

## Public Private Partnership – Participatory Interventions to Improve Primary Education in OPEPA<sup>1</sup>

*A group of children in maroon and white school uniform sat in groups with their desks arranged in neatly in rows. Amid whispers and giggles, they look at the computer screens in front of them, sometimes repeating whatever is being shown on the screen. This is the scene in a school that has adopted Computer Aided Learning (CAL) programme as part of its curriculum. “They are not scared of computer anymore” says the headmaster Nayak with satisfaction and confidence. This is the method that Orissa Primary Education Programme Authority (OPEPA) is struggling to improve computer literacy in 1300 primary schools in Orissa through multimedia pedagogical tools.*

This is an instance, where OPEPA has won presidential award for taking initiatives to improve learning levels in primary schools with interventions at multi levels. This is a joint work by Orissa Government agency, Ajim Premji Foundation and NIIT in which all these partners are pooling in their funds, network of resources, skills and infrastructure to implement a programme of this nature. Primary education is a sensitive as well as complex in nature. Education is a state jurisdiction in India and Government is solely responsible for literacy rate in the states. The 'cluster' approach adopted in Orissa can be replicated in other states, across different languages of instructions. This cluster approach can be used to raise school drop outs rates as well as learning standards.

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## **Introduction**

Millennium Development Goal (MDG) number two has set the goals to achieve universal primary education by 2015. The goal targets to achieve are 1. Higher net enrolment ratio, 2. Low dropout rates, and 3. Increased literacy rate among 15-24 year olds. To achieve these goals, several initiatives were initiated at national levels such as Sarva Siksha Abhiyan (SSA), National Programme for education of girls (NPEGEL) and Kasturba Gandhi Balika Vidyala (KGBV). India, being a developing nation, struggles with challenges in its primary education and strives to reach 100% literacy. Universal Compulsory Primary Education, with its challenges of keeping poor children in school and maintaining quality of education in rural areas, has been difficult to achieve. All levels of education in India, from primary to higher education, are overseen by the Ministry of Human Resource Development and heavily subsidized by the Indian government, though there is a move to make higher education partially self-financing.

During the eighth five-year plan, the target of "universalizing" elementary education was divided into three broad parameters: Universal Access, Universal Retention and Universal Achievement i.e., making education accessible to children, making sure that they continue education and finally, achieving goals. As a result of education programs, by the end of 2000, 94% of India's rural population had primary schools within one km and 84% had upper primary schools within 3 km. Special efforts were made to enrol SC/ST and girls. The enrolment in primary and upper-primary schools has gone up considerably since the first five-year plan. In 2002/2003, an estimated 82% of children in the age group of 6-14 were enrolled in school.(MIS report from OPEPA, available with the department). The Government of India aims to increase this to 100% by the end of the decade. To achieve this Government launched Sarva Shiksha Abhiyan(SSA). The Sarva Shiksha Abhiyan(SSA) is a flagship programme of the Government of India for achievement of universalization of elementary education in a time bound manner, as mandated by the 86th amendment to the Constitution of India making free and compulsory education to children of ages 6-14 a fundamental right. The programme aims to achieve the goal of universalization of elementary education of satisfactory quality by 2015.

## **OPEPA Organization Structure**

Exhibit 01 shows organization structure for OPEPA. This organization functions directly under Chief Minister Office (CMO), but day to day operations are monitored and controlled by Chairman, who happens to be the Chief Secretary as well. The roles and responsibilities of different positions are mentioned in Exhibit 02.

The known bureaucracy in a government department has been negated to a large extent by forming a cluster and fixing responsibilities for each and every government roles. Even though we have different partners and interventions at different levels, still the accountability lies squarely with the Government agency, viz. OPEPA. Hence, the organization structure and roles and responsibilities defined pin point the activities that need to be carried out by different officials. The Key Performance Indicators (KPIs) are aligned with responsibilities so that annual increments and promotions are decided based on achievement of these KPIs.

## **Where It Started**

A lot of money has been spent in different five year plans after independence trying to improve the quality of education and reducing dropout rates in primary education in Orissa. The situation is not much different in many of the states in India as well. Still the quality of primary education in Orissa is quite bad and below expectations. However, the education secretary said, "it would be wrong to say that the quality of primary education is poor and it cannot improve further. On the contrary, I can see a change in the future as many good things are happening in the school when I visited them. It seemed that the teachers have the zeal but they lacked focus, guidance and support". This statement summed up the objective of the CAL programme initiative in Orissa.

There are decent class rooms but no proper monitoring system. The initial assessment showed that the reason for high drop out in the school was not because of quality of education alone but due to the fact that they lacked basic interest in education. The pedagogical tools, contents did not interest students and the parents used the excuse to send their children to the fields for harvesting. As a result the dropout rate in 2003 was as high as 32% among the age group of 10 to 11 year children. The education was free or subsidized, but this does not generate the interest and attention that is required make children go to schools. Even mid-day meal schemes also failed to

attract students to schools. Mid-day meals along with quality of education have to go hand in hand to improve the dropout rate.

Another point in consideration was the quality of teachers. They were not trained and this attributed to the state of primary education. Mere education will not make a good teacher; rather ability to make the class room interesting, ability to deliver in the classes with proper pedagogy will improve attendance in the class. The mandate given to teachers was to complete a syllabus, but there was no focus to find out the training needs of the teachers and improve their communication abilities. In addition to that teachers have been given administrative work in the schools which do not leave enough time to prepare for the classes. Sometimes they even skip their regular classes so that they can attend to administrative load.

### **Turning It Around**

To start with it was decided to set objectives for the initiatives and monitor its progress against these objectives. Under Sarva Shiksha Abhiyan (SSA), a component called Innovative Scheme of Education has been introduced. Under this scheme, Computer Aided Learning is one of the major activities which allow installing computers at Upper Primary Schools, equip the computer lab of the schools, provide digital contents on the hard spots of the regular curriculum and train the teachers on Pedagogy & Technology so that they can use these computers as Teaching Learning Material. CAL Programme in Orissa has been implemented in Upper Primary Schools under the banner of Biju Pattanaik Computer Aided Education Programme (BiCEP).

### **Objectives of the Initiative:**

- ✓ To make learning effective and interesting.
- ✓ To generate supplementary materials in digitized form with the help of graphics, animation, voice etc.
- ✓ To bring back the “dropout children” who are unable to complete Upper Primary education due to difficulty in regular course curriculum.
- ✓ To improve retention and quality of education.
- ✓ To empower the Teachers in teaching process.
- ✓ To prepare children to welcome & face future with smile & confidence.

## **Implementation of CAL in Orissa**

The Sarva Shiksha Abhiyan (SSA), the national programme for Universalization of elementary education has correctly incorporated “EDUCATION FOR LIFE” as one of the major objectives.

Under SSA, a component called Innovative Scheme of Education has been introduced. Under this scheme Computer Aided Learning is one of the major activity which allows spending @Rs.50 Lakhs per district per annum.

### **Biju Pattanaik Computer-aided Education Programme (BiCEP)**

The programme was planned for three phases. The Biju Pattanaik Computer Aided Education Programme (BiCEP) was initiated on 5th Sep. 2004 in 600 schools at elementary level of 24 districts of Orissa. The programme was implemented in a BOOT (Build Own Operate & Transfer) basis. The BOOT agency has to purchase & supply Computer Hardware, Software and connected accessories, maintain the hardware & software and provide education services (teachers’ training, refresher training to teachers) in the schools for a contract period of 5 year.

#### **BiCEP PHASE - I**

During 2004-05, BiCEP Phase-I was implemented in 600 Government Upper Primary Schools of 24 districts through BOOT Model for five years by M/s Aptech Ltd. and M/s Educomp Solution Ltd. The contract with the BOOT Agencies is over since August 2009. The BOOT Agency has handed over the Computers & Peripherals to the School Committee. After the closure of BiCEP phase – I, all the Schools have been merged into BiCEP Phase – II. NIIT Ltd. has been assigned to train the teachers on CAL and provide onsite Technical & Pedagogical support to the Schools.

#### **BiCEP PHASE - II**

During 2008-09, BiCEP Phase-II was implemented in more 900 Government Upper Primary Schools of 30 districts through Direct Model where the lab with Computers & peripherals are equipped by OPEPA. NIIT Ltd. has been assigned to train the teachers on CAL and provide onsite Technical & Pedagogical support to these Schools.

#### **BiCEP PHASE – III**

As approved by PAB in 2009-10, BiCEP Phase-III will be implemented in 300 Government Upper Primary Schools of 27 districts in "TURN KEY" Model through Orissa e-Governance Service Limited (OeSL) of OCAC.

### **Procedure Adopted**

The 13th Executive Committee has resolved to form a Sub-Committee to look into the aspect of purchase of computers and its accessories and suggest modalities for comprehensive education policy in Upper Primary School. The State Level Procurement Committee (SLPC), logistic Committee and Curriculum Committee were constituted to formulate the guidelines for Computer Aided Learning at elementary stage by MHRD, Govt. of India. The Committee decided to go for a BOOT model with a five year contract period. Tenders were invited from reputed firms dealing with Computer Education for implementation of Computer Aided Learning Programme in 900 schools of 30 districts of Orissa. The technical bids were evaluated and M/s Educomp Solution Ltd was the lowest bidder. But as the cost exceeds to Rs.50,00,000/-, SLPC decided to involve two firms to implement this programme. Hence, M/s Educomp Solution Ltd. & M/s Aptech Ltd. the 2<sup>nd</sup> lowest bidder were awarded the work in 50:50 ratios. In addition to this SLPC recommended to introduce the above programme in lesser number of schools instead of 900 schools as it is introduced for the first time in Orissa & OPEPA took a decision to operate the programme in 600 schools in 24 districts. Besides, the entire content development work was awarded to M/s Educomp Solution, Ltd.

### **Site Preparation**

The District Project Offices were instructed to select Upper Primary Schools situated in semi urban / urban areas having electricity facility & at least one room with RCC slab and doors & windows for computer lab set up. After the selection of schools, the District Project Offices were equipped the computer labs with earthing, necessary electrical wiring, supply of tables & chairs.

### **Method of Implementation**

The Biju Pattanaik Commuter Aided Education Programme is implemented in Build Own Operate & Transfer (BOOT) model basis. The BOOT Agency has provided the computer hardware &

software & connected accessories in lease rental basis, installed the equipments at the school point and will maintain the equipments for 5 years & hand over the equipments to the school after completion of the project. The agency has also imparted teachers' training on CAL.

**Specifications of Equipments**

Each school is provided with:-

- a) Three Celeron Computers
- b) One Dot Matrix Printer
- c) Three 750VA Line interactive UPS with 60 min. backup
- d) One Anti Virus software per computer
- e) Open Office software
- f) Linux OS (in one computer dual booting with Ms XP)
- g) AMC for 5 years
- h) Insurance for all the equipment for 5 years

**Support to the Schools by OPEPA**

OPEPA takes care that required infrastructure is provided to each and every school where the initiative has started. The Computer Lab of the schools is equipped with computer tables, chairs, electrical wiring & earthing through the DPOs. It also understands that one of the major stakeholders, the teachers, need to have proper knowledge on computer. OPEPA arranges trainings for teachers at the district points. Two teachers from each school were trained for 12 days on different topics such as Introduction to Computers & LINUX operating system, how to work with Open Office.org, how to create folders, saving a file, browsing the file, copy & paste a file etc, how to browse the content based multimedia CDs. Besides this, a teachers' manual has also been provided to all the teachers.

The lease rental Payment for hardware, software & connected accessories is being made by OPEPA in a quarterly basis. Each school has been provided with Multimedia based digital content CDs developed by OPEPA with the help of M/s Educomp Solution Ltd, containing hard spots from the regular syllabus of class-V to VII. In addition, regular monitoring by the DPO staffs, BRCCs & CRCCs through school visit & through the monthly & quarterly feedback reports received from the schools.

**Support to the Schools by the BOOT Agency**

The BOOT agency has a role to play for the success of the CAL programmes. It ensures that each school is supplied & installed with three Celeron Computers, three 750VA Line interactive UPS with 60 min. backup and one Dot Matrix Printer by the BOOT agencies in a lease rental basis. To keep the computers in proper running condition, AMC & insurance of the equipments has been made by the agencies and also the electricity bill of the computer lab & consumables including office stationeries are being provided by the agencies. In addition to these, BOOT agency also ensures that appointments of skilled personnel are done so as to extend educational and technical support to the teachers. One Computer Assistant for 10 schools, one District Manager in each district, two Zonal Managers and one State Project Manager to execute the programme. The BOOT agency has divided the roles and responsibilities of different players. The Computer Assistants at the school level are responsible for the preliminary teachers' training, visit the schools at least 2 times in a month to extend support to the teachers in the computer lab and conduct refresher training for the teachers; the District Managers at the district level is responsible to provide support to the Computer Assistants, teachers and support for maintenance of the computers and coordinate teachers' trainings; Zonal Manager (one Zonal Manager for 6 districts) is responsible to provide immediate hardware / software supports to the schools & manage the MIS for CAL; and State Project Manager is responsible for the successful implementation and monitoring of the programme, reporting to State Project Office and management of the staffs engaged for the CAL programme. It also conduct training programme for teachers of all selected schools for 12 days on computer aided learning & fundamentals of computer and refresher training for the teachers in regular intervals.

**Support to the Schools by Azim Premji Foundation**

Azim Premji Foundation, a voluntary non-profitable organization has also been involved in successful implementation of BiCEP by developing & supplying multimedia content CDs based on the hard spots of regular syllabus in different languages and orienting the teachers on Computer Aided Learning.



**Content Specification:**

42 number of multimedia based content CDs on hard spots of regular syllabus of Mathematics, Science, English & computer literacy for classes - V to VII has been developed by OPEPA through M/s Educomp Solution Ltd & supplied to the schools.

25 number of multimedia based content CDs on hard spots of regular syllabus of Mathematics, Science, English, Grammar & Social Studies for classes - IV to VII has been developed by Azim Premzi Foundation (APF) & supplied to the schools. Beside these, one science CD has been translated in Santali language by APF and circulated to the schools of Mayurbhanj & Keonjhar districts where Santali students are studying.

**Supervision & Monitoring:**

The Programmer & one DEO of each district where BiCEP has been implemented are in charge of monitoring & supervision of the schools. They have been visiting the schools regularly & extending necessary support to the schools. The Pedagogy Coordinators of these districts are also supporting the schools in the pedagogical aspect.

**Impact Assessment Study on Computer Aided Learning**

An Impact Assessment Study was conducted to evaluate the programme in the following aspects -

1. Impact of CAL on school children with regard to enhancement of their interest in school and learning level.
2. Performance of both the BOOT agencies with a detail comparison on their efficiency and support.
3. The quality of the content developed and it's impact on the teaching methodology.

Accordingly OPEPA invited research proposals on “**Performance Assessment Survey on CAL under SSA**” from different institutions. An independent, third party institute named Xavier Institute of Management, CENDERT, Bhubaneswar was selected to conduct the audit. The audit was conducted in 300 sample schools (50% schools) from all 24 districts of Orissa where BiCEP was implemented. Different stake holders like students, their parents, teachers, VEC members, personnel from BOOT agencies, functionaries from the Education Department of Government of

Orissa were included during the audit. The independence nature of the third party helped to reduce political criticism and achieved laurels from many quarters. The results of the audit helped to fine-tune the implementation and improve the literacy rate further.

### **Some of the Major Findings of the Study are as Follows –**

- Both the BOOT agencies have implemented the programme as per the prescribed guidelines.
- The BOOT agencies in collaboration with the District Project office have conducted training programme as per the provision and in most cases the training programme were found qualitative and helped the teachers to learn effectively.
- During the interaction with the children it is observed that the children who were reluctant to come to school are now desperate to come to school even on holidays.
- Creativity in many forms like doing paintings in the computer or preparing different models of computer in thermo cool etc. is visible among the students.
- Students who were low achievers in study are doing better in computer.
- The student strength in CAE schools has increased in many schools.
- Increase in students' interest in study has its manifestation in the form of increased attendance and retention level.
- The responses of the students to a set of attitudinal statements reflect positive attitude towards the computer aided education system.
- Findings reveal that there is improvement in the performance of children in subjects like English, Mathematics and Science which are taught through computers in CAE schools.
- The content CDs used in CAE are well designed to capture students' interest in study.
- Among the subjects taught through content CDs, Mathematics & Science are basically popular among the students.
- The test conducted for the students during the study on subjects like English, Mathematics & Science which are taught to students through computer reveals that the students of CAE schools doing better than non CAE school students.

- Computer as a teaching tool has minimized the task of most of the teachers as it becomes easier to explain the subject matter through visualization & practice.
- Teaching the subjects through computer also helping the lower achiever students to grasp the subjects better.

### **Computer Aided Learning Programme in Direct Model**

The annual budget under CAL is enhanced to Rs.50 Lakh per district from 2008-09 and the CAL Programme has been extended to 900 more Upper Primary schools covering all the 30 districts.

#### **Implementation process**

Based on reports from independent agency, the State Level Purchase Committee (SLPC) suggested for fresh tender regarding the selection of firm and constituted the State Level Technical Committee under the chairmanship of the State Project Director, OPEPA to carry out the entire process of implementation of CAL in new schools. The State Level Technical Committee (SLTC) has divided the whole activities under CAL Programme into three major components and assigned the responsibilities to the competent authorities. Computer labs were set up in the schools, procurement of furniture and the provision of consumables with payment of electricity bills of the computer lab by the District Project Office. Hardware and software were provided to the schools through NICSI. Through selected external agency, digital contents were developed. Also trainings were provided to teachers through qualified trainers.

Upper primary schools having pucca building class room, regular electricity supply, student strength more than 100 and adequate teachers were selected by the District Project Offices. One existing class room of the selected schools was converted to the school computer lab. The lab was been set up by the DPOs with required electrical wiring, earthing, furniture and fixtures. It was also decided that the electricity bill of the computer lab & consumable would be provided by the DPOs. A Terms of reference (TOR) has been signed with NICSI for supply & maintenance of the hardware & software. As per this TOR, the State Level Technical Committee would procure the following items through NICSI for installation at 900 schools.

- Core-2 DUO Desktop computer system (@ 3 per School) with 5 years warranty
- SUSE Linux operating system

- 500 VA wall mount UPS

NICSI has also signed a Service Level Agreement (SLA) with the vendors regarding the supply & maintenance of the hardware & software. It was planned that technical persons would be deployed by the vendors at ten zonal districts to provide technical support at the school point.

### **Digital content development**

It was decided by the SLPC to use the existing digital contents developed by Educomp Solution & Azim Premji Foundation for the 900 new schools. A State Level Pedagogical Committee under the chairmanship of Director, SCERT, Bhubaneswar was formed to initiate the process of developing digital contents on hard spots. The committee was empowered to do the required modification in the existing digital contents, identify new hard spots and support the process to develop new digital contents. It was also decided by the SLPC to collect content CDs developed by other States, private agencies working on this issue and web portal (if available) and use it after translation / dubbing / adaptation .

### **Teachers' training & onsite support**

Service providers were selected through outsourcing method to provide technological support to the schools along with teachers' training. Required manpower were deployed by the selected firms at zonal districts, district project offices & block level to impart teachers' training and required support for the continuation of the programme.

### **Base line study & Annual Concurrent Evaluation**

As per the process, it was decided that base line study will be conducted by empanelled research organization to evaluate the achievement level of the beneficiaries of all 900 schools. Annual Concurrent Evaluation Process will be adopted to track the improvement in learning achievement level due to implementation of CAL in schools.

### **Monitoring & supervision**

State Level Technical Committee constituted different committees for supervision and monitoring of the progress & achievement of the programme. Steering Committee was constituted under the

chairmanship of Commissioner-cum-SPD, OPEPA to monitor the progress & achievement in quarterly basis. State Level Project Monitoring Committee was constituted under the chairmanship of Additional Director, Planning, OPEPA to review the project on monthly basis. District level Project Monitoring Committee was constituted under the chairmanship of the District Project Coordinator to monitor & supervise the programme at school level.

### **Benefits of the approach**

At the time of writing this case, a total of 3120 nos. of teachers were trained on CAL and using it as teaching-learning material. All the BRCCs & CRCCs are being oriented on CAL to give Pedagogical support to the schools (Exhibit 03).

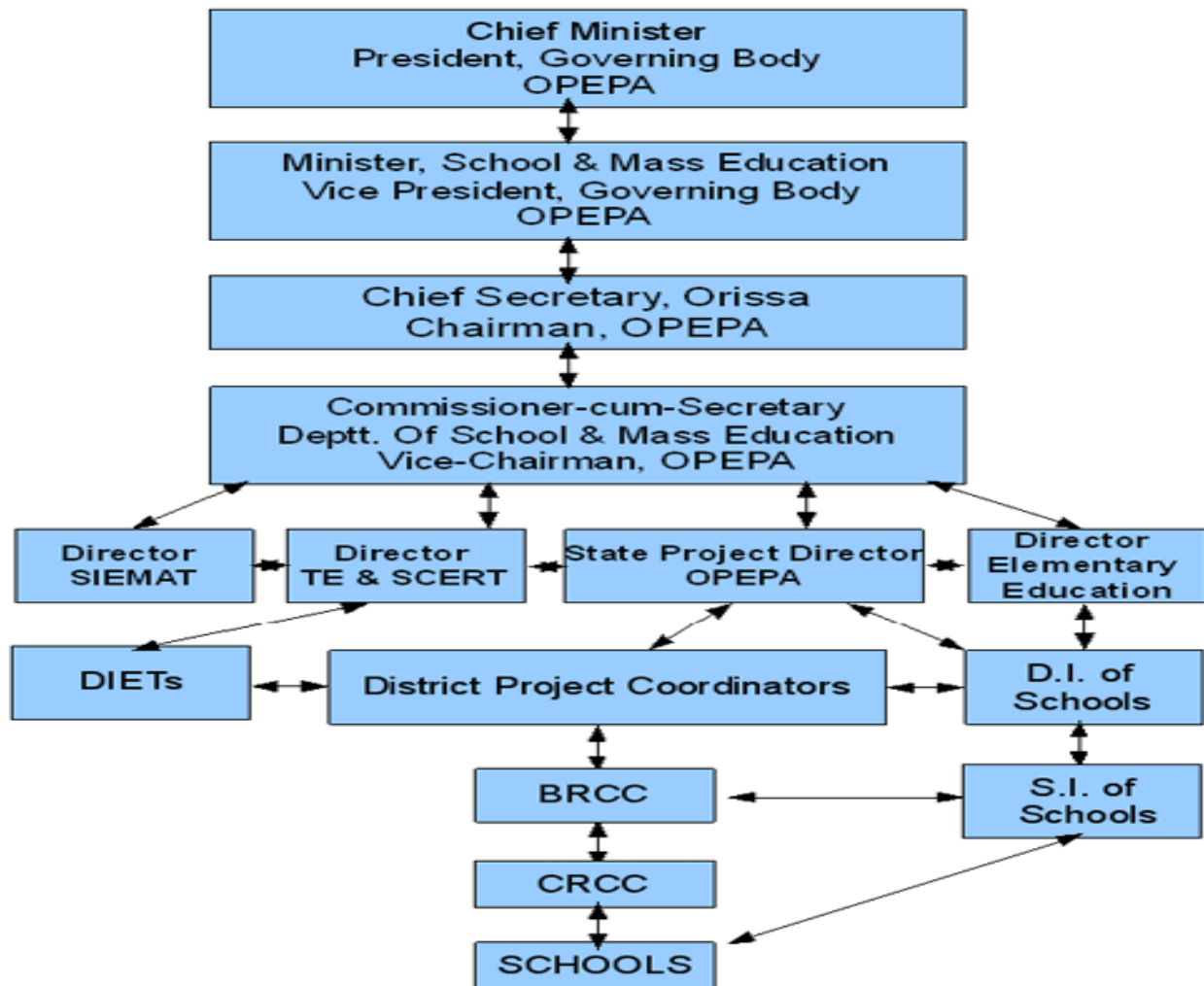
### **Evolving a Demonstrable Model on Computer Aided Learning**

A project “**Evolving a Demonstrable Model to effectively use Teacher Facilitated Digital Learning Material for enhanced learning**” is being implemented on a pilot basis in 60 schools of Nayagarh district of Orissa for the children of classes 3 to 5 jointly by OPEPA & Azim Premji Foundation (APF). Out of 60 schools, 20 schools are of control group where the programme is running in the existing set up, 20 schools are experimental - I group where necessary IT support has been provided along with the input for teachers’ development and the rest 20 schools are experimental – II group where input for over all teachers’ development is being given. The project will run for three years in a pilot basis to achieve an understanding about a demonstrable model for use of technology in Education using the digital learning material.

### **CONCLUSION**

Free and compulsory education to all children up to the age of fourteen years is a Constitutional commitment in India. The CAL Programme is an innovative intervention to create interest & motivation among the students towards education. It also increases the interest and motivation of the Teachers which influences education of students in School. The Programme implemented during 2004 has been able to impact on the enrolment, attendance, and retention rate of students very positively. It has also been successful in improving the performance of the learners. The Programme is in its inception stage and will be extended to all the Schools of Orissa in future.

Exhibit 01: Organization Structure of OPEPA



### Exhibit 02 - Roles and Responsibilities of Different Positions

Roles	Responsibilities
Additional Director (General)	<ul style="list-style-type: none"> <li>- Establishment</li> <li>- Service Matter/Recruitment</li> <li>- Text Book</li> <li>- Court Cases</li> <li>- Uniform</li> <li>- Teacher Appointment</li> <li>- PIO</li> <li>- House Committee</li> <li>- Assembly Question</li> <li>- Printing Work</li> <li>- Management of SIEMAT</li> <li>- Rajya Sabha / Lok Sabha Question</li> <li>- Additional Reading Material</li> <li>- Community Mobilization</li> </ul>
Additional Director (Planning)	IED <ul style="list-style-type: none"> <li>- KGBV</li> <li>- Mid Day Meal</li> <li>- School Sanitation Hygiene Education</li> <li>- Media</li> </ul> Planning and Management <ul style="list-style-type: none"> <li>- Joint Review Mission</li> <li>- MIS (DISE, CTS, GIS, EPIS, IMIS, Data Sharing and Capacity Building, All Presentations, MIS Activities, Computer Aided Learning (System), Reporting and Documentation, HW, SW &amp; Network Maintenance of SPO &amp; DPO, Roll out of NIC portal)</li> </ul>
FA & CAO	Finance and Management <ul style="list-style-type: none"> <li>- Audit</li> </ul>
Deputy Director (Pedagogy)	Pedagogical Improvement (SIG, TLM, RMG, Quality Monitoring, BRC, CRC, Curriculum, Textbook revision, Remedial Teaching etc.) <ul style="list-style-type: none"> <li>- Computer Aided Learning (Quality)</li> </ul>
Deputy Director (TT)	In service training, Induction training, training for teachers, resource persons and preparation of training materials
Joint Director (AS)	Distance education, Access and Alternative Schooling <ul style="list-style-type: none"> <li>- Opening up of new Schools (Primary and Upper Primary Up gradation)</li> <li>- Innovation</li> </ul>
Deputy Director (Girls Education)	Girls Education, co-ordination with national bodies such as NPEGEL and ECCE
State Project Engineer	<ul style="list-style-type: none"> <li>- Civil Work Related to SSA, DPEP, NPEGEL and KGBV</li> <li>- State Project Office Maintenance</li> </ul>

**Exhibit 03 - Increase in Enrolment after CAL Implementation**

Year	Total Student Beneficiary		
	Boys	Girls	Total
2006-07	51,314	42,979	94,293
2007-08	54,914	46,654	1,01,568
2008-09	54,596	47,695	1,02,291
2009-10	1,68,141	1,48,142	3,16,283