4. India Case Studies: West Bengal

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 country. Other important cities include Siliguri, Asansol, Durgapur, and Raniganj.

The population of West Bengal is predominantly dependant on agriculture. Rice is the principal food crop and jute is the prime cash crop of the state. Tea is also produced commercially. Manufacturing industries are mostly centered in and around the city of Kolkata, with Asansol and Durgapur hosting

Figure 6: Map of West Bengal
Source: http://en.wikipedia.org/wiki/West_bengal

many steel manufacturing industries. Although agriculture is the prime source of income for the citizens, the service sector is the largest contributor in the Gross Domestic Product of the state.
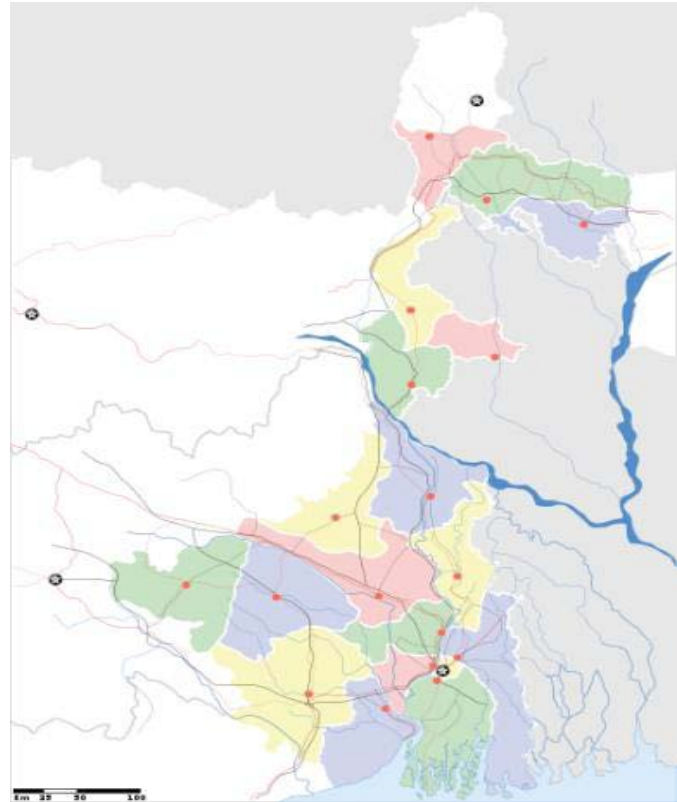
Key demographic indicators of West Bengal are given in the following table:

Table 14: Demographic Indicators – West Bengal

Parameter	Statistics (2009)
Capital	Kolkata
Population	80,176,197 (2001 Census)
Population density	903/sq. km
Area	88,752 sq. km

Source: http://www.banglarmukh.com/

4.1. Background

Brief Overview of the Education Sector

The development of education in the state is the responsibility of the Ministry of Education. The Ministry of Education in West Bengal works through different departments like Mass Education Extension and Library Services, School Education, and Technical Education and Training.

The prime objective of the department is universalizing school education. While, there is a thrust on quality, the government has set certain quantitative milestones to be achieved in the state:

- Ensure 100% Net Enrollment Ratio (NER) for primary education within 2008–09
- 100% NER for elementary education within 2010–11
- 100% NER for secondary education within 2014–15

The Ministry has worked out many strategies to meet the aforementioned objectives. The Department of Education has been working on ensuring universal access to education at all levels, including unhindered enrollment at the higher secondary level for all the students passing secondary school. Bridging the gap between the gender disparity in the field of education is another major concern for the government. To address the issue, the government has been working on enrolling girls in schools at all levels giving special attention to girls coming from backward, reserved, and minority communities. The high dropout rate, 75% from Classes I to X, is a critical issue in the state. As the government is focusing on ensuring universalization of education at all levels, reducing the dropout rate has become equally important. Steps are also being taken to rationalize the teacher student ratio, introduce and implement computer literacy, recruit trained teachers, and help them with proper pedagogical facilities and updated learning material. The government is also planning to provide infrastructural facilities like equipped laboratories, better school buildings, drinking water, and so on.

The government has a special focus on technical education. The Department of Technical Education and Training administers schemes providing technical education at all levels through various institutions:

- Diploma level through Polytechnics
- Craftsmen training through Industrial Training Institutes and Industrial Training Centers
- Formal Vocational Training through Vocational Training Centers (VTCs)
- Non-Formal Vocational Training through Community Polytechnics
- Short Term Vocational Training Programme implemented through Zilla Parishads and Non-Government Organizations

West Bengal also envisages leveraging EDUSAT to provide distance education to supplement school education. The government is trying to bridge the digital divide through various initiatives. Some of the major initiatives have been profiled in this report in subsequent sections.

Some key education indicators in the state are given in the following table:

Table 15: Education Indicators – West Bengal

Education indicators (2007–08)			
Gross enrollment ratio (%)	**Total**	**Male**	**Female**
Primary school	104.91	106.75	103.01
Upper primary school	66.71	70.97	62.22
Secondary school	44.66	49.21	39.81
Higher secondary school	26.23	30.68	21.43
Dropout rates (%)	**Total**	**Male**	**Female**
Class I–V	38.67	37.67	39.73
Class I–VIII	62.45	61.16	63.88
Class I–X	75.12	72.82	77.68
Teaching staff	**Pupil/teacher ratio**	**%Trained**	**%Female**
Primary school	50	74	37
Upper primary school	62	80	34
Secondary school	58	83	39
Higher secondary school	51	85	43
Literacy level (%)	**Total**	**Male**	**Female**
Urban literacy level (India)	81.25 (82)	86.13 (88)	75.74 (75)
Rural literacy level (India)	63.42 (61)	73.13 (72)	53.16 (50)

Source: Select Educational Statistics, 2006-07, Government of India

Table 16: Number of Schools – West Bengal

District name	Primary	Upper primary up to class VIII	Secondary	Higher secondary
Bankura	3,463	29	229	190
Burdwan	4,001	53	452	335
Birbhum	2,373	42	225	138
Dakshin Dinajpur	1,171	8	87	70
Darjeeling	1,171	53	69	95
Howrah	2,117	29	251	239
Hooghly	3,005	112	294	270
Jalpaiguri	2,038	19	155	126
Coochbihar	1,822	21	121	118
Kolkata	1,439	46	282	276
Malda	1,887	26	178	134
Murshidabad	3,165	103	282	181
Nadia	2,598	40	190	226
North 24 parganas	3,635	58	421	492
Paschim Medinipur	4,673	91	385	509
Purba Medinipur	3,245	85	319	
Purulia	2,986	73	152	142
South 24 parganas	3,674	65	406	328
Uttar Dinajpur	1,430	27	84	85

Total	49,893	980	4,582	3,954

Source:http://www.banglarmukh.com/portal/banglarmukh/Government/Departments/DepartmentListPort letWindow?action=e&windowstate=normal&mode=view

Brief Overview of the ICT Scenario:

There are around 500 IT & ITeS companies, employing about 60,000 software professionals according to the state's budget announced for 2008–09. Almost 80% of the companies are in the small and medium scale enterprise (SME) sector. The state has estimated a growth rate of 45% for export revenue during 2007–08 and it is expected that the same growth rate will be maintained during the next couple of years enabling West Bengal to get closer to realizing its IT vision.

The state has initiated e-governance projects to improve access to services for the citizens and bring IT closer to life. The telecom infrastructure of the state is in a good condition to support these facilities. The government is focusing on building the core infrastructure in the state through several key initiatives. The State Wide Area Network (SWAN) has been created to provide state wide intranet connectivity that can be leveraged by different departments to provide electronic services to the citizens. Vertical connectivity through the West Bengal SWAN is complete, which provides intranet connectivity at the state level, district, subdivision, and block head quarters. Work on horizontal connectivity is underway, which will connect government offices of different line departments situated away from district, subdivision, and block headquarters.

Apart from the SWAN, the government is in the process of building a State Date Center (SDC), which will be able to store and process all the data from the entire state and support the applications running to provide services to the citizens. These key infrastructure projects will provide a platform for excellence in the field of education as well, once they are fully operational.

The telecom industry in the state has been growing significantly, in terms of number of mobile users. As of October 2009 the total number of subscribers both for Global System for Mobile (GSM) and Code Division Multiple Access (CDMA) mobiles was 19.8 million according to the Indian Cellular Association.

4.2. Policy Framework and Delivery Mechanism

There is a growing awareness among the policymakers globally and across India on the emerging and pivotal role of ICTs in the education sector. There is recognition of the need to bridge the digital divide and keep the present generation abreast with the changing technologies. The integration of ICT would call for changes in various aspects of the delivery mechanism.

With the objective of universalizing primary and elementary education the Government of India launched its flagship scheme Sarva Siksha Abhiyan (SSA) in 2001. The Government of West Bengal is implementing this ambitious scheme since its inception and has further focused on the need for universalizing secondary education, in conformance with the national plan, with the objective of enhancing GER for class IX and X to 75% by the end of 2012.

Use of IT in schools

The ICT @ Schools scheme is a centrally sponsored scheme being implemented by the different State Governments in India. It was launched in 2004 and has been a very important step toward crystallizing educational policies and aligning them with ICT. The scheme is currently being implemented in both government and government-aided secondary and higher secondary schools.

In 2007–08, Government of West Bengal took up the 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 process.[9]

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).

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 still 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 institutions.

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 revenue. The government has been actively promoting the state as the IT destination for the major IT giants.

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[9] Data from the Department of Education, Government of West Bengal.

4.3. Initiatives

Several initiatives using ICTs for education are ongoing in the state, led by government as well as private players. Some of the major initiatives are profiled as follows:

4.3.1. State Council of Education Research and Training (SCERT)

The West Bengal SCERT, with the West Bengal Board of Secondary Education, West Bengal Council of Higher Secondary Education, and West Bengal Board of Primary Education, has primarily been responsible for developing textbooks as per the prescribed national curriculum framework. In addition, SCERT has been working extensively to create multimedia content to help in CAL for students in the government schools across the state of West Bengal.

Multimedia Content:

Developing multimedia content is a continuous process and SCERT has been involved in this activity since 2006. Extensive workshops were undertaken with around 100 teachers to formulate the strategy for developing content. It was realized that simply digitizing the textbooks would not be sufficient and hence the teachers were asked to be actively involved in the creation of the content, where they wrote the scripts and gave voiceovers simulating a classroom session. This exercise is done at the district levels at the District Institute of Education and Training (DIET) labs and at the state level at SCERT headquarters. The lessons made at the district levels are sent to the SCERT for verification and correction by experts and then this content is put into an interactive multimedia package by Center for Development of Advanced Computing (CDAC), who work closely with SCERT in packaging the content.

Figure 7: Inside the SCERT Education Technology Laboratory – West Bengal

Workshops have been conducted at the DIET level by SCERT to demonstrate the process of writing of scripts and recording voiceovers. All the DIETS have been equipped with at least one computer for various activities including creation of digital content. These workshops have been conducted in four districts and have led to the training of around 300 teachers. There are around 300,000

teachers in the state and SCERT is in the process of training as many teachers as possible to create content digitally.

After establishing a stable and sustainable model of content generation, SCERT has created 11 lessons for classes VI, VII, and VIII and has handed these over to Sarva Siksha Abhiyan authorities for deployment and circulation. The lessons can be downloaded from their Web site. (http://www.scertwestbengal.org/multimedia_main.php)

Radio Scripts

In 2002, SCERT conducted a workshop to develop a strategy of using radios for imparting education. As a result of the workshop, a set of 21 scripts were prepared to help students in learning English. In 2005–06, SSA sponsored a timeslot at 9:30 p.m. to broadcast these lessons, which were prerecorded at the Rabindra Bharti University Studio. The program has been a success in terms of its reach and response. SCERT has been working on developing more scripts to broadcast on RADIO.

SCERT has also assisted AIR in formulating a list of topics/lessons to be taught at specific time slots. AIR, based on the inputs of SCERT, invites teachers who take a class on the specified topic. This live program runs every day at 2:30 p.m. and is called Bidyathider Jonno Onusthan.

4.3.2. IL&FS Education and Technology Services Limited

IL&FS Education and Technology Services Limited (IETS) is a subsidiary of Infrastructure Leasing & Financial Services Limited (IL&FS) offering educational infrastructure and education technology support in the country. IETS has partnered with various State Governments and other national and international agencies to catalyze the outreach of education in the country. IETS have been working closely in collaboration with the government of West Bengal to promote the use and benefits of ICT in the field of education. An innovative product designed by IL & FS ETS is KYAN, which is being deployed by the government of West Bengal in almost all districts. KYAN, the Vehicle of Knowledge, has been developed by IETS, in collaboration with the Indian Institute of Technology (IIT), Mumbai, as a Community Computer. It is effectively a digital multimedia device which was designed by Dr. Kirti Trivedi in 2004 and commercialized by IETS in 2007. The device contains a computer with inbuilt projector, content, speakers, and has wireless keyboard and mouse. It combines the computing power of a computer with an appropriate high luminosity, high resolution, and large screen projection system.

KYAN:

The Department of Information Technology has funded the project to introduce the KYAN in schools, with the objective of bringing the benefits of ICT to children from disadvantaged communities. A pilot initiative was undertaken in 65 government schools across two districts, namely, Bardhaman and Bankura of West Bengal in 2007–08. The initiative covered 500 teachers and 40,000 students, mostly from marginalized section of the society (Scheduled Caste & Scheduled

Tribe communities). The initiative was an effort to utilize ICT tools such as digital content, alternative power supply solutions, and capacity building programs to bridge the digital gulf and ensure sustainability.

Figure 8*: A KYAN Machine – West Bengal*

In the pilot phase, 65 schools were selected in the two districts by the respective district administrations, based primarily on the number of SC/ST children in the schools. With the success of the pilot, the project has then been rolled out gradually in other districts as well. KYAN is now being deployed on a small scale in almost all the district in the state. The project is currently in the fifth phase. Phase wise deployment of KYANs is as shown in the following:

- Phase I (2007)—65 schools in Bankura and Burdawan
- Phase II (2008)—51 schools in North 24 Parganas
- Phase III (2009)—90 schools across 6 districts (15 each in Cooch behar, Malda, Nadia, Purulia, Howrah & South 24 Parganas)
- Phase IV (2009)—115 schools across the state

Figure 9: KYAN multimedia class – West Bengal
Source: Department of Information Technology, GoWB

The content in the KYAN, developed by IETS, consists of 1,090 lessons on various hard to teach topics in all the subjects from kindergarten to class X, and is preinstalled in the machine. After the first phase it was realized that the lessons needed to be mapped to the topics of the textbooks as per the curriculum, and hence IETS has done an extensive study and with the help of the teachers mapped the topics in the textbook to the lessons created by IETS. IETS has recently been involved in translating the lessons into Bengali and Urdu as well. The content generation is a continuous process and the content is updated in all the KYANs running the state as and when required. IETS has provided extensive support to implement KYAN in terms of content as well as technology.

At the time of installation, representatives from IETS conduct a one-day orientation training for the head of the institute, followed by a two-day teacher training. In the first day, the teachers are given basic computer training and the fundamentals of using the KYAN, and in the second day, they are taught how to navigate to find lessons; they are given a demo of a class and finally the teachers are asked to take a small KYAN class in front of other teachers giving rise to a healthy competition among teachers. After these trainings, the teachers are asked to practice delivering classes with KYAN and once they are comfortable using the machine they are asked to give classes to the students. This brings a sense of ownership in the teachers. IETS has setup a call center to address any technical issues with the machine, and representatives of IETS also visit the schools on a periodic basis to extend handholding support to the teachers.

KYAN has also helped in increasing attendance of students in the schools as the students find KYAN classes interesting and it makes them stay in the schools and attend classes. Further details of KYAN and visit to Achana High School, one of the schools implementing KYAN in West Bengal can be found in Annexure II

Double Click!

Double click is an initiative of UNICEF in collaboration with IETS Kolkata to develop and test run a capacity building initiative in computer literacy among the tribal children of Kasturba Gandhi Balika Vidhyalaya (KGBV) centers in Purulia. The target group of the children is destitute girls mostly from backward classes. Capacity building has been the focus of this initiative to ensure better employable opportunities for the children. All the 20 residential schools have received an orientation on classroom management skills. The wardens have been oriented through the use of computer aided programs. The training was conducted for a period of 2 months between January and March 2009, where the students were introduced to the basics of computers and MS paint applications.

SPEED

A Spoken English Program for the rural and semi-urban youth has been planned by IETS in partnership with Webel Informatics Ltd., which is the nodal agency of the Government of West Bengal for developing Information Technology and implementation of eGovernance in the State. SPEED (Spoken English for Enhanced Development) has been conceptualized as a program to be delivered through 50 centers across all the districts of West Bengal. The project was launched at Press Club, Kolkata, in March 2009. Following this, the SPEED Training of the Trainers (TOT) was organized for the facilitators of SPEED in this project. Forty-five faculty members were certified for delivering the training and, nearly, 100 students have enrolled in 10 centers across West Bengal by now. The other centers are not fully operational yet.

IETS has developed the content for imparting this training and also designed the guidelines for the trainers, but the multimedia content is designed in such a way that the trainer acts merely as a facilitator. The course fee is INR 2,400 (approximately USD 50) and has 40 classes of 90 minutes each. IETS has created the content for blended mode learning, where each class is divided into three sessions of 30 minutes each for reading, writing, and listening English. The target group of the program is young adults from class X onward. IETS has trained more than 80 trainers so far.

4.3.3. Intel Education Initiative

Intel in collaboration with the Government of West Bengal started an initiative to encourage computer literacy across schools, equipping them with standardized Intel processor-based PCs and servers running the Linux operating system. The curriculum was developed by the West Bengal Board of Secondary Education. The Computer Literacy and Training Program (CLTP) was initiated by the government in 2002 and deployed in 500 schools by early 2005. Approximately 400 of those schools were each equipped with nine Intel Celeron processor-based PCs running Red Hat Linux 8.0* and one Intel Pentium 4 processor-based server provided by IBM. Since 2002, the program has enrolled 160,000 students. Evaluators have recognized not only an improvement in basic computer skills among participants but also a general improvement in all academic skills as a result of the program. The Intel Teach Program was initiated in West Bengal in 2004 with the Education Department and in 2005 with the Madrassa Board. More than 6,168 teachers were trained across 330 government and private schools in 19 districts (Education Department) and 13 districts (Madrassa Board) under this program.

4.3.4. NIIT@Schools

NIIT@Schools is a program for providing computer education to private and public schools. NIIT has been working since 2001 in different states in the country. Through the implementation of this initiative Computer Literacy Training Programme has been introduced in selected higher secondary

schools in West Bengal. The plan was executed in phases, where in the first phase 100 schools have been computerized and computer education started through partnership between Webel (a nodal agency of the Government of West Bengal for developing IT and ITeS industries in the State) and NIIT from October, 2001. In the second phase, 200 selected schools have been computerized and the computer education has started in these schools through Webel-IBM partnership from May, 2002.

The schools participating in this initiative in West Bengal have shown remarkable improvement in results. Additionally, two schools from the State, that is, the Howrah Zila School and the Hindu School, received the Government of India's Department of Information Technology Excellence Award in Computer Literacy from the President of India in 2003 and 2004.

4.3.5. IBM

IBM is working in collaboration with the Department of Information Technology (DIT) in West Bengal to address the issue of bridging the digital divide. As part of its responsibility for promoting the growth of the IT industry in West Bengal, the Department of IT, Government of West Bengal, has identified the need to create effective education programs for building basic IT skills at the middle school and high school levels as a primary objective.

In 2004, as part of the IBM Integrated IT Literacy Program in association with Webel, BM Learning Solutions planned to provide the necessary IT infrastructure, education services, IT support, and project management for 400 schools and install 10 computers in each school. The program planned to bring more than 150,000 students under its coverage. IBM was responsible for selecting the trainers, enrolling them in "train the trainer" programs and certifying them.

The program has been conceptualized with the objective of empowering every student to use computers in their professions and businesses. For those inclined toward a career in IT, the program includes technology content in the higher-level classes. In the future, the infrastructure will support a blended e-learning solution for both IT and K-12 curricula.

To popularize the learning content, it has been made available in local languages. IBM conducts annual student assessment tests and provides appropriate student certificates upon completion. Orientation sessions are also conducted annually for regular teachers from each school, so that they can take up the curriculum at the end of IBM's contract with the Government of West Bengal.

4.3.6. Media Lab Asia

Media Lab Asia (MLAsia) has been set up by the Department of Information Technology, MCIT, Government of India, as not-for-profit Research & Development organization. MLAsia works on the paradigm of collaborative research in the task of developing relevant and sustainable technologies and culturally appropriate solutions and bringing them to the daily lives of people. MLAsia works with academic and R&D institutions, industry, NGOs, and government in this endeavor.

MLAsia at its research laboratory at the Indian Institute of Technology (IIT), Kharagpur, has undertaken many projects in the areas of ICT for village livelihood generation, healthcare education, empowerment of the disabled, and rural connectivity. Some of these are now undergoing test deployment and are being made ready for national/large-scale deployment. The following are some of the pilot initiatives in the field of education.

Multimodal Participatory Content Repository for the Education of Rural Children

The project has been undertaken jointly with IIT Mumbai and IIT Kharagpur for the development of a Multimodal Participatory Content Repository for the education of rural children.

It has a browser-based interface to access online educational content and a searchable, sharable repository of courseware from different sources in various languages. It provides multilingual support. It aims to provide educational institutions with a repository of courseware in major subjects.

Sahayika: The Knowledge Network

The project Sahayika is a system that works with the objective of supplementing the knowledge requirements of the school students. It works with a vision of learning and beyond. The initiative has been taken up in collaboration with IIT Kharagpur. The objective of the software is to provide school children with a knowledge network through which they can perform concept-based as well as topic-based navigation of contents.

It has the interface to create a new ontology for subjects in the school curriculum. It provides an ontology builder, ontology browser, and ontology visualization through navigation. Sahayika supports English as well as Bengali. It provides automatic indexing and manual document indexing to attach actual contents to any entity belonging to the ontology. Indexing tools enable the system to be used as a course organizer or a self-learning system. It is being test deployed in eight secondary schools in West Bengal.

Development of ICT-Based Resources for Rural School Education

The project has initiated different programs to train the teachers of rural schools to develop multimedia content using an open-source multimedia authoring tool and to design Virtual Physics Lab (VPL) experiments for the rural school children, who do not have access to physics laboratory infrastructure in their schools. Large numbers of teachers have been trained by International Institute of Information Technology (IIIT), Hyderabad, through this project.

Gyanpedia

It is an interactive portal for collating, organizing, and circulating contents generated in schools in India through a Single Open Web Platform. It envisions bringing in a change in the entire learning experience through promoting and popularizing distance learning methods such as E-learning and E-education. It has an online presence of 50,000+ students covering 10 states.

The beta version of the portal is available on http://www.gyanpedia.in

Samvidha: Low cost Internet access and content personalization for rural schools.

It is a project undertaken by IIT Kharagpur, which aims at providing offline Internet access at low cost to the schools and provide the users with relevant content in answer to their queries on subjects related to their curriculum. It has navigation interfaces in Bengali, Hindi and English and has a local repository built for reference. The relevance of information provided is ensured through proper scrutiny and filtering of the information provided.

This project has been initiated with the objective of finding innovative methods of providing low cost, offline, low bandwidth Internet access. It explores store and forward methods for asynchronous searches.

The technology is being tested for curriculum based offline internet access in selected schools at Bhalopahar, Galudihi, Purulia, whereas deployment is in progress at Bankura and Ashok Nager.

Multimodal Participatory Content Tutoring System for the Education of Rural Children

The project has been taken up in collaboration with Indian Institute of Technology (IIT), Kharagpur, targeting selected rural schools in Maharashtra and West Bengal. The project is based on a system, which includes an artificial intelligence-based Intelligent Tutoring System (ITS). An ITS contains a control engine as a common teaching model and stores all the information of the students. It provides an interactive environment for the children to access the educational material at their own pace. It provides the platform to make teaching more effective, interactive, and interesting. It has the facility to present the same courseware in different forms and delivery paths. Based on the performance of students, the ITS system adopts different routes to teach the same concept.

All the aforementioned information are however micro initiatives at a test stage.

4.3.7. InTuition (Techno Teaching Info Solution Pvt. Ltd.)

InTuition is an online interactive learning process, which provides multimedia lessons for Physics, Chemistry, Biology, and Math for classes 9 to 12. The interactive multimedia content has been developed by subject matter experts including teachers from schools and professors from colleges. The lessons are delivered to the students in the forms of DVDs that are sold at a price of Rs. 6,000 for four subjects for 12 months which comes out to be Rs. 125 per month per subject. The students even have the facility to pay in installments.

The unique value proposition of InTuition is the availability of online teachers from 6 a.m. in the morning to 10 p.m. in the evening for all the subjects. The teachers are available for online interaction with chat and video facility to answer queries that the students might have during the lessons. There are more than 100 teachers in West Bengal operating to provide this service. InTuition also plans to start labs for Physics, Chemistry, and Biology, which will be recorded and broadcast on Internet, and students who have subscribed to InTuition will be able to view the experiments online.
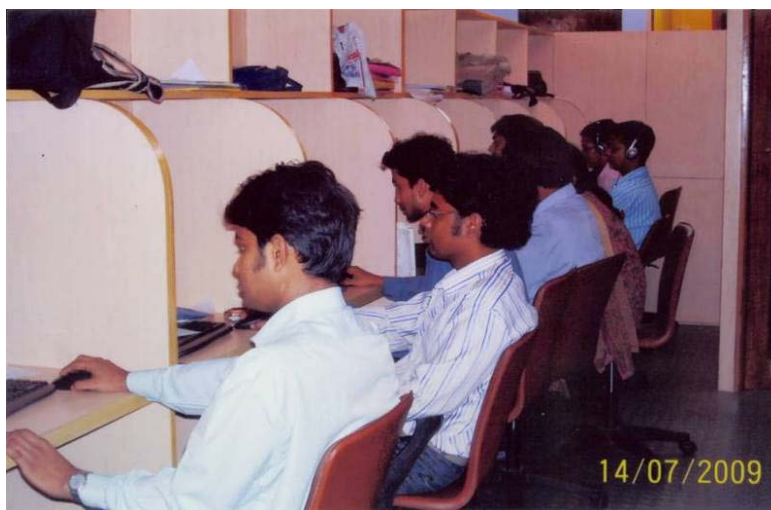

Figure 10: An InTuition Content Generation Lab – West Bengal

InTuition has an assessment program as well in which the students get to take online tests every three months on the lessons already taken and hence they can track their progress periodically with modern analysis tools.

InTuition is in the process of developing content for classes 6 to 8 for Science and for Humanities subjects for classes 9 to 12. InTuition is also developing content to support students of class 11 and 12 in preparing for the competitive exams.
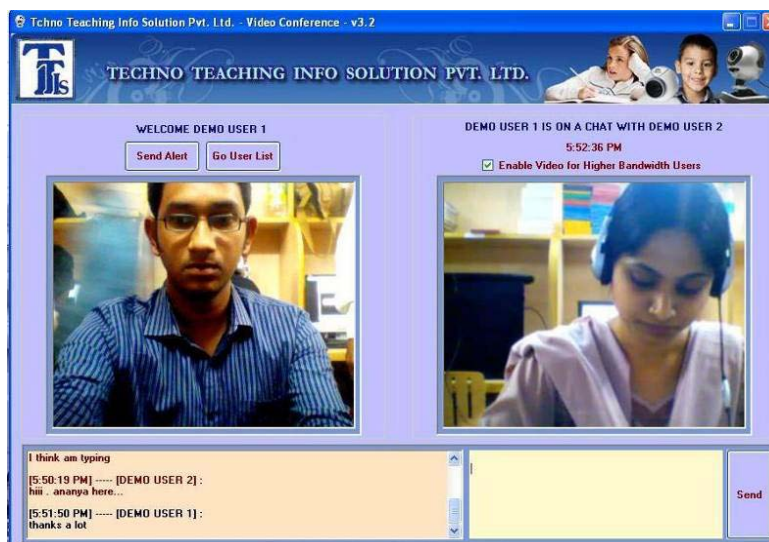
Figure 11: InTuition Online Teacher Student Video Chat Forum - West Bengal

4.3.8. e-Governance for the Department of Education

In addition to the aforementioned initiatives, the Department of Education has also been working for computerization of the department so that it can provide electronic services to the citizens. All the district headquarters have been provided with District Computer Centers, with 50 computers in each centre. The aim of establishing these computer centers is to impart computer education to school children predominantly in the rural areas. Five District Computer Centers have started functioning at Paschim Medinipur, Hooghly, Malda, Uttar Dinajpur, and Dakshin Dinajpur.

A detailed project report has been prepared by the State for introducing e-governance as a part of State e-governance program under National e-governance Plan. The report is currently being reviewed by the Department of Information Technology, Government of India.

To ensure better communication with the districts, the Department of School Education, its Directorates, and the offices of the District Inspectors are being computerized. Various activities like educational statistics for school education in the state, management of schemes, monitoring of funds, archiving government acts, orders for references, and management of court cases have been computerized to a large extent.

4.4. Key Learnings

West Bengal enjoys the advantage of being one of the emerging IT hubs in the country with significant potential for harnessing ICTs for education. It has the added advantage of a wide reach of ICTs, since it is one of the few states where successful PC penetration has been achieved at the village level through the empowerment of the local self-government bodies, the gram panchayats. PCs are now available to all 210 gram panchayats across 19 districts of the state. However, several

critical factors need to be addressed to ensure successful integration of ICTs in the education system:

- Capacity building is one of the key areas where there is a scope of development. There is a lack of a trained pool of teachers, who can efficiently train the students and appreciate the aligning of ICT with the regular curriculum.

- Infrastructure in schools remains a key bottleneck; existing infrastructural facilities in schools need to be improved for the successful and unhindered implementation of ICT.

- The curriculum needs to be updated and new mode of learning needs to be promoted in order to keep pace with changing requirements.

- An effective partnership with private players with clearly defined roles and responsibilities can ensure better management and can support the government initiatives efficiently.

- Better coordination between different government departments, with responsibility for IT and education initiatives would result in more streamlined and effective implementation of major schemes.

- Since ICT is new to rural areas it will be appropriate to establish institutional networks at panchayat samiti (local self government body) level to facilitate in-service training of teachers and panchayat samiti officials to ensure optimal utilization of ICT resources. State institute of education and training could provide leadership at the state level which can have network with districts and district level lead institute can develop network with panchayat samities. These institutions, if provided with adequate funding and professionally trained staff, can effectively take responsibility of capacity building at different levels to ensure absorption of ICT inputs.

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West Bengal Electronics Industry Development Corporation Limited, WEBEL
www.webel-india.com

"Government of West Bengal Conquers Digital Divide with help from IBM"
www-935.ibm.com/services/us/imc/pdf/cs-west-bengal.pdf

State Council for Educational Research & Training, SCERT, West Bengal
www.scertwestbengal.org

IL & FS Education and Technology Services Limited
www.ilfsets.com

Intel Education Initiative, West Bengal
http://cache-www.intel.com/cd/00/00/42/17/421739_421739.pdf

National Institute of Information Technologies, NIIT
www.niit.com

Media Lab Asia, Department of IT, Government of India
http://medialabasia.in/index.php?option=com_content&task=view&id=35&Itemid=38

Webel Informatics Limited: http://www.webel-india.com/webel-informatics.html

4.6. Stakeholders

The details of persons contacted for the Case Study are given in the following table:

Name	Designation	Organization
Rathindranath De	Director	State Council of Educational and Research and Training (SCERT)
Debojyoti Basu	Assistant Manager	IL&FS Education and Technology Services Ltd.
Pranata Dhar	Officer	IL&FS Education and Technology Services Ltd.
Biswajit Das	District Coordinator	IL&FS Education and Technology Services Ltd.
Sidhartha Roy	Executive Director	West Bengal Electronics

		Industry Development Corporation Limited
Suvendu Chatterjee	Managing Director	Techno Teaching Info Solution Pvt. Ltd.
Pranab Rai	Head Master	Achana High School, Achana, South 24 Parganas, West Bengal
Mritnunjaya	Teacher, Computer Division	Achana High School, Achana, South 24 Parganas, West Bengal

4.7. Annexure II

School Visit: Achana High School, District South 24 Parganas

Introduction of KYAN has been a successful initiative in the state with the device reaching schools in 17 out of 19 districts in the state so far. Achana High School is one government-aided school in the district of South 24 Parganas with around 800 students, where KYAN has been running.

The selection of schools for the deployment of KYAN is based on the number of children from disadvantaged communities in those schools. Achana High School has more than 90% of the children belonging to backward communities and hence as per the recommendations of the District Administration two KYANs were installed in the school in August 2009.

Figure 12: Front View of Achana High School

This was preceded by a meeting with Heads of Schools to gauge the interest of the Head Masters in the initiative and a preinstallation survey was undertaken by the IL&FS team. It is believed that the success of running KYAN in a school predominantly depends on the will of the Head of the Institution. After the installation of KYAN in the school along with a UPS for backup power supply, six teachers from the school were provided training to use the machine. Among the teachers

selected in the training one has been selected as an ICT coordinator for the initiative. This selection has been done by the Head Master on the basis of interest and previous knowledge of computers. The job of an ICT coordinator is to coordinate and encourage teachers to effectively utilize KYAN and to train other teachers in the school as well.

Figure 13: Achana High School

The school with its two devices has managed to provide 2–3 KYAN classes to a class in one day. The KYANs have been kept in rooms called the Audio Video (AV) rooms. As per the Head Master, the KYAN classes are extremely popular with the students, and students often prefer to attend a KYAN class as opposed to a lecture-based class. This holds true not only valid for the high achievers in the class but also the academically weaker section of the class. KYAN classes have brought interest in the students and have increased class participation and student attendance.

Hence KYAN has improved the learning experience of the students and has brought more interest in the students. However, there are certain issues involved with the use of KYAN. One major concern is the security of the machines; the Audio Video rooms have to be secured to keep the machine safe as there have been instances where the machines have been stolen. Given the poor physical infrastructure in rural school, this is a significant challenge. Further lessons are in English and IL&FS has been working on translating the lessons to Bengali (local language of West Bengal) and Urdu. According to the teachers, the classes will be much more helpful if they are in Bengali. There are also several issues with the comprehensiveness of the content and several teachers felt that some topics were not covered in adequate details. Moreover, the set of 1,090 lessons does not always match to the exact lessons in the West Bengal School Education Curriculum. The technical support has also been a cause of concern as the schools are situated in very rural areas and getting local technical support is nearly impossible and hence in case of any technical problem the school has to depend on the support from IL&FS for troubleshooting, which sometimes takes more time than expected.

Figure 14*: A KYAN machine in the AV Room – West Bengal*

Going ahead, IL&FS aims to provide soft skills training to selected teachers to enhance their performance and add more value to the classes. Apart from the soft skills, the teachers will also be provided training on using the KYAN to develop their own content. The possibility of developing their own content also makes the model self-sustaining after the project time of 3 years. Although KYAN success varies from school to school, Achana High School has been leveraging ICT in education effectively through the KYAN.