

Connected Learning Initiative In Mizoram

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An Initiative seeded by

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The Connected Learning Initiative (CLix) is a technology enabled initiative at scale for high school students. The initiative was seeded by Tata Trusts, Mumbai with Tata Institute of Social Sciences, Mumbai and Massachusetts Institute of Technology, Cambridge, as founding partners.

Collaborators: Centre for Education Research & Practice - Jaipur, Mizoram University - Aizawl, Eklavya - Madhya Pradesh, Homi Bhabha Centre for Science Education - Mumbai, National Institute of Advanced Studies - Bengaluru, State Council of Educational Research and Training (SCERT) of Telangana - Hyderabad, Tata Class Edge - Mumbai, Govt. of Rajasthan, Govt. of Mizoram, Govt. of Chhattisgarh and Govt. of Telangana.

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CLlx in Mizoram

Introduction

Mizoram has one of the highest literacy rates in the country (91.6% as compared to 76% overall in India). It also has a high percentage of enrolments in schools (DISE, 2015) and according to National Assessment Survey (2014), the learning levels among students by the end of elementary school (Class VIII) in Mizoram are at par with the national averages. However, a large percentage of students, especially from under-privileged backgrounds, lack access to quality secondary education opportunities that would enable them to holistically develop self-esteem, prepare for active participation in higher learning in vocational programmes, employment opportunities and receive relevant learning in Mathematics, Science and English, within a value based framework. With the idea to address this gap, Connected Learning Initiatives (CLlx) was proposed as one of the collaborative initiatives of Tata Trusts in North-east and Mizoram.

Overview of CLlx

On October 9, 2015, the Department of School Education entered into a Memorandum of Understanding (MoU) with Tata Institute of Social Sciences for implementation of CLlx in Mizoram. Prior to and following the agreement, various activities have been conducted in collaboration with the Department of School Education and Mizoram University, which is the local implementation partner for CLlx in the state. Tables 1, 2 and 3 highlight all the activities and milestones achieved till December 2016

CLlx offerings in year 1 and 2

CLlx comprises of an introductory digital literacy course titled Invitation to CLlx (i2c), modules for Grade 9 students in Communicative English, Mathematics and Science, online certification modules focused on Teacher Professional Development in English, Mathematics and Science, innovative practices such as Teacher / Faculty Fellowships and promoting development of local leadership and expertise.

Keeping in mind the pedagogic approaches of the National Curriculum Framework and the model ICT curricula, the objective of CLlx is to demonstrate meaningful use of technology and hands-on learning to provide authentic & connected learning experience and deeper understanding of concepts to teachers as well as students.

A detailed outline of the modules and plans in CLlx are provided in Annexure 1. After the initial roll out of modules in year 1, in year 2, the existing modules shall be revised and offered, based on feedback from teachers and our observations in schools.

Table 1 : Progress and milestones achieved in CLlx

S.No	ACTIVITY	TIME
	GROUND PREPARATIONS AND RESEARCH	
1	School technical infrastructure and connectivity feasibility study	November 2014
2	Initial survey of schools to select pilot schools for CLlx intervention	April 2015
3	Implementation partner – Mizoram University: MoU between Tata Institute of Social Sciences and Mizoram University	June 2015
4	MoU between Department of School Education, Mizoram and Tata Institute of Social Sciences, Mumbai	October 2015
5	Selection of 30 schools in consultation with department **refer to Technology Readiness Report for details	October 2015
6	Two rounds of Pilot testing of baseline tools	Oct - Dec 2015
7	Baseline research in 30 intervention schools	Jun - Nov 2016
8	Study on Status of Secondary Education – Mizoram	Feb - Oct 2016
9	MoU with North East India Development Agency (NEIDA), Mizoram	April 2016
	LAB READINESS	
10	Detailed Infrastructure mapping study – Aizawl secondary schools (60)	Aug - Nov 2015
11	Procurement of peripherals and server machines	July 2016
12	Computer lab readiness, installation of servers, peripherals etc **refer to Technology Readiness Report for details	Jul - Nov 2016
	MODULE DEVELOPMENT	
13	Curricular Mapping	May 2015
14	Field Study – Math Group (Curriculum development)	July 2015
15	Field Study – English group (Curriculum development)	February 2016
	SYSTEMIC PREPARATION	
16	First State Advisory meeting	December 2015
17	CLlx Mizoram Launch and HM Orientation	January 2016
18	School Headmasters meeting for discussing time tabling	May 2016
19	Second Advisory Meeting	June 2016

CLlx Implementation

Teacher Professional Development (TPD)



Source: CLlx internal data, 2016

To implement CLlx in schools, first the teachers are trained and oriented on the CLlx modules. Teacher Professional Development/Training includes a face to face component and online engagement through discussions on platforms like the CLlx Community (Discourse) and Telegram. Online platforms are for the continuous engagement and deeper academic and professional discussions with teachers and to support teachers in implementing modules with students. A group of Teacher Educators from Mizoram has also been formed to support TPD of school teachers.

Table 2 : TPD workshops

	Teacher Professional Development (TPD)/Trainings	Time
1	TPD workshop in Mumbai for Subject advisors & Teacher educators (Teacher educators and advisors participated from Mizoram)	14-15 August & 13-14 September, 2016
2	i2C - Digital Literacy (165 teachers)	Feb 2016, April 2016
3	Mathematics - Geometry (34 teachers)	October 2016
4	English (36 teachers)	September 2016
5	Science team (physics) trial	October 2016
6	Science - Physics (32 teachers)	October 2016
7	Teacher groups on Telegram and CLlx community on Discourse platform	April 2016 onwards
8	TPD Design Camp at TISS, Mumbai - 4 Teacher Educators participated from Mizoram	December 2016

Student Module Rollout/Implementation



Source: CLlx internal data, 2016

Student rollout is conducted through the teachers implementing modules with their students. After school lab readiness and detailed discussions with the teachers and headmasters on time tabling, teachers implemented modules in their schools. Invitation to CLlx (i2C) has been implemented in most of the schools (28), however, it could not be implemented in 2 schools because of computer lab infrastructure challenges. English and Math have been implemented in 14 and 16 schools, respectively, so far and implementation will continue after the winter break.

During the implementation, the local team (MZU) re-oriented teachers on modules to make them comfortable to transact with students and also provided all the support to resolve the technical problems.

Table 3 : Student roll out

	Student Rollout	No. of schools (as of 3rd Dec 2016)	Time
1	i2C - 4 Modules i. Introduction / Indic Typing ii. Drawing and Designing – Inkscape iii. Measuring and Observing – Spreadsheet iv. Dynamic Mathematics – Geogebra	28 schools	Aug- Nov 2016
2	Mathematics - 1 Module i. Geometric Reasoning	16 schools started (as of 3rd Dec 2016)	Oct-2016 onwards
3	English - 2 Courses i. English Beginner - 10 lessons ii. English Elementary - 5 lessons	14 schools started (as of 3rd Dec 2016)	Oct-2016 onwards

Teachers' Comments



Challenges faced in implementing CLlx

There has been an overall appreciation for the initiative among the head masters, teachers and students. However, there have been several challenges along the way in implementing the CLlx intervention.

- i. **Teachers' level** – The teachers during training and especially post training, were quite confident to transact the module with students. However there were few challenges that were observed during student roll out.
 - a) Teachers' anxiety for technology or technology based teaching.
 - b) Teachers perception of separate ICT class for any technology/ICT based teaching.
 - c) Teacher's' inability to relate i2C (Digital literacy) to their subject areas and thus their disinterest in rolling out i2C in their schools.
 - d) Expectation from teachers for presence of the local team member during the module roll out in schools.
 - e) Declining confidence in teachers for rolling out modules in school because of the gap between TPD/Trainings and module delivery.
 - f) Delay in module delivery and pressure on teachers to complete the syllabus making teachers unable to accommodate CLlx modules.
 - g) Gap between teachers' understanding of CLlx and their expectations and CLlx approach on integration of technology in curriculum and pedagogy.
- ii) **ICT infrastructure in schools** - The training for TPD and i2C for teachers were done at the computer laboratories in the chosen institute or college, hence there were no infrastructural issues faced in conducting the trainings successfully. However, for the roll out of i2C to students, the implementation team faced several constraints owing to the inadequate infrastructure available at the school. Some of the issues are -
 - a) Challenges in transacting the modules and limited access to computers by students because of high computer student ratio (1:3 - 1:5) in some schools.
 - b) Not enough physical space in the computer lab of some schools to accommodate one entire section of students (average class size is 40).
 - c) Low maintenance of computer labs by schools and authorities (HMs) not sure of provisions for maintenance.
 - d) Non functional computer labs largely due to budget constraint in upgrading and making them functional.
 - e) Constant technical issues arising in relation to the functioning of computer labs.
 - f) Lack of continuous internet connectivity. Modules have to be uploaded on all the machines or servers. Uploading, updating and data retrieval is a manual process.
- iii) **Administrative-**
 - a. Grouping a section of student in two or more groups to access the computer lab is challenging.
 - b. Timetabling - incorporating CLlx modules (block periods) in the existing timetable has been very limited

Recommendations

The experience of implementing CLIX in Mizoram, highlighted many issues that need to be addressed in order to effectively implement an ICT programme in the state, including the CLIX intervention. Some of these issues are strengthening of the overall ICT infrastructure in schools, streamlining policies regarding teacher trainings and use of ICT resources for their professional development, use of open and free software, and adequate allocation and use of budgets.

In this regard, some key recommendations for ICT in Mizoram are:

1. The state government should enhance the existing ICT infrastructure in schools. Specifically, it should:
 - Provide adequate number of computers to schools based on student enrollment, to improve the computer-student ratio at least to 1:2 (at present it is 1:5 or even worse).
 - Replace five and above years' old non-functional machines with new machines of the latest configuration.
 - Ensure the computer lab is of appropriate size to accommodate all students at one time.
 - Ensure internet connectivity to schools for connected learning experience, access to open educational resources and information, easy updating of content and data retrieval.
 - Provide computing device (laptop) for teachers to engage in online professional courses and for the development of educational resources
 - Provide power backup to the computer labs to avoid any data loss, provide uninterrupted learning experience and ensure safety of machines.
 - Provide on-going maintenance of the computer lab.
2. The ICT@School scheme must ensure that part of the in-service training include teachers using ICT facilities in their schools or homes for accessing online courses, open educational resources (e.g. the NROER among other resources) relevant for their subjects, with credits/certificates awarded for completion of such courses and assignments. ICT should also be used for teacher professional development.
3. As the 7th JRM on RMSA noted, the state government should review, with the help of subject specialists and IT experts (including from TISS - CLIX), the relevant IT solutions/software available that can enable students to build their knowledge and skills starting from their existing level towards their grade appropriate level.
4. The School Education department must issue a GO / circular to all schools requesting adequate i.e. at least 30% of the teaching time per subject to be apportioned for computer-aided education. This needs to be done in consultation with school teachers and Principals.
5. The School Education department must submit a state specific costed ICT plan as part of the AWPB submission and seek greater flexibility in terms of use of their budgets.
6. Latest available government data reveals that no allocation was made towards ICT@School within the integrated RMSA for Mizoram (in 2015-16). The three departments of School Education, Planning & Programme Implementation and Finance must convene a joint meeting to understand reasons for non-allocation towards ICT, and ensure an allocation for ICT in the 2017-18 budget.
7. In Mizoram, ICT@School was initially managed by SCERT and the outright purchase method was used. The scheme was subsumed in RMSA w.e.f. 2014-15 and not much has been done so far under RMSA. There is a need to address this gap on an urgent basis.

Annexure 1: Details of CLlx offering 2017-18

Student Offerings



(1) Invitation to CLlx - Digital Literacy course

Invitation to CLlx (i2C) provides learners with operational skills for the new media. In i2C we invite learners for an exemplary connected learning experience on a specially designed course Platform. i2C prepares learners for conceptual and investigative engagements in Science, Mathematics and Communicative English to be offered through CLlx. The skills thus acquired will last for a lifetime. Modules to be offered:

- i. Introduction / Indic Typing
 - i. Drawing and Designing – Inkscape
 - ii. Measuring and Observing – Spreadsheet
 - iii. Dynamic Mathematics – Geogebra
- ii. Programming activities – Turtle
 - 1. Simulations – Turtle
 - 2. Mapping your world – Open Street Mapping

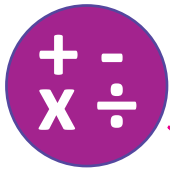


(2) English

The English course aims to improve learners' communicative abilities, especially oral communication skills, through an immersive experience using computer technology, by adopting a task-based, communicative language teaching approach for L2 or second language learners.

Modules to be offered:

- i. English Elementary (30 lessons)
- ii. English Beginners (10 lessons)
- iii. English Pre-Beginner (20 lessons)



(3) Mathematics

CLlx Math aims to change the approach to math learning and teaching at high school level. It focuses on three core aspects to bring about desired changes, with technology as an enabler:

- i. Re-interpreting the Curriculum: Strengthening the intended curriculum by building modules that use parts of the textbook content as the basis for building foundational concepts, strengthening reasoning ability, and understanding core ideas of mathematics
- ii. Transforming the Pedagogy: Learning through meaningful explorations and games, discussion of mathematical ideas

Continuous professional development of Math teachers

Modules to be offered:

- i. Geometric reasoning
- ii. Proportional reasoning



(4) Science

CLlx science focuses on strengthening the fundamentals of scientific learning.. Modules to be offered:

- i. Physics:
 - i. Fundamental idea of motion
 - a. Force and Motion
 - ii. Astronomy
- iii. Life Science:
 - a. Ecosystem
 - b. Cell structure and function
- iv. Chemistry
 - a. Atomic Theory



(5) Values

A course on values will be offered to both student and teachers where in students will work with rich stories and games that expose them to a wide variety of personal and social situations and help them to reflect on how they can make decisions in such situations. Teachers will be also be oriented and trained to reflect on their own values, which will allow them to be more effective role models for children. Teachers will also be equipped to facilitate values learning sessions with children in a way such that students' ability to independently question and reflect on value dilemmas is strengthened.

Teacher Professional Development

Continuous professional development of teachers through blended mode of learning and continued engagement through Communities of Practice (CoP). Formal credits and certification courses to be offered from TISS for teachers.

- i. 6 credits course (Foundation and Subject)
- ii. 17 credits course (Foundation, Subject, Elective & Action Research)

Teacher/Faculty Fellowships

CLIX offers Teacher/Faculty Fellowships for faculty from colleges, University Departments and teachers from schools involved with teaching Mathematics, Science, English, Technology and teacher education in the state of Mizoram. The Fellows will be placed at TISS Mumbai to work with CLIX curriculum development teams to contribute to the design and development of modules. The fellowship will provide an opportunity to work on new and emerging ideas in technology integration into curriculum and teacher professional development.

Develop Local Leadership and Expertise

For long term sustainability, TISS and partner institutes will share their expertise and build the capacities of the local groups to develop local leadership in the development of technology integrated curriculum and teacher professional development.

