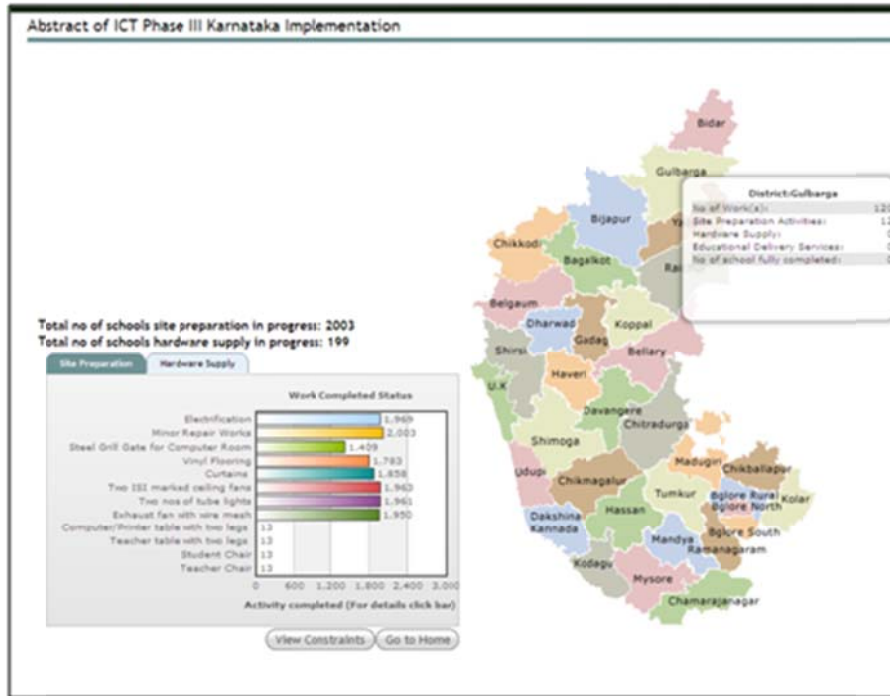
- **Planning** - The entire project can be broken down into multiple sub-projects. Each sub-project may be scheduled with multiple milestones in terms of work package/school.
- **Works Monitoring** - The status of progress of any work package/school can be updated by checking whether the activity is completed or not.
- **Stores** - The Capital Items and Consumable items are maintained in the Stores module Transaction history of the receipts and issue is maintained.
- **Tracking maintenance Support and service** – This module features in accepting the service requests made and updating the status of the accepted service requests
- **Monitoring site expenditure** - This module tracks the Expenditure for each package/school that occurs during the maintenance period
- **Feedback monitoring** - This module allows capturing the feedbacks from Students, Faculty Members and School management. This feedback helps in tracking, comparing and improving the service delivery for each school.
- **Faculty attendance monitoring** – This module allows capturing the attendance, leave, working hours of Faculty day by day basis.
- **Educational Content Repository and rating** – This module provides a collaborative tool for developing educational contents. Content can be a pdf document, animation, text file, image, video etc. Teachers develop the educational content and upload in the repository which are viewed and rated by other teachers, students and parents. Contents are grouped by Grade and Subject.
- **Portfolio Reports and Dashboard** – This module features in generation and viewing monthly and activity wise progress reports and Dashboard. The entire state of Arunachal Pradesh is mapped as per districts which allows for easy viewing of the reports required.

11.1.5 CHALLENGES

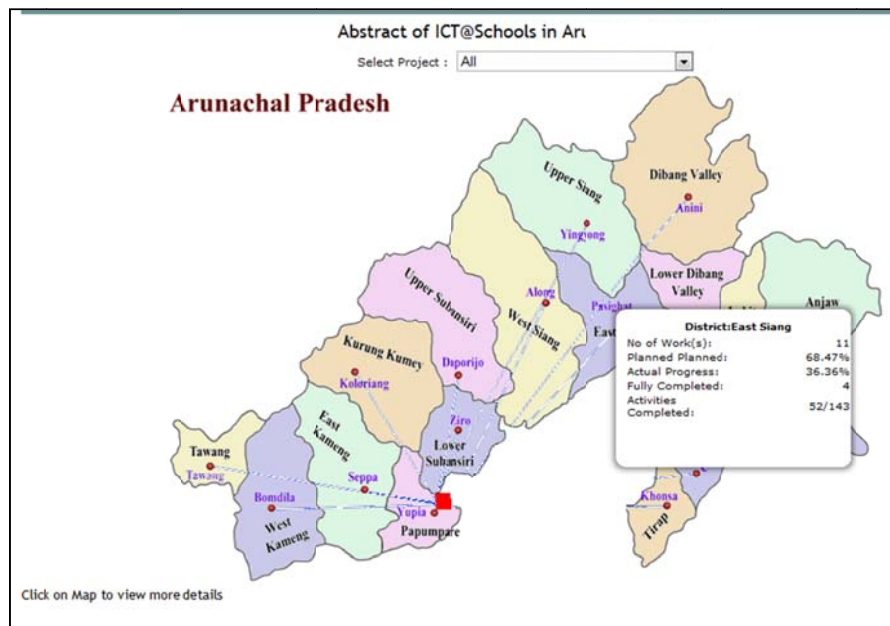
Software development for ICT@Schools involved collaborating with various levels of users at multiple locations. It involved knowing the requisites and the comfort levels of software users at every level so as to deliver a model that fits all. It also involved designing the software and fine tuning the same to the information and communication systems available at various distant geographical locations.

11.1.6 DASHBOARD.

Dashboard no1 of Backend Solution for ICT@School in Karnataka



Dashboard no 2 of Backend Solution for ICT@School in Arunachal Pradesh



11.1.7 RESULT

As a result of implementing Backend's Project Management System Software, Everonn Education Limited is able to monitor the real time data and reach of the intended project deliverables to the desired acceptable levels of stockholders involved.

12 ICT POLICY OF OTHER STATES

12.1 GOVERNEMENT OF ANDHRA PRADESH ICT POLICY 2005-2010

Features

In the area of ICT, Government of Andhra Pradesh will address the development of skills that are in synchronisation with emerging employment opportunities. The Government will set up a 'Future Skills Unit' under the A.P. State Council of Higher Education and IEG. This unit will be required to track technology trends and identify future requirements in terms of skills and training¹⁸.

- Training Incentive, Technical education Strategy Paper on School education (2001)
- Harnessing new technologies, IT Education in School curriculum , Secondary Education and vocational

12.2 GOVERNMENT OF ORISSA ICT POLICY 2004

Features

1.Computer Education at Schools: Starting from the primary school level, all the school children in the State will be covered under computer training program through appropriate initiatives. The existing coverage of 400 schools will be suitably extended in the coming years.

2.Teachers' Training: Training will be imparted to all school teachers on computer usage and IT applications and special training will be given to teachers-incharge of computer education under multiple schemes. Regular training programs will be held for the teachers.

3. Industry friendly curriculum: Industry friendly curriculum will be devised for all kinds of IT education and training offered by institutions and training houses in the State in consultation with experts drawn from Industry and Academia. EDP will be included in the school and college curricula. This will ensure the compatibility of the young graduates and professionals to the requirement of industry and commerce for getting suitable jobs in various industries.

4. Orissa Computer Application Centre will continue its role as the agency for computerization of the Government. In addition it will function as the Directorate for Information Technology. Promote and establish Institutions of Excellence in the State in the IT, ITES and Communication sector to create world -class facilities for training and education.

5. IT Literacy Program in Schools/Colleges: It is necessary that IT education be introduced right from the primary school level. This establishes the required level of familiarity of job-seekers and makes them employable with the minimum educational background of school final. Knowledge on general maintenance and repair of IT Hardware and overall knowledge on networking shall be introduced to students at school level¹⁸.

12.3 GOVERNMENT OF UTTARANCHAL ICT POLICY 2006

Features

1. Accelerate the use of IT in schools, colleges and other educational institutions
2. To integrate information technology with schooling and education to empower learners to acquire skills, knowledge and understanding.
3. With special reference to geographical location of schools in interior rural areas, inadequate transport and communication facilities make it imperative to take advantage of IT, to provide accessibility of quality education to every child.
4. Enabling students to access, collate and organize information from different sources in the world and encourage on-line learning¹⁸.

12.4 GOVERNMENT OF KERALA ICT POLICY 2007

Features

ICT in Society Digital Divide: The Government has already taken up initiatives to make ICT accessible to all citizens, thereby addressing the issue of digital divide in a holistic manner. Projects such as Akshaya, IT@School, FRIENDS and Citizen Call Center will be strengthened. Finishing schools will be established with industry participation.

Programmes will be created to impart ICT skills among all students and teachers of both schools and colleges. The Government will give top priority to the task of imparting to students 21st century skills such as communication, media and information literacy, in addition to leadership skills and problem-solving abilities¹⁸.

13 CONCLUSION

ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would enable development of collaborative skills as well as knowledge creation skills. This in turn would better prepare the learners for lifelong learning as well as to join the industry. It can improve the quality of learning and thus contribute to the economy. Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching.¹⁶

ICT increases the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to contribute to the industry. It can improve the quality of learning and thus contribute to the economy. It provides several tangible and intangible benefits for all stakeholders involved in the economic growth of the country.

Wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching. ICT also allows the academic institutions to reach disadvantaged groups and new international educational markets. Thus, ICT enabled education will ultimately lead to the democratization of education. In India, effective use of ICT for the purpose of education has the potential to bridge the digital divide¹⁶.

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