Welcome to CLIx
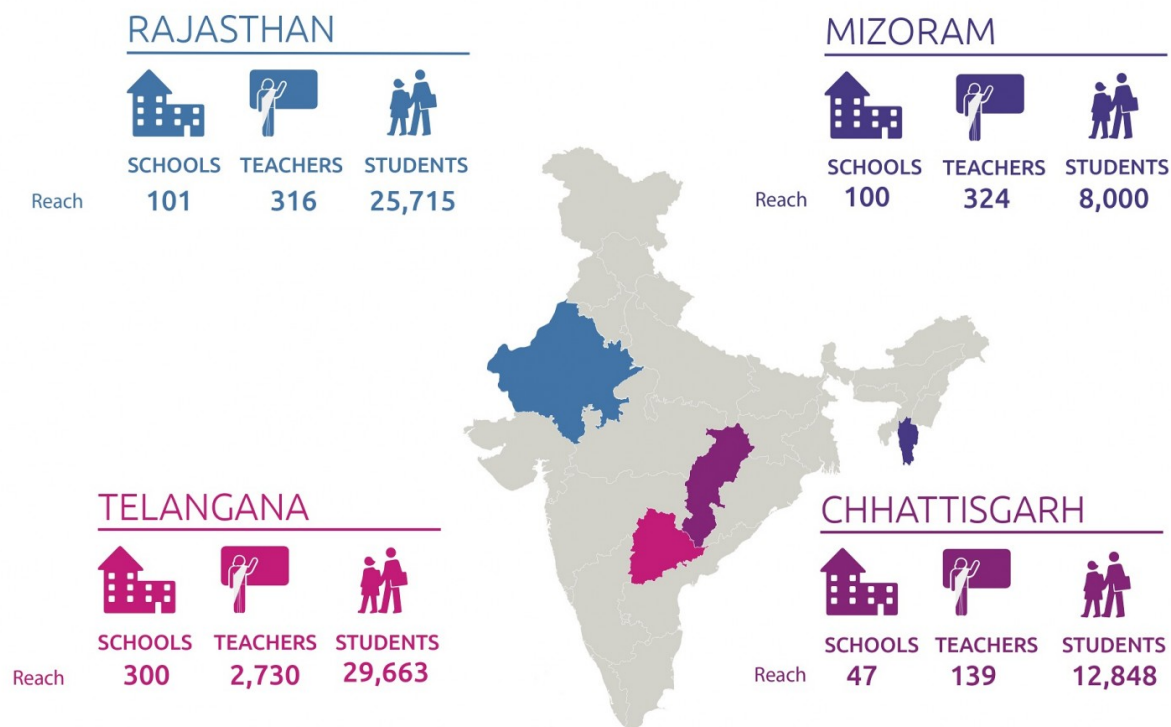
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About CLIx

Connected Learning Initiative (CLIx) is seeded by the Tata Trusts in collaboration with Tata Institute of Social Sciences (TISS) and Massachusetts Institute of Technology (MIT). This project won *UNESCO's prestigious 2017 King Hamad Bin Isa Al-Khalifa Prize & Open Education Consortium's OER Collaboration award for Excellence 2019,* under the category resources, tools and practices. CLIx has been working to improve teacher professional practices and student learning through the use of ICT-enabled Open Education Resources (OER). Driven by Tata Trusts' commitment to serving disadvantaged communities in India, CLIx draws on MIT's and HBCSE's expertise in platform-based, blended-learning and interactive technologies in education, and TISS' experience of impactful field action research program for underserved and marginalized communities in school and teacher education to ensure equitable access to educational technology and opportunities to improve learning outcomes.

RAJASTHAN

Reach

SCHOOLS	TEACHERS	STUDENTS
101	316	25,715

MIZORAM

Reach

SCHOOLS	TEACHERS	STUDENTS
100	324	8,000

TELANGANA

Reach

SCHOOLS	TEACHERS	STUDENTS
300	2,730	29,663

CHHATTISGARH

Reach

SCHOOLS	TEACHERS	STUDENTS
47	139	12,848

* As on 30 Nov 2019

Figure 1: Reach of CLIx in various states of India

CLIx offers high-quality interactive and technological enabled STEM (Science-Technology-Engineering-Mathematics & Communicative English) resources to secondary school students, professional development for their teachers and support to maintain and use ICT labs in school. Teacher Professional Development is available through professional communities of practice and the blended Post Graduate Certificate course in Reflective Teaching with ICT. Resources for students have been designed to be interactive, foster collaboration and integrate values and 21st century skills, aligned to the pedagogic vision of the National Curriculum Framework 2005. These are being offered to students of secondary government schools in Chhattisgarh, Mizoram, Rajasthan and Telangana in Hindi, Telugu and English, in close partnership with the state governments. The initiative has partnered with the governments of Rajasthan, Mizoram, Chhattisgarh, and Telangana to work in government high schools with students and teachers. It has also collaborated with a number of organizations for curriculum development and implementation. These include Eklavya (Bhopal), Homi Bhabha Centre for Science Education (Mumbai), Mizoram University (Aizawl), Tata Institute of Fundamental Research (Mumbai), National Institute of Advanced Studies (Bengaluru), State Council of Educational Research and Training, Raipur (Chhattisgarh), State Council of Educational Research and Training, Hyderabad (Telangana), Tata Class Edge (Mumbai), and the Inter-University Centre for Astronomy and Astrophysics (Pune).

Video 1: Overview of CLIx

The CLIx modules integrate select concepts, topics or skills from subject areas, chosen in collaboration with teachers, teacher educators and academic experts through state-wide workshops and consultations that were conducted in 2015-2016. Guided by the philosophies of constructivism and constructionism, CLIx offers students opportunities to work in a hands-on manner to construct knowledge in active ways, and enhances the prospects of professional development for teachers in their respective subjects through the use of ICT. This document provides an overview of the vision and journey of CLIx. It gives a glimpse of technology in CLIx, the pedagogies and approaches of the student and teacher modules in Digital Literacy, English, Mathematics, Science and Values, the implementation processes, continuous teacher professional development, collaborations and partnerships that have enabled the presence of CLIx in the Indian schoolrooms and the action research accompanying and supporting the program. In short, it is the story of the birth and growth of CLIx over the last few years of its implementation.

Objectives

CLIx aims to develop the skills and competence in young adults in general and high school students by focusing on a process-oriented pedagogy that supports critical and analytic thinking, active learning, peer collaboration and deeper conceptual learning, which can prepare them for the challenges they will face in work, life and citizenship in the 21st century.

The specific objectives of the CLIx program are:-

1. Offer curricular resources in Digital Literacy, Communicative English, Mathematics and Science, with meaningful use of technology through which active, interactive and collaborative learning for developing higher-order concepts and skills is possible.
2. Support teachers to integrate these curricular resources into their subject teaching through Teacher Professional Development and participation in Communities of Practice (CoPs).
3. Implement the program at scale, adopting an action research approach, reaching the target students in government schools located in underserved areas.
4. Adopt an ecosystem approach to implementation, to change teaching-learning practices within schools, to leverage and build on existing programs of the State that can enable wide-scale adoption and integration of the program.
5. Research, monitor and evaluate the program continuously and contribute to academic scholarship on meaningful uses of ICT for education in developing contexts.
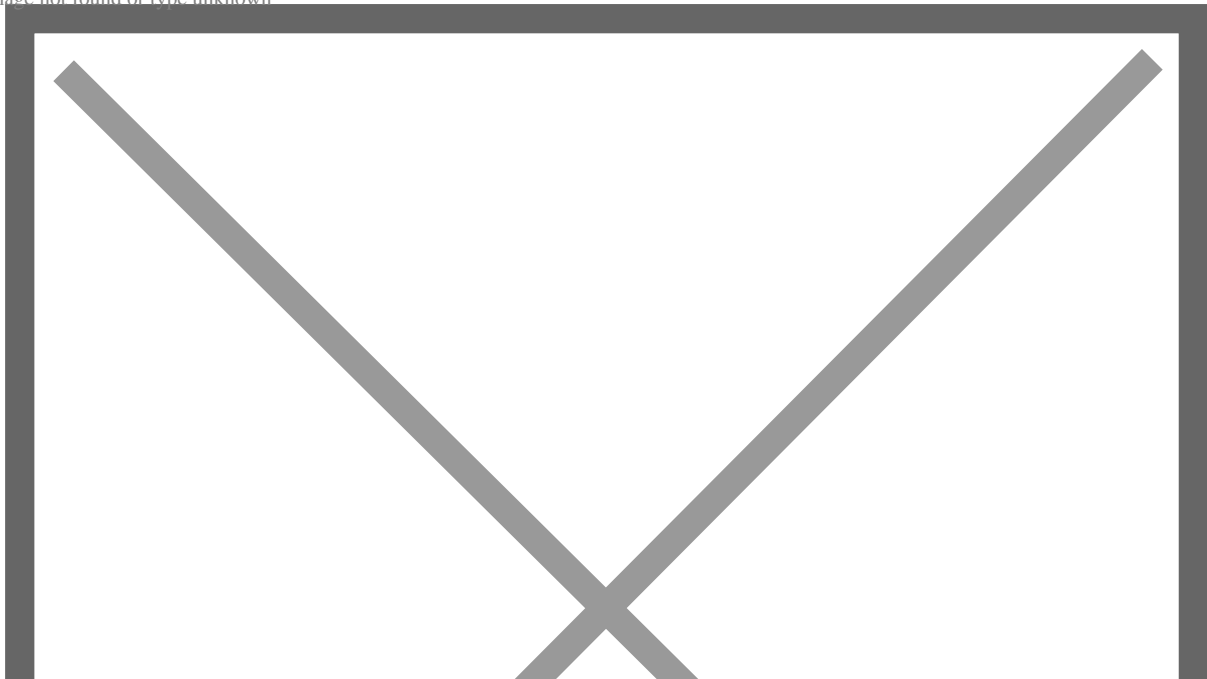
We invite you to join us on this journey!

CLIx Model

There are three key components of CLIx model

1. CLIx for students
2. Teachers' Professional Development
3. CLIx Platform

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CLIx for Students

The resources for the students' modules have been developed through a Design-Based Research (DBR) approach, comprising multiple iterations in design and content that are derived from field observations. The student modules include several *critical innovative uses of technology*, to create interactive, media-rich experiences and authentic hands-on learning opportunities that can enable students to be creators and not mere consumers of content. This is a paradigmatic shift from trends in which technology is deployed to either teacher-proof curricula, or micro-manage teachers. The modules use a combination of digital and non-digital tools and low cost, locally available materials for lab activities. The topics of the modules are mapped to the state curriculum and selected based on hard-spots. Relevant research literature relating to the topics were drawn upon. Feedback was sought from teacher educators and subject experts from state governments before the contents were authored and reviewed multiple times for Quality Assurance. ICT has been used to enhance learning and make it an active process through interactives, games, simulations, and tools. This is supported by feedback from teachers in real-time. Each subject module in CLIx for students - Digital Literacy, English, Mathematics, Science and Values - adapts domain-specific pedagogies to these pedagogical pillars to help students become critical thinkers and creators of knowledge. The pillars have also guided the design of technology tools, interactives, and the implementation process to ensure a rich learning experience for students and teachers alike.

The CLIx Pillars

Figure 3: Pedagogical Pillars of CLIx

Creating an authentic learning context

Creating collaborative learning spaces

Creating safe spaces to learn from mistakes

The pedagogical principle involved in these module involve approach to constructing an ethos for group learning through access to and interaction within peer group and with expert groups, but there is ample sophisticated consideration for pedagogies for paced learning, individualized support, and development, where teachers can use these modules in a nonlinear way to address the diverse need of learners. This pedagogical approach enhances opportunities for hands-on learning and experimentation, new pedagogical affordances for investigation, inquiry, and reflection, revision and assessment, and enables access to knowledge, content and experts and communities of peers and practitioners.

Following is the list of modules that are being used:

- **Introduction to CLIx:** Indic Typing, Spreadsheet, Inkscape, Mind Maps and Geogebra.
  (4 modules x 2 weeks/8 periods each)
- **Mathematics:** Geometric Reasoning 1&2 (2 modules x3 weeks/12 periods), Proportional Reasoning (3 weeks/12 periods) and Linear Equations (3 weeks/12 periods).
- **Communicative English:** English Beginner (11 weeks/22 periods) and English Elementary (11 weeks/22 periods)
- **Science:** Motion (5 weeks/20 periods), Sound (4 weeks/16 periods), Astronomy (3 weeks/12

periods), Health and Disease (4 weeks/16 periods), Atomic Structure (4 weeks/16 periods) and Ecosystems (2.5weeks/10 periods).

Note - Each module includes several interactive digital tools and hands-on and collaborative work by students. Each module includes pre- & post-assessment. Please refer here Annexure 1 for more details on the student modules.

CLIx Platform

OERs offer opportunities for sustainable growth in improving the access and quality of education, by enabling free use and repurposing of high-caliber learning materials. They address issues of scale and existing needs in the area of content and instruction. OERs are available free of cost which reduces the cost to create educational resources. Since teachers themselves would mostly by the users to create such resources, the acceptance rate of transacting through these resources would be much higher as compared to resources developed by others. The integration of OERs requires design thinking and design-based research for the development and curation of OER resources. Design thinking is a creative approach to problem-solving, through collaboration and iterative thinking around the design, educators will develop ways of thinking and creating/curating resources. It involves integrating the learner's context, the affordance of technology, play-testing and taking into systemic constraints into designing thinking processes to create meaningful, implementable and contextual resources. Design-based research is a systematic but flexible methodology to design and aimed to improve educational practices and solutions through iterative analysis, design, development, and implementation, based on collaboration among researchers, teachers

Over the years, CLIx has developed a range of high-quality educational resources for high school students and teachers. True to its vision, CLIx has converted these high-quality assets into Open Educational Resources (OERs) and through this portal releasing them under open licenses so that anyone could reuse, re-create, modify and adapt these OERs to varied contexts. We aim, in the process, to be truly free - where we define 'free' as the spirit of freedom and independence to create, learn and grow! Currently, CLIxOERs comprise more than 120 hours of content in the areas of Mathematics, Sciences, Communicative English and Digital Literacy, more than 40 digital interactives games and simulations and teacher support material - all available in English, Hindi

and Telugu languages with both online and offline versions. Apart from the OER resources, the CLIxOER portal also provides insights into the design and development processes as well as the design-based research that went into the creation of these educational resources. Therefore, the portal offers a range of resources for teachers, students, educators, and policymakers. and teacher educators. (CLIx OER to be linked with the section of OERs in Technology chapter)

Note - To understand more about the CLIx OER portal, please refer to this link.