REPORT ON

- **Status of Secondary Education in Telangana**
- **Technology Readiness for CLIx Intervention in Telangana**
- **CLIx in Telangana**

CLI CONNECTED LEARNING INITIATIVE

2016-17

An initiative seeded by

TATA TRUSTS

Led by

RE-IMAGINING FUTURES
TISS

Massachusetts Institute of Technology

CLIx (2017)

TISS/CEI&AR/CLIx/RP1(TS)/21May'18

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; and Governments of Rajasthan, Mizoram, Chhattisgarh and Telangana.

www.clix.tiss.edu

Table of Contents

Preface

The Connected Learning Initiative (CLIx) is the outcome of a collaboration between Tata Trusts (India), Tata Institute of Social Sciences (TISS, Mumbai, India) and Massachusetts Institute of Technology (MIT, Cambridge, Mass., USA). CLIx aims to provide high school students from underserved regions opportunities for participation in quality education through meaningful integration of technology. CLIx is geared to provide engaging, hands-on learning experiences in mathematics, science, communicative english and digital literacy, integrated with value education and skills relevant to the 21st century.

As a platform for innovation in education, CLIx also supports the professional development of teachers, making substantial contributions to teacher education in Indian languages. Research activities and collaborations aim to nurture a pool of professionals from the fields of education, technology and science. Supported by an interconnected network of partners, institutions, public education systems, teachers and learning resources, CLIx is developing a scalable and sustainable model of education, providing students with technology-aided opportunities of deep and authentic learning. In the first phase, these resources are being offered to students and teachers of government secondary schools in the four Indian states of Chhattisgarh, Mizoram, Rajasthan and Telangana in Hindi, English and Telugu .

Challenges facing students from rural areas who manage to reach high school tend to include weak foundations laid in primary years, unavailability of resources in their own languages, isolation, poor access to learning opportunities and lack of qualified teachers, particularly in Maths, Science and English. In this context, CLIx addresses both curriculum content and pedagogical approaches to work with students and teachers to deliver quality solutions at scale. CLIx has reached approximately 1,000 schools and 150,000 students in these four states during 2015-17. With an eye on capacity building, Teacher Professional Development (TPD) courses for approximately 2,700 teachers were conducted during the same period.

Successful implementation of the project could pave the way for expansion not only in terms of schools but also in terms of states covered, subjects and age groups. The future would lie in the replication of the model throughout the country. The two main aspects that are at the core of the CLIx implementation approach are integration of technology and an ecosystem approach for sustainability. Through such an approach, we envision processes whereby communities build and share knowledge with each other. Capacity building of high school students, student-teachers, teachers and teacher educators are an integral part of the sustainability plan. CLIx has partnered with locally invested institutions and groups to utilise their experience and existing resources in optimal ways.

Technology is an integral part of CLIx, and it is being thoughtfully used to design the curricular offerings (modules or courses). For most components of the CLIx offerings, Information and communications technology (ICT) infrastructure is essential. Most government high schools and higher secondary schools have received such infrastructure through the ICT@Schools scheme, now merged with Rashtriya Madhyamik Shiksha Abhiyan (RMSA) of the Government of India. CLIx is using the existing infrastructure wherever feasible and trying to build on it as needed through support from state governments and other agencies. CLIx platforms and offerings are designed to take advantage of technological advancements opening up in future.

Soon after the project was launched, there was a need to comprehensively document and understand the status of secondary education in each of the four states. This was important not only to inform the intervention in each of the four states but to also to help prepare a broader document that would be a useful reference for researchers and practitioners. While much work has happened in the area of elementary education, comprehensive and accessible literature on secondary education in the four states is not easily found.

This report tries to fill the gap. It is divided into three sections. Part one presents the status of secondary education in Telangana by presenting recent trends in provision, enrolment, equity, quality, efficiency and financing of secondary education in the state. This section is based on secondary data gathered from the official websites of and information from District Information System for Secondary School Education (DISE) school-level data for the state, Rashtriya Madhyamik Shiksha Abhiyan (RMSA) planning and appraisal documents, the state governments' budget data on education and secondary education, and other reports. While we have made all efforts to make the report comprehensive, gaps still remaining are on account of lack of availability of data. Part two presents technology readiness for CLIx intervention in Telangana, where we present the gaps in infrastructure and how these have been filled. Part three provides a brief overview of the CLIx intervention in Telangana during the academic year 2016–17 and key recommendations to the state government.

List of Figures

List of Tables

List of Acronyms

BOOT	Build Own Operate and Transfer
CBSE	Central Board of Secondary Education
CSS	Centrally Sponsored Scheme
DISE	District Information System for Secondary School Education
EBB	Educationally Backward Block
GoI	Government of India
GoT	Government of Telangana
GSDP	Gross State Domestic Product
ICT	Information and Communication Technology
IEDSS	Integrated Education of the Disabled at Secondary Stage
JRM	Joint Review Mission
MDG	Millennium Development Goals
MHRD	Ministry of Human Resource Development
NAS	National Achievement Survey
NCERT	National Council of Educational Research and Training
NSS	National Sample Survey
OBC	Other Backward Castes
PSSCIVE	Pandit Sunderlal Sharma Central Institute of Vocational Education
PTR	Pupil Teacher Ratio
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
SC	Scheduled Caste
ST	Scheduled Tribe
SMDC	School Management and Development Committee
UDISE	Unified District Information System for Education
TISS	Tata Institute of Social Sciences
HBCSE	Homi Baba Centre for Science Education
TSTS	Telangana State Technology Services
DEO	District Education Officer

Status of Secondary Education in Telangana

1. Introduction : Setting the Context

Education is a critical tool for the attainment of sustainable growth and development. In this regard, primary education acts as the basic enabling factor for participation, freedom and overcoming of basic deprivation while secondary education facilitates economic development and establishment of social justice. Over the years, liberalisation and globalisation have led to rapid changes in the scientific and technological spheres and have improved the quality of life and reduced poverty. This undoubtedly necessitates school students to acquire higher levels of knowledge and skills than they are given throughout the eight years of elementary education. Also, a crucial stage in the educational hierarchy, secondary education empowers children by preparing them for higher education and the world of work.

Secondary education, as a part of this process of growth and development, not only serves an important transition from primary to higher education but provides key generic competencies that are important across all domains of knowledge. It provides skills for early employment and the foundation for further education. Secondary education is a vital part of a virtuous circle of economic growth within the context of a globalised knowledge economy. According to UNESCO, expanding secondary schooling is "a minimum entitlement for equipping youth with the knowledge and skills they need to secure decent livelihoods in today's globalised world" (Bokova, 2011). Secondary education also helps build social capital by raising the likelihood that citizens will participate in democratic institutions and will join community organisations and engage in politics.

The first part of this report presents the status of secondary education in Telangana. It describes the state context in terms of socioeconomic indicators and then focuses on the education indicators. In October 2016, the state government added 21 new districts, taking the total to 31 districts. Since data was not available in the disaggregated form for the new districts, this report uses data available for the former ten districts.

1.1 About Telangana

Telangana became the 29th state of India, separated from undivided Andhra Pradesh, on 2 June 2014. It has a geographical area of 1,14,840 sq.km. with a population of 3,51,93,978 (2011 census). It is the 12th largest state in the country in terms of both area and size of population. The state is bordered by Maharashtra and Chhattisgarh to the north, Karnataka to the west and Andhra Pradesh to the south and the east.

The population growth rate has decreased from 18.77% in the previous decade to 13.58% during 2001–11. Only 38.88% of Telangana's population resides in urban areas. However, the urban population has grown by 38.12% during 2001–11, as compared with 25.13% in the previous decade. Hyderabad accounts for around 30% of the total urban population in the state (Government of Telangana, 2016a). Of the total population of the state, scheduled castes (SC) constitute 15.44% and scheduled tribes (ST) 9.34%. The sex ratio is 988, which is better than the national sex ratio of 943. However, sex ratio for children declined from 957 in 2001 to 933 in 2011, which is a matter for concern.

Economic context: The advance estimate for the Gross State Domestic Product (GSDP) of Telangana for 2015–16 was Rs. 4.69 lakh crore. The GSDP of Telangana for 2016–17 is estimated at Rs. 6,70,756 crore. Average growth of Telangana's economy at constant prices declined from 9.1% in 2005–10 to 5.7% in 2010–15 (PRS, 2016). The share of expenditure on the

social sector comprised almost 60% of the total expenditure in Telangana during 2010–13. Out of this, expenditure on education was more than 40% in all the districts across Telangana except Rangareddy, where it was 32% (Centre for Economics and Social Studies, 2015). The Human Development Index (HDI) of Telangana rose from 0.343 in 2004–05 to 0.513 in , 2010-11 thus improving its rank in India from 13 to 10. The projected HDI for 2015–16 is 0.663 (Government of Telangana, 2016a).

Telangana's progress in achieving developmental goals and the initiatives by the state government are as follows:

Poverty and Hunger: The state has been successful in reducing poverty levels from 44.2 percent in 1993–94 to 8.8 per cent in 2011–12. However, malnutrition among children remains a challenge. Mission Kakatiya is a flagship programme under which all water bodies will be revived in a phased manner to develop agriculture and reduce rural poverty. The state government has introduced the Aasara pension scheme covering widows, weavers, toddy tappers, old persons and AIDS patients, as well as a scheme to provide monthly financial assistance to beedi workers. The government is providing financial assistance of Rs. 51,000 to needy SC, ST and minority community single girls under the Kalyana Lakshmi and Shaadi Mubarak schemes (Government of Telangana, 2016a).

1.2 The Education Sector

Universal Primary Education: By 2017, 100% Net Enrollment Rate is envisioned to be achieved by 2017. The state has achieved universalisation of primary education, but universal access to education is a bigger problem as children belonging to tribal communities, migrating communities, and homeless children are still unable to avail free education.In order to improve the educational standards of the minority communities, the state government has proposed to start 70 new residential schools throughout the state (Government of Telangana, 2016a). According to Census 2011, the literacy rate of Telangana is 66.5% which places Telangana at 35th position among the 36 states and union territories (UTs) in India, just above Bihar. The female literacy rate is lower than the national average of 65.5 and much lower than the male literacy rate as Table 1 shows.

Table 1: Literacy Rates in Telangana, 2011

Total	Male	Female	Rural	Urban
66.54%	75.04%	57.99%	57.25%	81.09%

Source: (Census 2011)

1.3 Education programmes

Telangana aims to improve the quality of secondary education by removing gender, socio-economic and disability barriers and by providing universal access to secondary education by 2017. To this end, the state has implemented six major programmes. Preliminary information about these programmes is taken from the official websites http://rmsaindia.org/en/ and http://tsrmsa.nic.in/index.html. Some of these programmes received grants in the current financial budget and the details are provided later in this report.

Rashtriya Madhyamik Shiksha Abhiyan (RMSA) is a Centrally Sponsored Scheme (CSS). In Telangana, this project is being implemented from the academic year 2009–10 to 2019–20. The objectives of RMSA are:

- Establishing at least one secondary school within a radius of 5 kms of every habitation
- Achieving 75% access by 2012–13 and 100% access by 2017–18
- Achieving 100% retention by 2020
- Providing necessary physical facilities and teaching and non–teaching staff for every secondary school
- Ensuring that no student is deprived of secondary education because of gender disparity, socioeconomic reasons, disability or any other reasons

The main activities of RMSA are:

- Construction of additional classrooms
- Laboratory
- Laboratory equipment
- Supply of furniture and equipment
- Separate toilet blocks for boys and girls and drinking water facility
- Annual grants
- Minor repair grants
- Major repair grants
- Laboratory maintenance grants
- Library, newspaper grants

Model schools: A model school conceptually should have infrastructure and facilities of the same standard as in a Kendriya Vidyalaya and meet the stipulations on pupil-teacher ratio, ICT usage, holistic educational environment, appropriate curriculum and emphasis on output and outcome.

Objectives

- To have at least one good quality secondary school in every educationally backward block (EBB)
- To have a pace-setting role for these schools
- To try innovative curriculum and pedagogy
- To try innovative evaluation and school governance
- To give access to quality secondary education to talented students in rural areas

Implementation

- Model schools have classes from 6 to 12, each class having two sections with the state syllabus.
- The medium of instruction in these schools is English.
- The three-language formula in the state is followed.
- Special emphasis is placed on the teaching of science and mathematics.
- Teaching methodologies are selected to help students to improve their analytical and critical thinking abilities.
- Along with traditional scholastic subjects, new scholastic subjects like physical education and yoga, moral education, work experience and projects, are implemented.
- The state has 390 EBBs; 317 model schools have been approved; 113 model schools have been constructed; 64 constructions are in progress. In all, 177 model schools are functional.

ICT@Schools: The scheme Information and Communication Technology (ICT) in Schools (ICT@Schools) has been subsumed under RMSA. ICT@Schools was launched in December 2004 and revised in 2010 to provide opportunities to secondary school students to develop their ICT skills and to facilitate computer-aided learning process. The fund sharing pattern is 75:25 between the centre and the state.

Until 2015, 20 schools are approved under the Vocational Education scheme. Under ICT, 4,857 schools were approved in 2010–11. At present, 2,680 schools are functional under the BOOT model, and 2,177 schools are yet to be implemented. However, from 2016–17 onwards, the state government has decided to discontinue the BOOT model and has run the ICT@School directly for the remaining 2,420 schools. (The initial proposal was to cover 5,000 schools under the scheme). The state government is proposing to sanction a sum of Rs. 50 lakh per district for installing computers, training teachers and develop ICT curriculum (RMSA, 2016).

Vocationalisation of secondary and higher secondary education: The objectives of the Centrally Sponsored Scheme (CSS) of vocationalisation of secondary and higher secondary education are:

- To increase opportunities for youth employment by providing competency-based modular vocational courses
- To maintain their competitiveness through provisions of multi-entry and multi-exit learning opportunities and vertical mobility or interchangeability in qualifications
- To fill the gap between educated and employable
- To reduce the dropout rate at the secondary level

The Vocational Education programme has been introduced from 2013 for classes 9 and 10 in 20 model schools in all, with 2 to 3 model schools per district. This programme is at the pilot stage and is planned to be extended to 100 more model schools in the academic year 2016–17). The curriculum has been developed by Pandit Sundarlal Sharma Central Institute for Vocational Education (PSSCIVE), Bhopal, and is designed within the National Skill Qualification Framework (NSQF). The certification given to students is both from the State Secondary Board and the National Skills Development Corporation (NSDC). The course is being offered as a part of the regular course of study. The state government has offered four vocational courses: (1) Beauty and Wellness, (2) Information Technology and Information Technology Enabled Services (IT/ITES), (3) Tourism and Hospitality and (4) Retail. The sharing pattern between the centre and the state for funds released under all the components of the scheme is 75:25.

Construction and running of girls' hostel for students of secondary and higher secondary schools: This is also a Centrally Sponsored Scheme (CSS) that has been implemented since 2009–10 to set up a 100-bed girls hostel in each of the 3,479 Educationally Backward Blocks (EBBs) of the country. An effort to ensure that girls are retained at the secondary education level, this scheme aims to benefit female students in the age group of 14–18 years studying in classes 9 to 12 and belonging to SC, ST, OBC, minority communities and BPL families. There are 396 EBBs in Telangana, and 192 hostels have been approved and sanctioned in 2011–12.

The central government's share of 90% of funds is released to the state government, which releases it to the implementing agencies. The applicable state share of 10% is directly released to the agencies by the state government.

Inclusive Education for Disabled at Secondary Stage (IEDSS): The IEDSS is a CSS launched during 2009–10. This scheme aims at providing opportunity to students with disabilities to complete four years of secondary education in an inclusive environment. There are two major components:

- Student-oriented components such as medical and educational assessment, books and stationery, uniforms, transport allowance, reader allowance, stipend for girls, support services, assistive devices, boarding and lodging facilities, therapeutic services, teaching learning materials
- Other components include appointment of special education teachers, allowances for general teachers teaching special needs children, teacher training, orientation of school administrators, establishment of resource room, providing barrier-free environment

The school education department of any state government or union territory (UT) administration acts as the implementation agency for this scheme, and 100 percent central assistance is provided for all items covered in the scheme. The state governments are only required to make provisions for a scholarship of Rs. 600 per disabled child per annum.

2. Secondary Education in Telangana: Access to Secondary Education

This section provides an overview of secondary education in the state of Telangana in terms of number of secondary schools, enrolment by gender and social group, teacher parameters and so on. The data for 2012–13 to 2015–16 is used to study the trend, but in some cases the latest data may not be available.

2.1 Availability of secondary schools

As per U-DISE (2014–15), there are 13,183 schools at the secondary and higher secondary levels in Telangana. Among these, 7,955 are rural schools and 5,228 are urban. The schools have all management types. The number of schools is the highest in Rangareddy and the lowest in Khammam (Table 2).

Table 2: Number of Schools in Telangana by District

District	Number of Schools
Khammam	868
Nizamabad	929
Medak	1,004
Adilabad	1,013
Mahabubnagar	1,309
Nalgonda	1,420
Karimnagar	1,548
Warangal	1,553
Hyderabad	1,574
Ranga Reddy	1,965
Total	13,183

Source: Compiled from U-DISE Flash statistics for 2014–15 (Figures are for the old districts.)

Availability by type of school management In Telangana, private-unaided schools constitute almost half of all the secondary schools. At the national level, local body schools form only

4.48% whereas in Telangana they comprise the second largest group of schools. Table 3 shows the share of schools according to management type at both national and state levels.

Table 3: Percentage of Schools by Management Type

Management type	Percentage of Schools	
	Telangana	India
Department of Education	8.95	34.21
Tribal or social welfare department	4.1	2.89
Local body	36.24	4.48
Private aided	2.57	16.68
Private unaided	47.44	38.84
Other government managements	0.07	0.29
Central government	0.3	0.90
Unrecognised	0.25	1.06
Madarsa recognised	0	0.43
Madarsa unrecognised	0.08	0.20

Source: Compiled from U-DISE Flash statistics

Availability of infrastructure: Separate toilets for boys and girls, boundary wall, playground, electricity and drinking water are the major components of infrastructure that a school should have, as prescribed by the Right to Education (RTE) Act. Table 4 shows the percentage of schools (U-DISE 2014–15) which have these facilities in place. All the schools do not have separate toilets for girls and boys, which is a matter for concern. About 24% schools do not have playgrounds

Table 4: Percentage of Schools Having Basic Infrastructure

Availability of separate boys and girls toilets		Boundary wall	Playground	Electricity	Drinking water
Girls	Boys				
94.83	80.76	86.56	76.81	96.47	98.22

Source: Compiled from U-DISE Flash statistics

The average number of classrooms in all schools in Telangana is 2.5 at the secondary level and 8.4 at the higher secondary level. Single classroom schools are almost non-existent (0.92%).

Availability of teaching learning equipment: The majority of the schools (91%) have libraries as Table 5 shows. However, the availability of laboratories is disturbing: Only 19.09% schools have science laboratories, 12.76% have computer labs and 15.88% schools have ICT labs. The percentage of schools having other subject labs is less than 5%, except maths where 8.14% schools have maths labs.

Table 5: Percentage of Schools Hav ing Library and Laboratories

Library	Labs							
	Science	Math	ICT	Computer	Language	Geography	Home Science	Psychology
91.39	19.09	8.14	15.88	12.76	4.12	2.26	2.35	1.81

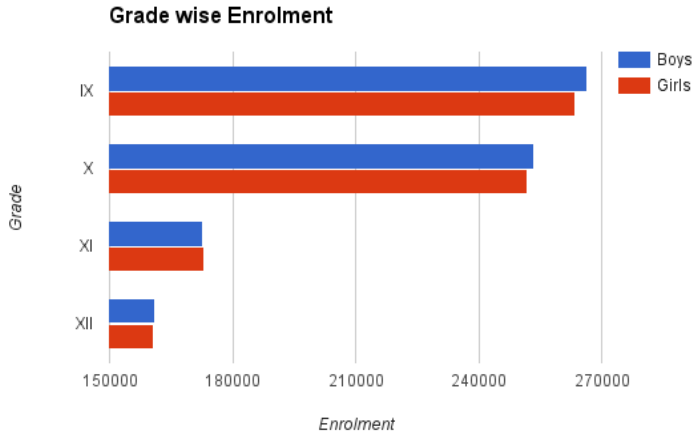
Source: Compiled from U-DISE Flash statistics

3. Enrolment and Equity in Secondary education

3.1. Enrolment in 2014–15

Enrolment in schools by grade: Enrolment trends from class 9 to class 12 during 2014–15 show that enrolment, regardless of gender, is decreasing with every consecutive higher class (see Fig. 1). In all classes, the overall number of boys enrolled is greater than the number of girls. However, only in class 11, the number of girls is slightly greater than of boys. The percentage of children with special needs (CWSN) to total enrolment at the secondary level is 0.69 whereas at the higher secondary level, it is 0.09. This is a worrying fact, and the state needs to address the issue of accessibility of schools for CWSN.

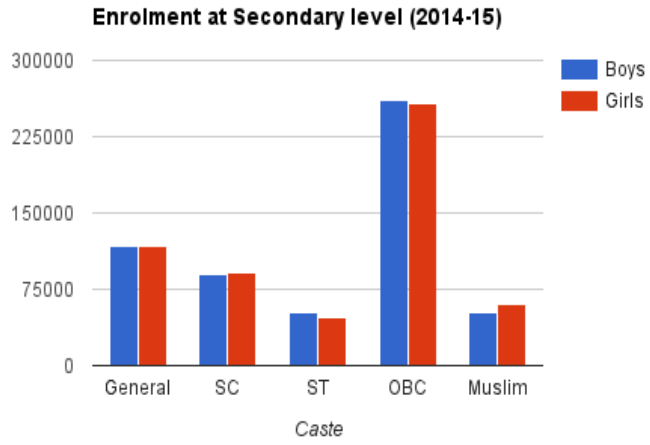
Figure 1: Enrolment in Schools for Classes 9–12



Source: Compiled from U-DISE Flash statistics

Enrolment in schools by social groups: The enrolment in secondary and higher secondary classes in 2014–15 indicates that in the general, Muslim and SC categories, there is not much difference in enrolment between boys and girls. Among ST and OBC, boys have a slightly higher enrolment than girls (Fig. 2).

Figure 2: Enrolment at Secondary Level by Social Category

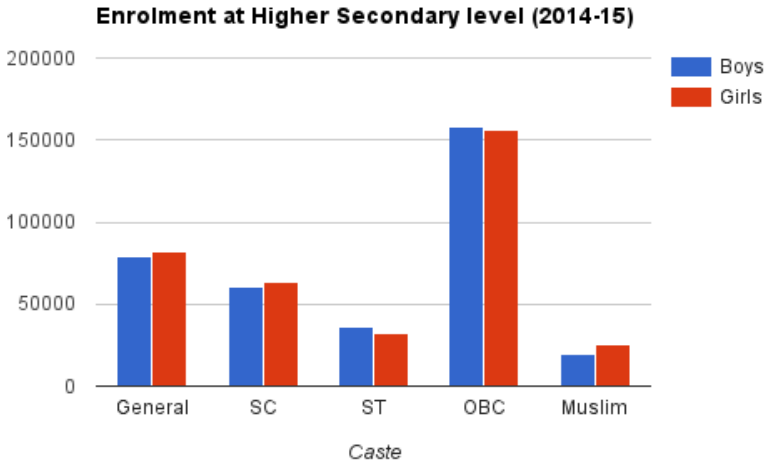


Source: Compiled from U-DISE Flash statistics

Going only by enrolment by category, OBC students have the highest enrolment, followed by general, SC, ST, and Muslim students have the lowest enrolment at both the secondary and higher secondary levels. This distribution persists even at the higher secondary education level

as Figure 3 shows.

Figure 3: Enrolment at Higher Secondary Level by Social Category



Source: Compiled from U-DISE Flash statistics

Enrolment by school location (classes 9–12): The number of girls studying in urban schools is greater than boys, but in rural schools, enrolment of boys is higher than of girls. Overall, enrolment in rural areas is greater than in urban areas (Table 6).

Table 6: Enrolment by Gender and School Location

School location	Boys	Girls	Total
Rural	4,69,946	4,60,522	9,30,468
Urban	3,83,740	3,88,548	7,72,288
			17,02,756

Source: Compiled from U-DISE Flash statistics

Enrolment in schools by school management type (classes 9–12): The enrolment of boys and girls by school management type, presented in Table 7, reveals an interesting fact. Girls constitute almost 60.5% of the total students in private aided schools while in government and private unaided schools, they form only 48% and 47% of the student population, respectively.

Table 7: Enrolment by School Management Type (Classes 9–12)

School management	Boys	Girls
State government	92,286	86,910
Private aided	14,746	22,536
Private unaided	4,89,214	4,39,692

Source: Compiled from U-DISE Flash statistics

The dropout rate for boys is slightly higher than for girls at both secondary and higher secondary levels. However, the repetition rate is also higher for boys than girls. The dropout rates in Telangana at the secondary level are almost the same as the national figures, but at the higher secondary level, the dropout rate for Telangana is 13.43 whereas it is 1.54 for India overall (Table 8).

Table 8: Dropout and Repetition Rates at Secondary and Higher Secondary Levels

		Secondary School			Higher Secondary School		
		Boys	Girls	Total	Boys	Girls	Total
Drop-out rate (percent)	Telangana	17.99	16.86	17.43	13.67	13.20	13.43
	India	17.93	17.79	17.86	1.48	1.61	1.54
Repetition rate (percent)	Telangana	0.04	0.03	0.03	0.87	0.47	0.67
	India	3.32	3.16	3.25	2.01	1.51	1.78

Source: Compiled from U-DISE Flash statistics

4. Quality of Secondary Education

4.1. Strength of teacher workforce and teacher characteristics

Table 9 shows the total number of teachers (including para-teachers) at the secondary level in Telangana. Out of total teachers, the majority are in rural areas, among whom male teachers are almost twice the number of female teachers. In urban schools, female teachers are more in number although not by a significant margin.

Table 9: Number of Teachers by School Location

Rural Area		Urban Area		Total
Male	Female	Male	Female	
51,358	28,685	21,671	26,415	128129

Source: Compiled from U-DISE Flash statistics

The pupil-teacher ratio (PTR) at the secondary level is 25 (U-DISE 2014-15). The quality of teachers can be determined by their academic and professional qualifications.

Teachers' academic qualifications : Most teachers have graduate or postgraduate degrees as Table 10 shows. Among contractual teachers, the number of teachers with postgraduate degrees is almost twice that of teachers with graduate degrees. In terms of professional qualifications, a majority of teachers have B.Ed. or B.El.Ed. degrees.

Table 10: Number of Teachers by Academic Qualification

Qualification	Regular Teachers	Contractual Teachers
Below graduate	2,767	4,06
Graduate	23,588	2,781
Postgraduate	33,113	5,387
M.Phil.	820	88
Ph.D., postdoctoral	0	0
Sub-total	60,288	8,662
Overall total	68950	
Note: This data excludes para teachers.		

Source: Compiled from U-DISE Flash statistics

Table 11: Number of Teachers by Professional Qualification

Qualification	No. of teachers
2-year basic teacher training	1,031
B.Ed., B.El.Ed.	56,580
M.Ed or equivalent	7,177
Other	1,468
Diploma, degree in special education	379
No response	2,315
Total	68,950
Note: This data excludes para teachers.	

Source: Compiled from U-DISE Flash statistics

4.2. Education board and examinations

There are three state education boards in Telangana for school education:

1) Telangana State Board of Secondary Education
2) Telangana State Board of Intermediate Education
3) Telangana Open School Society

The Directorate of Government Examinations is an independent department functioning under the Department of Secondary Education, Government of Telangana. The Department is responsible for conducting the SSC and OSSC public examinations. The Telangana State Board of Intermediate Education conducts examination at the intermediate level. Apart from these, the Central Board of Secondary Education (CBSE) has affiliated to it all Kendriya Vidyalayas, all Jawahar Navodaya Vidyalayas, private schools and most schools approved by the central government of India. CBSE also conducts the final examinations for classes 10 and 12 in March every year for CBSE-affiliated schools. The Council for the Indian School Certificate Examinations also conducts Indian Certificate of Secondary Education (ICSE) and the Indian School Certificate examinations for classes 10 and 12 respectively for its affiliated schools.

4.3. Learning outcomes

Results from state board exams: Analysing the data for performance of students by social category and gender, we find that the overall pass percentage of Ggeneral category students in class 10 is the highest, followed by students from OBC, SC, ST and Muslim communities. The trend is the same with for girls in these respective categories. For boys, the order of pass percentage alters a little bit with more ST students passing than those belonging to the SC category (Table 12).

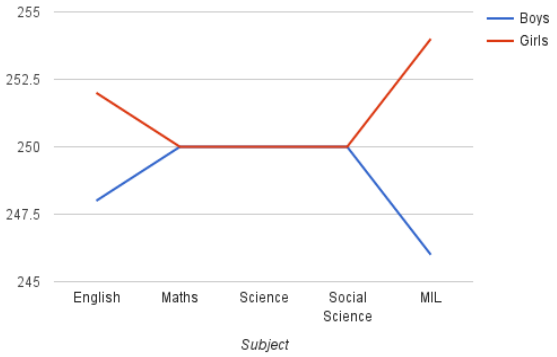
Table 12: Pass Percentage of Students in Class 10 Board Exams (2014–15) by Social Category and Gender

Social Category	Pass Percentage		
	Boys	Girls	Total
General	89.53	90.39	89.98
SC	84.72	85.85	85.29
ST	86.14	83.15	84.73
OBC	88.48	90.17	89.32
Muslim	64.76	76.05	71.39

Source: Compiled from U-DISE Flash statistics

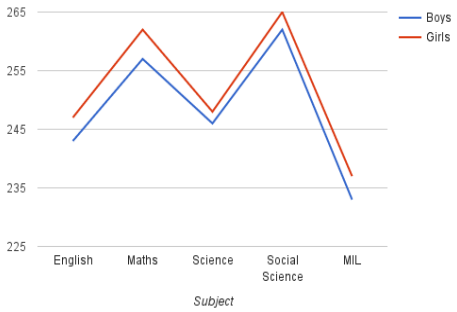
NAS class 10 results (NCERT): The National Council of Educational Research and Training (NCERT) conducted the first National Achievement Survey (NAS) for Grade class 10 in 2015. The performance of students in Telangana students in five subjects, when compared to those at the national data level, is shown in the two graphs given belowin Figures 4 and 5. In English, both boys and girls in Telangana have scored below the national average whereas in maths their scores is are higher than the national average. In Science and Modern Indian Language (MIL), the average scores of boys and girls in Telangana is lesser lower than the national averages, but that those in social sciences is significantly higher than the national scores.

Figure 4: Performance of Students by Gender, National Level, NAS (2015)



Source: NAS, 2015

Figure 5: Performance of Students by Gender, Telangana State level, NAS (2015)



Source: NAS, 2015

4.4 Curriculum and textbooks: Recent revisions

In Telangana, the curriculum has been revised for classes 9 and 10, and new textbooks and teacher manuals have been developed for all subjects. Apart from this, Continuous and Comprehensive Evaluation (CCE) has been introduced for classes 9 and 10 along with a detailed report booklet for each student from classes 6 to 10. According to the Joint Review Mission report (RMSA, 2016), the science and mathematics textbooks comprise activities, experiments and projects that are interesting from the point of view of teaching-learning. The curriculum for vocational education in classes 9 and 10 has been developed by PSSCIVE (Bhopal).

5. School Governance and Management

5.1 Characteristics of school management committees

School development management committees (SDMCs) are constituted in all the secondary schools for classes 9 and 10 as per the composition suggested under RMSA. The SDMC is assisted by two sub-committees, namely, school building committee and academic committee, both headed by the headmaster. Two members of the panchayat or the urban local body are among the members of the SMDC. The members of SDMC are nominated.

6. Financing of Secondary Education

6.1 Uses of public spending on education

In 2015–16, the Rashtriya Madhyamik Shiksha Abhiyan (RMSA) received a recurring grant of Rs. 6,397.54 lakh from the Ministry of Human Resource Development from the central government. This included Rs. 109.275 lakh for Inclusive Education for Disabled at Secondary Stage (IEDSS) and Rs. 1,625.655 lakh for girls' hostels. Out of the 232 girls' hostels sanctioned since 2010, 117 hostels are running successfully.

In 2016–17, the overall estimated budget for school education in Telangana was Rs. 8,575 crore, which is 3.7% higher than the revised budget of 2015–16. The provisions to be made through this budget are:

1) SC, ST and BC hostels to be converted into residential schools in a phased manner
2) Maintenance of sanitation in schools to be entrusted to respective gram panchayats

6.2 Per student expenditures

The average expenditure per student in Telangana, presented in Table 13, shows the vast difference between expenses incurred by students in government and those in private schools across all levels of education.

Table 13: Average Expenditure per Student in 2014–15 (in Rupees)

		Government	Private-aided	Private-unaided
Primary	Telangana	1,021	7,827	12,678
	India	1,111	9,355	10,623
Upperprimary	Telangana	1,512	14,167	16,803
	India	1,869	8,899	13,808
Secondary	Telangana	1,970	9,629	15,617
	India	3,724	9,298	15,785
Highersecondary	Telangana	5,697	16,876	17,043
	India	6,916	14,523	20,740

Source: Compiled from Analysis of Budgeted Expenditure on Education

6.3 Public spending on elementary versus secondary education

It is interesting to observe that the expenditure on research and training in secondary education has increased by almost 182%. However, the expenditure on other components has gone down by 50% in 2016-17. When compared to expenditure on elementary education, it is much lower.

Table 14: Centrally Assisted Plan Schemes Budgeted in 2016–17 for Telangana (Rupees in thousands)

Spent on	Secondary Education		Elementary Education	
	BE 2015–16	BE 2016–17	BE 2015–16	BE 2016–17
Research and training	11,000	2,01,490	–	–
Government secondary schools	20,87,660	12,80,252	–	–
Special Component Plan for Scheduled Castes	4,28,954	2,18,926	4,60,498	–
Tribal Areas Sub-Plan	2,59,484	1,49,822	2,78,566	–
Capital outlay on education, sports, art and culture	10,000	10,000	–	–
Other expenditure	–	–	19,43,436	32,190
Total budget	27,78,198	18,51,490	26,82,500	32,190

Source: Compiled from Analysis of Budgeted Expenditure on Education

6.4 RMSA expenditures at school level

During 2015–16, 2,402 schools had been approved for infrastructure funds under RMSA. As of November 2016, all the toilets approved for construction had been completed; out of 1,111 drinking water facilities approved, 73.1% had been completed; 37.9% of all approved libraries had been completed; and 47.8% of computer labs and 44% of science labs had completed construction.

7. Policy Suggestions

1. Considering the condition of the laboratories in schools, RMSA should allocate more funds for developing them in all the secondary schools. Students at the secondary levels should have access to diverse learning resources, and for that, it is essential to have libraries and ICT laboratories in fully functional condition.
2. The infrastructure of schools should be barrier-free so that children with physical disability can access school. Overall, an inclusive environment in schools will help to increase the enrolment and retention of children with disabilities.
3. Scarcity of funds should not be allowed to delay the civil work for construction of labs, toilets, boundary walls, drinking water, etc. These are vital components of school infrastructure and should be completed without any difficulties.
4. Both vocational education (VE) and ICT are essential from the point of view of students finding employment in industry after completing education. VE and ICT supported learning should be given required financial assistance for effective implementation in secondary schools. Teachers should be trained in ICT in a cluster manner so that they can use this skill in the teaching process and make learning interesting for students. The Department of Education can approach the IT industry for collaborating in this venture where students can be given internship opportunities after their school education and teachers can be oriented on use of technology in education.

Technology Readiness for CLIx Intervention in Telangana 2016-17

8. Overview of CLIx in Telangana

State Council of Educational Research and Training (SCERT),Telangana entered into a partnership with Tata Institute of Social Sciences (TISS) for implementation of CLIx in Telangana. Prior to and following the agreement, various activities have been conducted in collaboration with the SCERT and TISS, which is the field implementation partner for CLIx in the state. In the current third year of the CLIx programme, 300 schools in 13 districts have been selected for implementation.

This part of the report seeks to

- Give a brief overview of the ICT@Schools scheme in Telangana.
- Provide a snapshot of the process followed until now to select the schools for intervention.
- Estimate the type of infrastructural requirements, in addition to the infrastructure already present in the selected secondary schools of Telangana, to effectively run the CLIx intervention.

8.1 ICT@Schools Scheme in Telangana

Recognising the critical role of Information and Communication Technology (ICT) in achieving the country's developmental and educational objectives, the National IT Task Force in 1998 recommended the introduction of ICT infrastructure in schools and recommended that one 1-3 per cent of the budget be spent on providing computers in secondary and senior secondary schools over the subsequent five years (NCERT, 2014)[1] Following this recommendation, in 2004, the government launched its flagship ICT scheme for schools, the 'ICT@Schools', to promote ICT literacy and ICT-enabled learning in government and government- aided secondary and senior secondary schools. Based on the implementation experience of the first six years, the government revised the ICT@Schools scheme in 2010. Within a federal government structure, the central government lays down the broad guidelines for the scheme, while individual states are responsible for its implementation. The cost of the scheme is split in a ratio of 75:25 between the union government and the state governments.

8.2 ICT @ Schools in Telangana

CLIx has leveraged the ICT@schools scheme and chosen to intervene in schools that have received ICT infrastructure under the scheme. Yet, there are differences in the provisions under the scheme and the requirements to effectively implement CLIx. Table 15 shows these differences between infrastructure provisions under ICT@school scheme and technology infrastructure requirements for CLIx intervention. Speakers, camera and headsets, LAN interface, uninterrupted power supply and separate for labs for physics, chemistry and biology are additional requirements for CLIx intervention.

1 ICT@schools evaluation report, NCERT, 2014

Table 15 : Infrastructure Provisions under Revised ICT @ Schools Scheme and Requirements for CLIx.

Requirement ICT Infrastructure Item	Revised ICT@schools Scheme	CLIx Requirements	Remarks
Hardware 	10 PCs or 10 nodes connected through a server per school, printers, projector, etc. Keyboards customizsed for use in the regional languages.	3 CPUs working in case of NComputing or at least 7 computers; keyboards, projector, printer/ or scanner, audio system, camera, headsets , splitters.	Multimedia devices like camera, audio system, headsets are additional requirements for CLIx.
Connectivity 	Broadband internet connection of at least 2 mbps bandwidth or connection of lower bandwidth with plan to upgrade in the future. Wireless links would also be explored.	Functional Internet connection with a speed of at least 2 mbps or 3G. Schools must have LAN interface or at least a possibility of having such a setup.	Internet connection of 3G or above quality is required with LAN interface for CLIx.
Power Supply 	In case of unreliable power supply, a generator as a backup. In case of no power supply, solar generated power.	UPS present with all PCs.	Uninterrupted power supply is necessary forthe CLIx intervention.
Computer Room/ or Lab 	The computers would be installed in one of the Safe rooms in the school for computers. If such rooms are not available, the need can be met from the scheme (RMSA) in case of Government schools.	The school has a Computer lab/ or room. If not, there should be a provision or possibility of creating a space that can be used as a computer lab/room	Most of the schools have a computer lab.
Science Lab 	No provision under ICT@ school schemerequirement	The school has Functional science lab(s) with required equipment and supplies. Preferably three different labs for physics, chemistry and biology.	All the schools selected for CLIx have combined science labs.

The ICT@Schools scheme in Telangana was implemented under BOOT model. It was implemented in two phases: ICT@5000 schools in 2008-09 and ICT@1300 schools in 2010-11. In the first phase, 2,159 schools were covered, and in the second phase, 535 schools. Seven private agencies had partnered with the government for implementation of the scheme.:

NIIT, Educomp, Everonn, ECIL, Terasoft, Social Computers, and Institute of Electronic Governance (IEG). Phase 1 schools completed the first 5 years of the scheme in year 2012–13 and phase 2 schools in 2014–15. Schools covered under ICT Phase 1 and Phase 2 were mostly senior secondary schools. For the CLIx programme, schools covered in Phase 2 and 3 have been selected as the availability of infrastructure in these schools is comparatively better.

9. Role of Technology in CLIx and Available ICT Infrastructure

Technology is the backbone for the implementation of CLIx, which is based on the premise that use of appropriate technology in curriculum development, pedagogy and teacher professional development (TPD) can transform learning experience and improve the quality of education.

The central government initially recommended that states with limited capacity adopt the BOO or BOOT (Build Own Operate and Transfer) model. Under this model, a BOOT operator is responsible for procuring, deploying and maintaining the hardware. After a period of five years, the BOOT operator transfers this infrastructure to the states. Additionally, the BOOT operator is also responsible for supplying the content, establishing smart schools as well as hiring and training computer teachers.

Studies have reported that principals have low levels of awareness of the implementation of the ICT@Schools scheme. This contributes to the lack of infrastructure maintenance and the low levels of technology integration in teacher practice and administrative tasks. To create greater school- level ownership, the states must empower principals to interact with the BOOT operator and hold it accountable for the quality of service provision. This tripartite arrangement between the state government, the BOOT operator and the school principal will create an environment conducive to school- level ownership, planning and accountability. It will enable the state agencies to strengthen their evaluation processes by articulating a clear set of demands from the school. It will also enable principals to encourage teachers and students to be active participants in integrating technology in curriculum transaction and school processes (NCERT, 2014).

Table 16 : Financial Assistance under ICT@schools for Telangana (Rs. in lakh)

Year	Expenditure
2012–13	3,728.81
2013–14	7,808.35
2014–15	0.00
2015–16 (As on 24/ 7July /2015)	0.00
Total	11,537.16

Source: Lok Sabha Unstarred Question No. 2737, dated on 13, March 2013,Lok Sabha Starred Question No. 231, dated 23.07. July 2014; & Lok Sabha Starred Question No. 1471, dated on 29 July 2015,. www.indiastat.com

As evident in Table 16, Telangana has spent around Rs. 11,537.16 lakh on the implementation of ICT@schools scheme. The expenditure includes the unspent amounts of previous years, state share and central share and is based on expenditure reported by states for appraisal.

Refer to **Table 17** in the annexure below : Gaps in ICT Infrastructure in Karimnagar Schools Before CLIx Intervention

Refer to **Table 18** in the annexure: Gaps in ICT Infrastructure in Warangal Schools Before CLIx iIntervention

Refer to **Table 19** in the annexure: Gaps in ICT Infrastructure in Rangareddy Schools Before CLIx Intervention

Table 17,18 and 19 indicates the gaps in ICT infrastructure in the schools selected for CLIx intervention in Karimnagar, Warangal and Rangareddy districts respectively The gaps are mapped for eight key computer hardware specifications necessary for CLIx intervention. The cells marked × indicate the gap absence of specific hardware in the corresponding school and the ones marked √ indicates the presence of the computer hardware in the school.

The ICT@Schools was implemented in Telangana in two batches, in the 2008–09 and 2010–11. This was primarily done through external agencies, who were responsible for maintaining the labs. Once this scheme concluded, most of the labs fell into a state of neglect and disuse. As a result of this, the labs and the computers are in urgent need of refurbishment. The schools were originally issued 3 CPU's and 11 monitors with N-Computing terminals. In order to make the infrastructure suitable for the CLIx intervention, the following infrastructure was proposed to the government of Telangana.

Table 20 : Estimated Budget Summary shared with Directorate of School Education, Telangana for Procurement of ICT Infrastructure

S.No	Device	Specification	Unit Cost (Rs.)	No. Required	Total Cost (Rs.)
1	School Server	Intel Core i 549603.5 GHz 8GB DDR3 1TB	36,788	1	36,788
2	New PC's	Intel Core i3 3.0 GHz 4GB DDR3 500 GB	31,850	15	4,77,750
3	Additional lab furniture	1 table and 2 chairs for each new computer	8,000	5	40,000
4	Headphone with mic	Frequency response – 20 Hz to 20 kHz Impedance – 32 Ohms Output power – 80 mW	550	27	14,850
5	Headphone splitter	3.5mm stereo jack splitter, durable PVC jacket, fully screened, cable length: 20 cm	100	20	2,000
6	LAN router	16 port unmanaged switch	1,500	1	1,500
7	Wireless Router	ADSL2	2,014	1	2,014
8	Cat 5E Cables	200 metres of cat 5E cable	2,000	1	2,000
9	Speakers	2.1 Speakers	1,600	1	1,600
10	UPS	UPS 10KVA with 2 hours battery backup	30,000	1	30,000
				Total Cost	6,08,502

Source: CLIx internal documents

Table 20 shows the requirements presented to the Directorate of Education, Telangana, specifying the number of units of each device required for CLIx intervention and its cost. This infrastructure was proposed by CLIx based on the gap analysis and limitations of existing ICT infrastructure in schools. Out of the proposed infrastructure, the following items were provided to 300 CLIx intervention schools to ensure minimum necessary functionality of computer labs and approximately, 2,000 other high schools were provided with 5 keyboards, 5 mouse devices each and LAN cables.

Table 20a: Summary of items provided to computer labs of selected schools in Rangareddy district

Rangareddy				
Sr. No.	**Device**	**Specification**	**Suggested model**	**No. Required**
1	Server	8GB RAM, i5 processor, 1TB hard disk, DOS		100
2	1 GB DDR2 RAM card	1GB DDR2 RAM cards	Gskill	208
3	2 GB DDR2 RAM card	2GB DDR2 RAM cards	Gskill	82
4	Headphone with mic – 2 terminals	Frequency response -– 20 Hz to 20 kHz Impedance – 32 Ohms Output power – 80 mW	iball - Rocky headset, over-ear head-phone with mic	1060
5	Keyboard	ps2 keyboard	Logitech, Zebronics	200
6	Mouse	ps2 mouse	Logitech, Zebronics	200

Table 20b: Summary of items provided to computer labs of selected schools in Karimnagar district

Karimnagar				
S.No.	**Device**	**Specification**	**Suggested model**	**No. Required**
1	Server	8GB RAM, i5 processor, 1TB hard disk, DOS		100
2	1GB DDR2 RAM card	1GB DDR2 RAM cards	Gskill	240
3	2GB DDR2 RAM card	2GB DDR2 RAM cards	Gskill	200
4	Headphone with mic – 2 terminals	Frequency response – 20 Hz to 20 kHz Impedance – 32 Ohms Output power – 80 mW	iball - Rocky headset, over -ear headphone with mic	2,158
5	Keyboard	ps2 keyboard	Logitech, Zebronics	400
6	Mouse	ps2 mouse	Logitech, Zebronics	400

Table 20c: Summary of items provided to computer labs of selected schools in Warangal district

Warangal				
S.No.	Device	Specification	Suggested model	No. Required
1	Server	8GB RAM, i5 processor, 1TB hard disk, DOS		100
2	1GB DDR2 RAM card	1GB DDR2 RAM cards	Gskill	205
3	2GB DDR2 RAM card	2GB DDR2 RAM cards	Gskill	200
4	Head-phone with mic – 2termi-nals	Frequency Rresponse – 20 Hz to 20 kHz Impedance – 32 Ohms Output power – 80 mW	iball - Rocky headset, over-ear headphone with mic	2,210
5	Keyboard	ps2 keyboard	Logitech, Zebronics	400
6	Mouse	ps2 mouse	Logitech, Zebronics	400

Table 21: Recommendation for upgrading DIET computer labs for inservice teacher training

Upgradation of DIET Computer Labs				
No.	Item Description	DGS&D-Dell Computers		
		Unit Price (in Rs.)	Quantity	Amount (in Rs.)
1	Desktop computer-1 Desktop Ccomputer with Core i3 or equivalent, 4GB RAM, 500GB HDD, 18.5” Ddisplay, Windows 10 (Pro) - Dell Ccomputer.	31,850.00	30	9,55,500.00
2	Desktop Ccomputer-1 Desktop Ccomputer with Core i 5 or equivalent, 4GB RAM, 500GB HDD, 18.5” Ddisplay, Windows 10 (Pro) - Dell Ccomputer	36,788.00	1	36,788.00
3	UPS 10 KVA UPS with 2 hours battery backup + 5% service tax and 15% tax as per TSTS	30,000.00	1	30,000.00
	Total			10,22,288.00

Source: CLIx internal documents

CLIx in Telangana 2016–17

10. CLIx Activities in Telangana

The academic year 2016–17 was a pivotal year for CLIx in Telangana in terms of achieving major milestones of implementation. We were able to work closely with the Directorate of School Education (DSE), State Council for Education Research and Training (SCERT) and Sarva Shiksha Abhiyan (SSA) on several key milestones of the project.

10.1 Lab Health Audit

As of 2010–11, 2,680 schools in Telangana were made functional through the BOOT model. Under this scheme, school labs were established and staffed by the third-party agencies who were expected to conduct ICT classes in the school. These agencies were also expected to transfer both knowledge and hardware to the schools by the end of their contract period. However, this was not done diligently, and most of these labs were neglected and fell into disrepair.

The Telangana government recently decided to end the BOOT model and run the school labs directly. In order to address current problems in school ICT labs, it was necessary to first understand the current status of these labs. To this end, a statewide lab health audit was initiated. The lab health audit is part of an ambitious goal of the Telangana government, namely, to identify the condition of ICT labs in all schools in Telangana. A set of comprehensive tools were created to capture the general conditions of school labs, the status of computers and infrastructure limitations of the schools, such as the availability of power, internet etc. Field-level data collection was done by MIS coordinators, who work with the SSA at the mandal level.

To train MIS coordinators in the use of these tools, a series of workshops were planned with the help of resource persons from TISS and Homi Bhabha Centre for Science Education (HBCSE). To initiate this process, a group of MIS coordinators were identified from each district to act as master trainers. The master trainers were trained in the use of the tools and in basic PC hardware troubleshooting in a three day workshop at SCERT. The goal of this training was to ensure that each of these individuals had the skills necessary to perform basic diagnostics on the health of the lab, the PCs and the N-computing system. They were further trained in the methods of reporting their findings using an Android-based application or an online portal. These master trainers then trained other MIS coordinators in district level workshops in all the districts.

The goal of this system was to enable persons conducting the lab audits to swiftly and seamlessly enter the results of the audit into a central database while avoiding unnecessary paperwork. There were some initial teething problems, as when some people did not understand how to use the tool or could not submit the filled forms. Despite these initial difficulties, all the technical issues were eventually resolved and the audit was completed with input from all the districts. Reports coming through this exercise included information on the functionality, repairs and replacements of lab equipment at school, district and state levels. On the basis of this report, 300 schools were selected across the districts of Warangal, Karimnagar and Ranga Reddy for CLIx implementation. The state government purchased additional equipment for the selected schools to make the labs fully functional.

10.2 Purchase of Equipment

To effectively improve the conditions of the ICT labs in Telangana, the state government decided to augment the existing infrastructure with minor upgrades and replacements as well as purchase new computers to increase the overall computing power available in the lab. This exercise was undertaken jointly by the DSE and the IT department.

A detailed list of requirements by individual schools was generated based on the lab health audit report. To fulfil this requirement, the education department constituted a committee to ascertain the cost of purchasing the equipment. This committee (with the help of CLIx personnel) ascertained the cost of procuring peripherals to replace non-functional parts of existing school labs and of adding new components. This mainly consisted of replacing non-functional keyboards and mouse devices with new functional equipment, adding new RAM cards to the old N-computing CPUs to enable them to serve multiple terminal effectively and providing a set of 20 headphones and 10 audio splitters to each of the selected schools. This equipment was purchased through Telangana State Technology Services (TSTS) and distributed to concerned district education officers (DEOs). CLIx personnel then coordinated the distribution of this equipment to the schools through the available MIS coordinators and cluster resource persons. In addition to this, 300 new computers were purchased to act as lab servers. These are to be linked to the existing computers through a LAN enabling them to host and run all new content. This system ensured that any new content generated would not be limited by legacy hardware and could be deployed using these new CPUs. The installation of these system was done with the help of MIS coordinators who were trained by the CLIx team for this task.

10.3 MIS Training

As part of their transition away from the BOOT model, the state education department sought to build the capacities necessary to install (new hardware) and maintain ICT labs in schools. To accomplish this, a two-day training workshop was organised at MCRHRD training centre for selected MIS coordinators. In this workshop, the MIS coordinators were trained in:

- Basic hardware maintenance
- Installation of CPU components
- Hardware diagnosis and troubleshooting
- Basic software diagnosis and troubleshooting
- N-computing setup and repair

In addition to theoretical instruction, they were given several opportunities for hands-on practice under the supervision of subject experts from CLIx. The MIS coordinators were given a detailed checklist with the procedures they were expected to follow and the links to pertinent software. In addition to this, the government made available to them the necessary tool kits.

10.4 Teacher Educator and Resource Person Training

To effectively implement the project in all 300 schools, a total of 1,590 teachers need to be trained. The total consist of 388 English teachers, 456 maths teachers, 384 physical science teachers and 362 biological science teachers. These teachers are spread across three districts, and the creation of new 13 districts added to the logistical challenges of reaching them. To meet these challenges, it was decided to train a cadre of teacher educators (TEs) and resource persons (RPs) who would support the training process as well as the implementation at the field level. The TEs were selected from the existing pool of teachers according to their seniority and level of digital

literacy. This group of TEs was brought together for training in the use of the student modules in a four-day workshop conducted during 9–12 August 2016 at Gov ernment B.Ed. College, Hanamkonda. The workshop was attended by 45 TEs from all subjects and regions. The workshop enabled the TEs to obtain detailed understanding of the goals and pedagogy of CLIx and the various tools and modules. As part of the programme, they were also required to practice with these tools and participate in a community of practice through email and Telegram messaging.

10.5 Head Teacher Orientation

Based on the suggestion of SCERT and DSE, the head teachers and principals of the selected 300 schools were oriented on the CLIx programme. The goal of these sessions was to emphasise the need for innovation in their schools and the ways in which CLIx could help to meet these needs. Through this process, they were included in the planning of the programme and were convinced of the need for CLIx.

10.6 English Teacher Training

Following on the TE training and the headmaster orientation, teacher training for the English modules was planned for December 2016. The English teachers working in the selected schools from the nine districts of RangaReddy, Vikarabad, Medchal, Warangal (U), Warangal (R), Jangaon, Jayashankar, Mahabubabad and Rajanna were invited to this training. This selection was made keeping in mind the availability of training centres with working computer labs. The trainings were hosted at IASE, Masab tank in Hyderabad and at the DIET, Hanmakonda in Warangal. The training for teachers from Karimnagar, Siddipet, Peddapally and Jagityal was put on hold until the DIET Lab at Karimnagar was brought up to specifications.

A total of 230 English teachers from the selected schools were invited to the training. It was organised in five batches, two at IASE Masab tank and three at DIET, Hanamkonda. It was organised by the state government with resource persons from CLIx supported by TEs from these districts. The training was attended by a total of 201 teachers across all five batches.

Through the workshop, the teachers were introduced to CLIx and the pedagogy that informed the module design. They were taken through a few exercises in the module and given room to experiment and practice under the supervision of both CLIx resource persons and TEs. At the end of each two-day training session, they participated in an exercise where they imagined how the programme might be rolled out in their respective schools and what immediate actions they could take to facilitate it.

11. Current Status of CLIx Implementation

Currently, CLIx implementation activities are being undertaken in 300 schools in 13 districts of Telangana. These districts are RangaReddy, Vikarabad, Medchal, Warangal (U), Warangal (R), Jangoan, Jayashankar, Mahabubabad, Rajanna, Karimnagar, Siddipet, Peddapally and Jagityal. Of these 300 schools, 70 are fully functional and an additional 65 are close to functional. Additionally, the English module is installed and running in 25 schools. CLIx staff are currently working with MIS coordinators to make the remaining labs functional.

Table 22: Modules Offered to Students in 2016–17

Subject	Module Name	Class	No. of Lessons or Periods	Period of Implementation
English	EB1 (English Beginner I, optional)	9	10 lessons (10 periods)	Dec 2016 to Feb 2017
	EE (English Elementary)	9	20 lessons (20 periods)	

Source: CLIx internal documents

On the basis of the experience of rolling out CLIx in 2016–17, the following challenges have been identified.

Outdated computing infrastructure: The computer labs set up under the ICT@school programme are at the very end of their service life and are unlikely to stand up to sustained use in the schools.

Legacy hardware: Most of the hardware cannot accommodate the basic needs of modules such as audio input for each terminal.

Day-to-day maintenance of labs: No provisions for day-to-day maintenance of labs is available from the government or from the ICT@school scheme. Proper maintenance of computer labs is very essential for IT enabled learning.

12. Module /Course offering for 2017-18

12.1 For students

In Table 23 modules/courses offerd to students are given. Time duration for each module and tentative timelines for implementation has been mentioned.

Table 23: Module or Course Offering for 2017–18

Subject	Module Name	Classes	Time to Complete Module (hours or periods of 35 or 45 min)	Student Module Implementation Timelines
Digital Literacy	Digital Literacy	8,9	20 hours	April 2017
English	English Beginner and/or Elementary	8,9	20 hours	June 2017 to Feb 2018
Maths	Geometric Reasoning	8,9	10 hours	October 2017
	Proportional Reasoning	8	16 hours (max) 13 hours (min)	January 2018
	Linear Equations	8,9	20 hours	July and September 2017

Subject	Module Name	Classes	Time to Complete Module (hours or periods of 35 or 45 min)	Student Module Implementation Timelines
Science	Ecosystems	9	10 periods	January 2018
	Health and Disease	8	10 periods	January, 2018
	Motion	9	10 periods	June 2017
	Sound	8	12 periods	October 2017
	Atomic Structure	9	16 periods	October 2017

Source: CLIx internal documents

12.2 Postgraduate Certificate Course on Reflective Use of ICT in Education

Details of certification: In 2016–17, teacher professional development (TPD) under CLIx was done with the focus on subject module transaction with students. Teachers' online engagement was supported through WhatsApp and Telegram groups. In 2017–18, TISS is offering a certification model for TPD. The CLIx programme will leverage ICT to provide sustained and long-term professional development to teachers by:

- Developing professional learning communities to reach rural schools and their teachers
- Imbibing transformative pedagogies with contextual, authentic content for teachers to re-engage with subject matter

Course content: CLIx blended learning courses are offered as part of a certificate programme for teachers. This programme is open to all teachers including teachers in schools that are implementing the CLIx project. The programme allows in-service teachers to engage in learning during a school academic year in the following key areas:

1. Foundation courses focusing on 21st century learning skills including ICT
2. Blended courses in the pedagogy of mathematics, science and english language
3. Developing communities of practice for teachers
4. Establishing a pedagogical framework

Course are to be offered in two phases.

1. 2017–18 TPD: 8 credit course, which includes two courses:
   i. Foundation Course — ICT in Education (4 credits)
   ii. One Subject Specialisation Course — English, Mathematics or Science (4 credits)

2. 2018–19 TPD: 9 credit course, which includes following courses:
   i. Action Research or Digital Portfolio (3 credits)
   Electives:
   i. Nurturing Values Development in Adolescents (2 credits)
   ii. Using Media in Classrooms (2 credits)
   iii. Hands-on Learning Through Toy-Making (2 credits)

13. Scale-up Strategies

1. Developing module for technology-enabled learning: CLIx has developed modules for digital literacy, one module each for geometry, physics, biology and three modules for

English. These modules will improve students' learning outcomes by addressing selected fundamental concepts in maths, science and English along with very strong components of digital literacy. CLIx also intends to help nurture students' value system with very carefully designed modules. The module development process is ongoing. It is expected that in the near future, the state team will be able to develop modules at the state level with initial support from expert institution like TISS.

2. Curriculum mapping with respect to modules for technology-enabled learning (open source only): CLIx enables teachers and students to use open source materials to increase learning .
3. School readiness for digital and connected learning: The state government is working with CLIx to create a network of trained MIS coordinators who can drive implementation in the field through technical support and monitoring.
4. Certification of teachers for digital learning: CLIx will provide an integrated and consolidated experience to teachers through a long-term professional development programme and institutional certification. Part I of this certification will be covered during 2017–18 and Part II in 2018–19. This programme includes the development of groups of teachers to exchange pedagogical practices.
5. Communities of practices for teachers working for CLIx: This will be an online forum of teachers supplemented by a few face-to-face meetings.
6. Development of teacher support cadre TE at secondary level for support in technology-enabled learning: The project will establish online and on the spot support mechanism for teachers. This includes a very close discussion among TEs, cluster coordinators to be chosen among teachers, field professionals and faculty members from expert institutions.
7. School roll-out: CLIx will upload curricular modules to school terminals and facilitate schools to adjust timetables and implement student roll-out. The online discussion forum among teachers and TEs will support the roll-out

14. Recommendations

I. Enhancing access to and quality of computer-based learning experiences for students (curriculum integration of ICT in maths, science, english)

1. Promote ICT use such that students are made active users of computers and are not merely passive consumers and integrate ICT with subject teaching and hands-on lab activity.
2. Promote the use of open education resources.
3. Provide maintenance grants for computer labs and upgrade existing machines and repair or replace old ones.
4. Ensure internet connectivity for computing lab with 4 mbps connection with unlimited upload and download.
5. Provide power backup of two hours to all labs and arrange maintenance and replacement of power backup.
6. Provide peripherals including headphones with microphones and splitters for listening and speaking.
7. Provide additional peripherals such as USB microscope (lost cost) to enhance lab use possibilities.
8. Take ICT@Schools Phase 4 in the direction of wireless solutions, including wireless

keyboards, laptops and tablets (as opposed to desktops), and ensure availability of peripherals such as headphones with microphones, USB microscopes.

9. Design for flexibility on device choice (e.g., purchase of laptops or notebooks instead of desktops) so that the computer lab is made more accessible to larger batches.
10. Allocate more devices to schools based on a 2:1 or 3:1 ratio of students to machines in one batch to enhance use by all students.

II. Teacher Professional Development (TPD) for and with ICT

11. Allocate resources for TPD to enable teachers to become ICT users, for teachers' digital literacy and for use of NROER and other such open, interactive resources.
12. Promote higher quality of in-service TPD and recognise the value of certified courses in in-service training.
13. Move towards cafeteria approach to in-service training with a menu of courses recommended to teachers.
14. Support teachers to purchase personal computing devices.
15. Provide data plans for teachers who are enrolled for courses or provide reimbursement of course fee, with a contingency for computing device and data plan, on successful completion with a minimum grade.

III. Schools

16. Allocate dedicated time in school timetables for science labs and ICT labs (approximately 20% of school time to be earmarked for lab and library time).
17. Ensure flexibility in timetabling, including batching and block period for use of science and ICT labs.
18. Ensure maintenance and refurbishment of science labs.
19. Ensure maintenance and refurbishment of libraries.
20. Provide school leadership training to manage and facilitate innovation and change.

Table 24 :Timeline of CLIx events in Telangana.

Sr. No.	Date	Activities
1.	June 2015	A pilot study was conducted at ZPHS Kapra to test the feasibility of the model in Telangana.
2.	October 2015	District-level workshops were conducted with MIS coordinators to identify a preliminary group of schools.
3.	November–December 2015	Infrastructure mapping survey was conducted in selected districts with the support of MIS coordinators to identify schools based on technical feasibility.
4.	December 2015	Based on the success of the previous infrastructure mapping survey, a master trainers workshop on lab health checkup and maintenance was conducted for selected MIS coordinators from all three districts.
5.	January–February 2016	A statewide school lab health audit was conducted by the Telangana state government with the support of the CLIx team.
6.	February 2016	A pilot of the CLIx programme was initiated in GHS Ameerpet to demonstrate the effectiveness of the ICT infrastructure model. As part of this pilot, the school lab was made fully functional and hardware provided by Intel for the purpose was tested.

Sr. No.	Date	Activities
7.	March 2016	The results from the lab health audit were analysed and presented to the Telangana government to form the basis of a plan for infrastructure revitalisation.
8.	March 2016	On this basis of the statewide lab health audit, CLIx recommended the purchase of new hardware to make existing school labs functional. Additional hardware was also recommended for CLIx school labs to run the CLIx modules.
9.	October 2016	Computer peripherals required for 300 schools were delivered at DEO offices of three districts.
10.	November 2016	Hands-on training on computer basics was conducted for 40 MIS coordinators from 3 districts and tool kits were provided by the government of Telangana.
11.	July–October 2017	12 selected MIS coordinators along with 12 TISS recruited field engineers were trained in student platform installation and computer lab readiness. By the end of October, servers were installed in 210 labs and the labs were made functional (full to partial).

Source: CLIx internal documents

References

Bokova, I.(2011) *"Countries struggling to meet rising demand for secondary education – UN."* UN News Centre. October 25, Accessed January 25, 2017. http://www.un.org/

Centre for Economic and Social Studies. (2015). *Human Development in Telangana State District Profiles*. Centre for Economic and Social Studies.

Government of India. (2014). *Education in India NSS 71st Round*. Ministry of Statistics and Programme Implementation. Retrieved from http://mospi.nic.in/Mospi_New/upload/nss_rep_575.pdf [accessed on May 1, 2017]

Government of Telangana. (2016a). *Reinventing Telangana: The Way Forward: Socio Economic Outlook*. Planning Department, Government of Telangana. Retrieved from http://www.telanganalegislature.org.in/documents/10656/19317/SES+Outlook+2016.pdf/aed9e53a-2977-45a2-b658-2145d4c3e583 [accessed on May 1, 2017]

Government of Telangana. (2016b). *Budget Estimates 2016–17 for Education Department*. Government of Telangana. Retrieved from https://finance.telangana.gov.in/uploads/budget-2016-17-books/Volume-III-7.pdf [accessed on May 1, 2017]

National Council for Education Research and Training. (NCERT) (2014). ICT@Schools *Scheme Implementation in the States: An Evaluation*. New Delhi: Central Institute of Educational Technology, NCERT.

NCERT. (2015). *State Report Card National Achievement Survey Class X Under RMSA*. NCERT. Retrieved from http://www.ncert.nic.in/departments/nie/esd/pdff/Telangana.pdf [accessed on May 1, 2017]

National University for Educational Planning and Administration. (NUEPA). (2015). Secondary Education Report Card: 2014–15 Telangana. NUEPA. Retrieved from http://dise.in/Downloads/SEMIS-STRC-2014-15/SEMIS-State_Report_Cards_2014-15.pdf

PRS. (2016). *Telangana Budget Analysis. PRS Legislative Research*. Retrieved from http://www.prsindia.org/administrator/uploads/general/1458039598_Telangana%2Budget%20Analysis%202016-17.pdf [accessed on May 1, 2017]

Rashtriya Madhyamik Shiksha Abhiyan. (RMSA). (2016). *Seventh Joint Review Mission: Aide Memoire*. Rashtriya Madhyamik Shiksha Abhiyan. Retrieved from http://rmsaindia.org/administrator/components/com_pdf/pdf/d70a200521faf84f2b4d4b0ed-0fbb434-7th-JRM-Aide-Memoire.pdf [accessed on May 1, 2017]

Annexure

Table 17: Gaps in ICT Infrastructure in Karimnagar Schools Before CLIx Intervention

Sl. no	Karimnagar	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
1	ZPHS Arnakonda	√	√	√	√	×	√	√	×
2	ZPHS Varshakonda	√	√	√	√	√	√	√	√
3	ZPHS Rudravaram	√	√	√	√	×	√	×	×
4	ZPHS Metpally	√	√	×	√	√	×	×	√
5	ZPHS Molangur	√	√	×	√	×	×	×	√
6	ZPHS Lmd T/M	√	√	√	√	√	√	√	×
7	ZPHS Thippaipally	√	√	√	√	√	√	×	√
8	ZPHS NOOKALAMARRY	√	√	√	√	×	√	×	×
9	ZPHS Katnapally	√	√	√	√	×	√	×	×
10	ZPHS Katnapally	√	√	√	√	×	√	×	×
11	ZPHS Nustulapur	√	√	√	√	×	√	√	×
12	ZPHS (Girls) Kodimial	√	√	√	√	×	√	√	√
13	ZPHS Korem	√	√	√	√	×	√	×	√
14	ZPHS (G) Choppadandi	√	√	√	√	×	√	×	×
15	GHS Dhangarwadi	√	√	√	√	×	√	×	√
16	ZPHS G Vemulawada	√	√	√	√	√	√	×	×
17	ZPHS Vilasagar	√	√	√	√	√	×	×	√
18	GHS Mukarampura	√	√	√	√	√	√	×	×
19	Govt School	√	√	√	√	√	√	×	×
20	ZPHS Kannapur	√	√	×	√	√	×	×	√
21	ZPHS Boinpalli	√	√	√	√	×	×	×	√
22	ZPHS Janagapally	√	√	√	√	√	√	×	√
23	ZPHS Thotapally	√	√	√	√	×	√	×	√
24	ZPHS Hanmajipet	√	√	√	√	√	√	×	×
25	ZPHS Kodurupaka	√	√	√	√	×	×	√	√
26	ZPHS Nustulapur	√	√	√	√	×	√	√	×
27	ZPHS Gundaram	√	√	×	√	×	√	×	×
28	ZPHS Peddalingapoor	√	√	√	√	×	√	×	×
29	ZPHS Kandikatkoor	√	√	×	√	×	√	×	×
30	ZPHS Vallampatla	√	√	×	√	√	√	×	×
31	ZPHS Galipally	√	√	√	√	×	√	×	×
32	ZPHS Kanagarthi	√	√	×	√	×	×	√	√
33	ZPHS Pothakapally	√	√	√	√	×	×	√	√
34	ZPHS Nagunnor	√	√	√	√	×	√	×	√
35	ZPHS Ramadugu	√	√	√	√	×	√	×	×
36	ZPHS (Boys) Manakondur	√	√	√	√	√	√	√	√
37	ZPHS Sirsapally	√	√	×	√	×	√	×	×
38	GHS Huzurabad	√	√	×	√	×	√	×	×

Sl. no	Karimnagar	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
39	ZPHS Kolanor	√	√	√	√	×	√	√	√
40	ZPHS ODELA	√	√	×	√	×	×	√	√
41	ZPHS Bornapally	√	√	×	√	×	√	×	√
42	ZPHS Potharam	√	√	×	√	×	√	×	×
43	ZPHS Gopalraopeta	√	√	√	√	×	√	×	×
44	ZPHS Shanigaram	√	√	×	×	×	√	×	×
45	ZPHS Gannervaram	√	√	√	√	×	√	×	√
46	ZPHS Sriramulapally	√	√	×	×	×	√	×	×
47	ZPHS Girls Jammikunta	√	√	√	√	×	√	×	×
48	ZPHS Venkatapur	√	√	×	√	×	√	×	√
49	ZPHS Bandalingampally	√	√	×	√	×	√	×	√
50	ZPHS Eligaid	√	√	√	√	×	√	×	×
51	ZPHS Dhoolikatt	√	√	√	√	×	√	×	×
52	ZPHS.Sulthanpur	√	√	√	√	×	√	×	×
53	ZPHS Gudur	√	√	√	√	×	√	×	×
54	ZPHS (G) Kamalapur	√	√	×	√	×	√	×	×
55	ZPHS Shanigaram	√	√	√	√	√	√	×	×
56	ZPHS Ghanmukla	√	√	√	√	×	√	×	×
57	ZPHS (B) Uppal	√	√	√	√	√	√	×	×
58	ZPHS (G) Uppal	√	√	×	√	√	√	×	×
59	ZPHS Challur	√	√	√	√	√	√	×	√
60	ZPHS Lingannapet	√	√	√	√	√	√	√	√
61	ZPHS Ellandakunta	√	√	√	√	√	√	×	×
62	ZPHS Gajasingavaram	√	√	√	√	×	√	√	√
63	ZPHS Gangipally	√	√	√	√	√	√	×	√
64	ZPHS Pachunur	√	√	√	√	×	√	×	×
65	ZPHS Veldhi	√	√	√	√	√	√	×	√
66	ZPHS Mallareddypet	√	√	√	√	√	√	√	√
67	ZPHS (Boys) GAMBHIRAOPET	√	√	√	√	×	√	√	√
68	ZPHS Kothapally	√	√	√	√	√	√	√	√
69	ZPHS Marripallygudem	√	√	√	√	×	√	×	×
70	ZPHS Rachapalli	√	√	√	√	×	√	×	√
71	ZPHS Vavilala	√	√	√	√	×	√	×	×
72	ZPHS Boys Jammikunta	√	√	√	√	√	√	√	√
73	ZPHS (B) Peddapalli	√	√	√	×	×	√	×	×
74	ZPHS Moodapally	√	√	√	√	×	√	×	√
75	ZPHS Anthergoam	√	√	√	√	√	√	×	×
76	ZPHS Potyala	√	√	√	√	×	√	×	×
77	ZPHS Basanthnagar	√	√	√	√	×	√	×	×
78	ZPHS Jayyaram	√	√	√	√	×	×	×	×

Sl. no	Karimnagar	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
79	ZPHS Racharlaboppapur	√	√	√	√	×	√	×	×
80	TTWR School (Girls) Dumala	√	√	√	√	×	√	√	×
81	ZPHS Racharla Gollapally	√	√	√	√	×	√	×	√
82	ZPHS Yellareddypet	√	√	√	√	×	√	×	√
83	ZPHS Narsingapur	√	√	√	√	×	√	×	√
84	ZPHS Sanugula	√	√	√	√	×	√	×	√
85	ZPHS Mallial	√	√	√	√	√	√	×	√
86	ZPHS Baswapur	√	√	√	√	√	√	√	×
87	ZPHS Dharmaram	√	×	√	√	×	√	×	√
88	ZPHS Nimmapally	√	×	√	√	×	√	×	√
89	ZPHS NTPC Jyothinagar	√	√	√	√	√	√	√	×
90	ZPHS Girls Gdk	√	√	√	√	√	√	×	×
91	ZPHS Korapally	√	√	√	√	×	√	×	×
92	ZPHS Wadkapur	√	√	×	√	×	√	×	√
93	ZPHS Peddapur	√	√	×	√	×	√	×	√
94	ZPHS Peddabonkoor	√	√	√	√	×	√	×	√
95	GHS Old High School	√	√	√	√	×	√	×	√
96	ZPHS Kurikyal	√	√	√	√	×	√	×	√
97	ZPHS Allipur	√	√	×	√	×	√	×	×
98	ZPHS (G) Raikal	√	√	×	√	×	√	×	×
99	ZPHS Thatlawai	√	√	×	√	×	√	×	×
100	ZPHS Chilvakodur	√	√	√	√	×	√	×	√
101	ZPHS Bhupathipur	√	√	×	√	×	√	×	×

Source : CLIx internal survey

Table 18: Gaps in ICT Infrastructure in Warangal Schools Before CLIx Intervention

Sl. no	Warangal	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
1	ZPHS Dhoolmitta	√	√	√	√	×	√	√	√
2	ZPHS Bairanpally	√	√	√	√	×	√	×	√
3	ZPHS Maddur	√	√	×	√	×	√	×	×
4	ZPHS Salakpur	√	√	×	√	×	√	×	×
5	ZPHS Machuphad	×	×	×	×	×	√	×	×
6	ZPHS Narmetta	√	√	√	×	×	√	×	×
7	ZPHS Veldanda	√	√	√	√	×	√	×	×
8	ZPHS Peddapahad	√	×	√	√	×	√	×	×
9	ZPHS Obulkeshwapur	√	√	×	√	×	√	×	×
10	ZPPSS Nawabpet	√	√	√	√	×	√	√	√
11	ZPPSS Cheetur	√	×	×	√	×	√	×	×
12	ZPHS (Girls) Dharmasagar	√	√	×	√	×	√	×	×
13	ZPHS Saipet	√	√	√	√	×	√	√	×
14	ZPHS Peddapendial	√	√	√	√	×	√	√	√
15	ZPHS Hasanparthy (G)	√	√	√	√	×	√	×	√
16	ZPHS Mucharla	√	×	√	√	×	√	×	×
17	ZPHS Siddapur	√	×	√	×	×	√	×	√
18	ZPPSS Madikonda	√	×	√	√	×	√	×	×
19	Tswrms Jr. College Madikonda	√	×	√	√	×	√	×	×
20	ZPPSS Paidipally	√	×	×	√	×	√	×	×
21	ZPPSS Sundaraiah Nagar	√	×	×	√	×	√	×	×
22	ZPPSS Kadipikonda	√	×	√	√	×	√	×	×
23	ZPPSS Tharalapally	√	×	√	√	×	√	×	×
24	ZPPSS Kondaparthy	√	√	√	√	×	√	√	√
25	ZPPSS Mamnoor Camp	√	√	√	√	×	√	√	√
26	GHS Waddapally	√	×	√	√	×	√	×	√
27	GHS Markaji	√	√	√	√	×	√	√	√
28	GGHS Lashkarbazar	√	√	√	√	×	√	√	√
29	GHS Basithnagar	√	√	√	√	×	√	√	√
30	Hanamkonda	√	√	√	√	×	√	√	√
31	GHS Somidi	√	√	√	√	×	√	√	√
32	GHS (Boys) Kazipet	√	√	√	√	×	√	√	√
33	ZPHS Upparapally	√	√	√	×	×	√	√	×
34	ZPHS Ellanda	√	√	√	√	×	√	√	√
35	ZPHS Kunur	√	√	×	×	×	√	×	√
36	ZPHS Zaffargadh	√	√	×	√	×	√	×	√

Sl. no	Warangal	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
37	ZPPSS Peddamadur	√	×	×	√	×	√	×	√
38	ZPPSS Chinnamadur	√	×	×	√	×	√	×	√
39	ZPHS Kodakandla	√	√	√	√	×	√	×	√
40	ZPHS Kondur	×	×	×	√	×	×	×	×
41	ZPHS Kondapur	√	√	√	√	×	√	√	√
42	ZPHS Mecharajpally	√	√	√	√	×	×	√	√
43	ZPHS Alair	√	√	√	×	×	√	×	√
44	ZPHS Dornakal	×	×	×	×	×	×	√	√
45	ZPHS Mulkalapally	√	√	√	√	×	×	×	×
46	ZPHS V S Laxmipuram	√	√	×	√	×	√	×	×
47	ZPHS Parvathagiri	√	√	√	√	×	×	×	×
48	ZPHS Edulapusapally	√	√	√	√	×	√	√	√
49	ZPHS Kambalapally	√	√	√	√	×	√	×	×
50	ZPHS Girls Mahabubabad	√	√	√	√	×	√	×	×
51	ZPHS Kalwala	√	×	√	√	×	√	×	×
52	ZPHS Penugonda	√	√	√	√	×	√	×	√
53	ZPHS Alankanipeta	√	√	√	√	√	√	×	×
54	ZPHS Peddakorpole	√	√	√	√	×	√	×	√
55	ZPHS Otai	√	√	×	√	×	√	√	√
56	TSTWREIS Hs Kothaguda	√	×	√	√	×	√	√	×
57	ZPHS Ashoknagar	√	×	√	√	×	×	√	×
58	ZPHS Budharaopet	√	√	√	√	×	√	√	√
59	ZPHS Dhrmaraopet	√	√	√	√	×	√	√	√
60	ZPHS Laknepally	√	√	×	×	×	√	√	√
61	ZPHS Boys Hs Narsampet	√	√	×	×	×	√	√	√
62	ZPHS Model Narsampet	√	√	×	×	×	√	√	√
63	ZPHS Girls Hs Narsampet	√	√	×	×	×	√	√	√
64	Govt Hs Narsampet	√	√	×	×	×	√	√	√
65	ZPHS Konkapaka	√	√	×	√	×	√	×	×
66	ZPHS Gunturpally	√	×	×	√	×	√	×	√
67	ZPSS Nandigama	√	√	√	√	√	√	×	×
68	ZPSS Rudragudem	×	×	×	×	×	√	×	×
69	ZPSS Medapally	√	√	√	√	×	√	√	×
70	ZPHS Elukurthy	√	√	×	√	√	×	×	×

Sl. no	Warangal	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
71	ZPHS Kommala	√	√	√	√	×	√	√	√
72	ZPHS Gorrekunta	√	√	√	√	×	√	×	√
73	ZPHS Dharmaram	√	√	√	√	×	√	×	√
74	ZPHS Pulukurthy	√	×	√	×	×	√	×	√
75	ZPHS Atmakur	√	√	√	√	×	√	√	√
76	ZPHS Akkampet	√	×	×	√	×	√	×	√
77	ZPHS Athnakur	√	×	×	√	×	√	×	×
78	ZPSS Neerukulla	√	√	√	√	×	√	×	√
79	ZPHS Varikol	√	√	√	√	√	√	√	×
80	ZPHS Nadikuda	√	√	√	√	×	√	×	√
81	ZPHS Motlapally	√	√	×	√	×	√	×	×
82	ZPHS Pidicilla	√	√	√	√	×	√	√	×
83	ZPHS Mogullapally	√	√	√	√	×	√	√	√
84	ZPHS Tekumatla	√	√	√	√	×	√	√	×
85	ZPHS Nainpaka	√	√	√	√	×	√	√	×
86	ZPHS CHITYAL	√	√	×	√	×	√	×	×
87	ZPSS Chelpur	√	√	√	√	×	√	×	×
88	ZPSS Ghanpur (M)	√	√	√	√	×	√	×	×
89	ZPSS Buddaram	√	√	×	√	×	√	×	×
90	ZPHS Girls Mulug	×	×	×	√	×	√	×	×
91	ZPHS Abbapoor	√	√	√	√	×	√	×	×
92	ZPHS Devagiripatnam	√	√	√	√	×	√	×	×
93	ZPHS Chalvai	√	×	×	√	×	√	×	×
94	Ttwreis Eturnagaram	√	×	×	×	×	√	×	×
95	GHS Railwaygate	√	√	×	√	√	√	×	×
96	GHS Rangasaipet G	√	√	√	√	×	√	×	√
97	GHS Kareemabad	√	√	×	√	×	√	×	√
98	GHS Orus	√	√	√	√	×	√	×	√
99	GHS G Middlefort	√	√	√	√	×	√	×	×
100	GHS Krishna Colony	√	√	√	√	×	√	×	×

Source: CLIx internal survey

Table 19: Gaps in ICT Infrastructure in Rangareddy Schools Before CLIx Intervention

Sl. no	Rangareddy	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
1	ZPHS Marpally Um	√	√	√	√	×	√	×	×
2	ZPHS Janwada	√	√	×	√	×	√	√	√
3	ZPHS Maharajpet	√	√	√	√	√	√	√	√
4	ZPHS Parveda	√	√	√	√	×	√	×	√
5	ZPHS Korremul	×	×	×	×	×	×	×	×
6	ZPHS Edulabad	√	√	√	√	√	√	√	×
7	ZPHS Ghatkesar G	√	√	√	√	√	√	√	×
8	ZPHS Badangpet	√	√	√	×	×	√	×	√
9	ZPHS Saroornagar	√	√	√	√	×	√	√	×
10	ZPHS Chilkur	√	√	√	√	×	√	√	√
11	T.S.W.R.S School	√	×	√	√	×	×	×	√
12	ZPHS Himayatnagar	√	√	×	√	×	×	×	×
13	ZPHS Aziznagar	√	√	√	√	×	√	√	×
14	ZPHS Venkatapur	√	√	√	√	×	×	×	×
15	ZPHS Aloor (G)	√	√	√	√	×	×	×	×
16	ZPHS Urella	√	√	√	√	×	×	×	×
17	ZPHS Malkapur	√	√	√	√	√	×	×	×
18	ZPHS Kandawada	√	√	√	√	√	√	×	×
19	ZPHS Kandanelly	√	√	√	√	×	√	×	×
20	ZPHS. Mothkur	√	√	√	×	×	×	×	√
21	ZPHS G Gandeed	√	√	√	×	×	√	×	×
22	ZPHS Naskal	√	√	√	√	√	√	×	√
23	ZPHS Manneguda	√	√	√	√	√	√	×	√
24	TS Model School	√	×	×	×	×	×	×	×
25	ZPHS Angadichittempally	√	√	√	√	×	√	×	×
26	ZPHS Pudur	×	×	×	×	×	√	×	×
27	ZPHS Pedda Ummenthal	√	√	×	√	×	√	×	×
28	ZPHS Manchanpally	×	×	×	×	×	√	×	×
29	ZPHS Thallapally	√	√	√	×	×	√	×	×
30	ZPHS Hythabad	×	×	×	×	×	√	×	×
31	ZPHS Regadi Doswada	√	√	√	√	×	√	×	√
32	ZPHS Shabad Boys	√	√	√	√	×	√	×	√
33	ZPHS Shabad Girls	√	√	√	√	√	√	×	√
34	ZPHS Sardar Nagar	√	×	×	√	×	√	×	√

Sl. no	Rangareddy	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
35	ZPHS (B) Tukkuguda	√	√	√	×	×	×	×	×
36	ZPHS (B) Maheshwaram	√	√	√	×	×	√	×	×
37	ZPHS Sheriguda	√	√	√	×	×	√	×	×
38	ZPHS B Manchal	√	√	×	×	×	×	×	√
39	ZPHS Rangapur	√	√	√	×	×	√	×	×
40	ZPHS Arutla	√	√	√	×	×	√	×	√
41	ZPHS Chinnathundla	√	√	√	×	×	√	×	×
42	ZPHS Yacharam	√	√	×	×	×	√	×	√
43	ZPHS Nandiwanaparthy	√	√	×	√	×	√	×	×
44	ZPHS Medipally Nakkartha	√	√	×	×	×	√	×	×
45	ZPHS Mall	√	√	√	√	×	×	×	×
46	ZPHS Pulimamidi	×	×	×	×	×	×	×	×
47	ZPHS Lemoor	√	√	√	√	×	√	×	×
48	ZPHS Nedunoor	√	√	√	√	×	√	×	√
49	ZPHS Mirkhanpet	×	×	×	×	×	×	×	×
50	ZPHS Thimmapur	×	×	×	×	×	√	×	×
51	ZPHS Kanakamamidi	√	√	√	√	×	√	×	×
52	ZPHS Kanakamamidi	√	√	√	√	×	√	×	×
53	ZPHS (G) Shankerpally	√	√	√	√	√	√	√	√
54	ZPHS Peerzadiguda	√	√	√	√	×	√	√	√
55	ZPHS (B) Kandukur	√	√	√	√	×	√	√	×
56	ZPHS Chengomul	√	√	√	√	×	√	×	√
57	ZPHS Somagurthy	√	√	√	√	√	√	×	√
58	ZPHS Kankal	√	√	√	√	√	√	×	√
59	ZPHS Patloor T/M	√	√	√	√	×	√	×	×
60	ZPHS Marpally T/M	√	√	√	√	×	√	×	×
61	ZPHS Kistapur	√	√	√	×	×	√	×	×
62	ZPHS Doma	√	√	√	×	×	√	×	×
63	ZPHS Nagaram	√	√	√	×	×	√	×	×

Sl. no	Rangareddy	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
64	ZPHS (G) Maheshwaram	√	√	√	×	×	√	×	×
65	ZPHS Rajiv gandhi Nagar	√	√	√	√	×	√	√	√
66	ZPHS (B) Peedemul	√	√	√	√	×	√	×	√
67	ZPHS Kongarkalan	√	√	√	√	×	×	×	×
68	GHS Ibrahimpatanam	√	√	√	√	√	√	√	√
69	ZPHS Mominpet (Boys)	√	√	√	×	×	×	×	×
70	ZPHS Momipet (G)	√	√	√	×	×	×	×	×
71	ZPHS Pulmamidi	√	√	√	√	×	√	×	×
72	ZPHS Nawabpet	√	√	√	√	×	√	×	×
73	ZPHS Miyapur	√	√	√	√	×	×	×	×
74	ZPHS Kukatpally	√	√	√	√	×	√	√	×
75	ZPHS Shamshiguda	√	√	√	√	×	√	√	×
76	ZPHS Jagathgiri Nagar	√	√	√	×	×	×	×	√
77	ZPHS (B) Medchal	√	√	√	√	×	√	√	×
78	ZPHS Balajinagar	√	√	√	√	×	√	×	×
79	ZPHS (B) Malakajgiri	×	×	×	×	×	×	√	×
80	ZPHS Nagawaram	√	√	√	√	×	√	×	×
81	ZPHS Habsiguda	√	√	×	√	×	×	×	×
82	ZPHS Hayathnagar	√	√	√	×	×	√	×	×
83	GHS Rajendranagar	√	√	×	√	√	√	√	√
84	ZPHS Ananthagiri Pally	√	√	√	√	×	√	×	√
85	ZPHS Girls Dharur	√	√	√	√	×	√	×	√
86	ZPHS Nagaram	√	√	√	√	×	√	×	×
87	ZPHS Bantwaram	√	√	√	√	×	√	×	×
88	ZPHS Mothukupally	√	√	√	√	×	√	×	×

Sl. no	Rangareddy	Computer lab	Computers	Projector Screen	Printer	Scanner	Power Backup	Internet	LAN Setup
89	ZPHS Chengole	√	√	√	×	×	×	×	√
90	ZPHS (B) Basheerabad	√	√	√	√	×	√	×	√
91	ZPHS Navalga	√	√	√	√	×	√	×	√
92	ZPHS Agganoor	√	√	×	√	×	√	×	×
93	ZPHS Kokat	√	√	√	√	×	√	×	×
94	ZPHS Bandavelkicherla	√	√	√	√	×	×	×	√
95	ZPHS Puttapahad	√	√	√	√	√	√	×	√
96	ZPHS (B) Kulakacherla	√	√	√	√	√	√	×	√
97	ZPHS Narkhoda	√	√	√	√	×	√	×	√
98	ZPHS Shamshabad (G)	√	√	√	√	×	×	×	√
99	ZPHS Veenched	×	×	×	×	×	×	×	×
100	ZPHS (G) Mohamadabad	√	√	√	√	×	√	×	×


CLI
CONNECTED LEARNING INITIATIVE