Report On

- Status of Secondary Education in Mizoram
- Technology Readiness for CLIx Intervention in Mizoram
- CLIx in Mizoram

CLI CONNECTED LEARNING INITIATIVE

TATA INSTITUTE OF SOCIAL SCIENCES, MUMBAI

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An Initiative seeded by

TATA TRUSTS

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TISS RE-IMAGINING FUTURES

Massachusetts Institute of Technology

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

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

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PREFACE

The Connected Learning Initiative (CLIx) is the outcome of a collaboration between Tata Trusts (India), Massachusetts Institute of Technology (MIT, Cambridge, Mass., USA) and Tata Institute of Social Sciences (TISS, Mumbai, India). CLIx has been created to provide young people from under-served communities, opportunities for participation in quality education offerings through the meaningful integration of technology.

CLIx is geared to provide engaging, hands-on learning experiences in Mathematics, three Science subjects, and Communicative English, as well as digital literacy through the i2C (Invitation to CLIx) platform, integrated with value education and skills relevant to the 21st century. In the first phase, these resources are being offered to students of government secondary schools in the four Indian states of Chhattisgarh, Mizoram, Rajasthan and Telangana, in their respective regional languages.

As a platform for innovation in education, CLIx also supports the professional development of in-service teachers, making substantial contributions to teacher education in Indian languages. Research activities and collaborations around CLIx 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 open education, providing students with a significantly higher level of knowledge and skills in key areas, more than existing systems and pedagogies have been able to achieve.

Challenges facing students from rural areas, who manage to reach high school tend to include: weak foundations laid in primary school; an unavailability of resources in their own languages; isolation and poor access to learning opportunities; and a lack of qualified teachers, particularly in Maths, Science, and English. In this context, CLIx addresses, both curricular content and pedagogical approaches, to work with students and teachers and to deliver quality solutions at scale. CLIx aims to reach approximately 1,000 schools and 150,000 students in 4 states during the period 2015-2017. With an eye on capacity building, Teacher Professional Development (TPD) courses for approximately 2,700 teachers, are to be conducted during the same period, to strengthen their competencies and confidence.

Successful implementation of the project could pave the way for increased coverage, not only of regions and schools, but also of subjects and age-groups. The future would lie in the model's replication throughout the country, in keeping with the National Curriculum Framework (NCF 2005). It also has the potential to travel to neighbouring countries.

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 local students, student-teachers, teachers and educators, are an integral part of the sustainability plan. CLIx has partnered with locally invested institutions and groups to utilize 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/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). CLIx is using the existing infrastructure, wherever feasible, and trying to build on it, as needed, through support from state and other agencies.

The purpose of this paper is to give a brief account of the status of secondary education in the state of Mizoram. It attempts to understand the recent trends in terms of enrollments, equity, quality, efficiency and financing of secondary education in the context of Mizoram.

The report uses data from various sources like state economic survey, government reports, U-DISE reports, etc. One of the limitations of this paper is that it majorly depends on secondary sources for data as latest data is not available.

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GLOSSARY

CLIx	Connected Learning Initiative
DISE	District Information System for Education
HDI	Human Development Index
MHRD	Ministry of Human Resources Development
MRP	Maximum Retail Price
RBI	Reserve Bank of India
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
SCERT	The State Council of Educational Research and Training
SSA	Sarva Shiksha Abhiyan

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I: STATUS OF SECONDARY EDUCATION IN MIZORAM

1. INTRODUCTION:

1.1 Importance of secondary education:

Education provides the surest instrument for attaining sustainable development of a high order in a country. In this regard, primary education acts as the basic enabling factor for participation, freedom and overcoming of basic deprivation, whereas, secondary education facilitates economic development and establishment of social justice. Over the years, liberalization and globalization have led to rapid changes in the scientific and technological world and have prompted the general needs of improved quality of life and reduced poverty. This, undoubtedly necessitates the school leavers, to acquire higher levels of knowledge and skills than what they are essentially imparted with, throughout the eight years of elementary education. Also, a crucial stage in the educational hierarchy, secondary education empowers children to aggrandize nations, by preparing them for higher education and also the world of work. Secondary education, in specific, as a part of this virtuous circle of growth and development, not only serves as an important transition from primary to higher education, but provides key generic competencies to individuals which prove 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 globalized 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 globalized world.” Secondary education also helps build social capital, by raising the likelihood that citizens will participate in democratic institutions, will join community organizations and engage in politics.

Mizoram is a mountainous state nestled in the southern tip of the north-east region of India. Flanked on the west by Bangladesh and on the east and south by Myanmar, the state has a 722 km long international boundary. Mizoram borders the sister states of Assam and Manipur in the North and Tripura in the north-west. Mizoram's population was 1,091,014, according to the Census, 2011. It is the 2nd least populous state in the country. Mizoram covers an area of approximately 21,087 square kilometers. About 91% of the state is forested. 51% percent of its population is male. The capital of Mizoram is Aizawl, and it is situated at about 1,132 meters above sea level. The population of Aizawl is 2,91,822 as per the Census, 2011. Mizoram is divided into 8 Districts and 3 Autonomous District Councils. Mizoram is linked with the rest of the country by air, rail and road transport. Mizoram is primarily an agricultural state. About 59.77 per cent of the total working population, is engaged in cultivation and other agricultural activities. The main pattern of agriculture is jhum or shifting cultivation. Of the total 2.1 million hectares of estimated land, 630000 hectares of land is available for cultivation of horticulture crops.

Mizoram ranks 7th in the Human Resource Development Index and 14th in the Poverty Index in India. Literacy rate in Mizoram has seen an upward trend and is 91.33 percent, compared to the national literacy rate of 74.04 percent, as per the Census, 2011. Of that, male literacy stands at 93.35 percent, while female literacy is at 89.27 percent. In 2001, literacy rate in Mizoram stood at 88.80 percent, of which male and female were 90.72 percent and 86.75 percent literate, respectively. The Gross State Domestic Product (GSDP) of Mizoram has been continuously

growing over the years at an impressive rate. According to the Mizoram Economic Survey 2014-15, Gross State Domestic Product (GSDP) at factor cost at constant (2004-2005) prices is expected to attain an amount of Rs. 560779/- lakhs in 2013-2014, against the provisional estimates of Rs. 520289/- lakhs for the year 2012-2013, showing a growth of about 8 percent over the previous year. The GSDP at constant (2004-2005) prices has clocked 9 percent average annual growth rate during the financial years 2004-2005 to 2013-2014. With respect to poverty estimates (as shown in Table 1), based on MRP-consumption, Mizoram's ranking has worsened over years, from rank 9 in 2004-05 to rank 22 in 2011-12.

The percentage of population, below poverty line, in Mizoram was well below the national average in 2004-2005. However, it has increased, from 15.40 percent in 2004-05 to 20.40 percent in 2011-12, while, for India as a whole, it has gone down. In terms of urbanization – another indicator of development, reflecting better facilities for health, education, employment and overall standard of living – the state has seen an increase in urban population. As compared to 2001, percentage of population staying in urban areas has increased from 49.63 to 51.51 percent in 2011.

Table 1 : Percentage of population below poverty line

Year	Mizoram (Rank)	India
2004-05 (Based on MRP Consumption)	15.40 (9)	37.20
2009-10 (Based on MRP Consumption)	21.10 (17)	29.80
2011-12 (Based on MRP Consumption)	20.40 (22)	21.92

Source: Handbook of Statistics on Indian Economy, RBI, 2016.

1.2. HISTORY OF EDUCATION IN MIZORAM (DEVELOPMENT OF EDUCATION IN MIZORAM)

The first educational institution was established on 2nd April 1984. From 1895-1952, elementary education was looked after by Christian missionaries, through a Honorary Inspector of schools. It then, passed into the hands of the District Council from 1953-1972. After the attainment of Union Territory, primary and middle schools were passed into the hands of the State Government.

The formal education for the Mizos was started in 1894 and the "Bible school", a system of "Sunday School" for learning the Gospel, was also opened in the same year. The Government School was established on 21st August 1897.

The two missionaries, J.H Lorrain and F.W Savidge wrote a "Grammar and Dictionary of the Lushai Language", containing seven thousand words, published by the Government in 1898, which became the foundation of all education work in the Mizo Hills. Thus, the two pioneers may be considered to be the "Fathers of Mizo Education" (Hluna, 1992).

On 1st March, 1903, all the government schools were placed under the supervision of the missionary, as per the instruction of the Chief Commissioner of Assam, who realized that the schools were better managed by the missionaries. The missionaries did not attempt to open high schools in Mizoram, nor did they encourage their middle graduates to pursue education beyond middle school. This accounted for low level of high school education in Mizoram on the eve of Independence on 15th August 1947.

In spite of strong objection, the first Mizo High School was opened at Aizawl, the capital of Mizoram in 1944, as a reward for the role played by the Mizo in the Second World War, with Rev. D.E Jones, as the first Head Master. As there was no school building, the classes were held at the Young Lushai Association (YLA) hall at Mission Veng, with 56 students in Class –VII. In the first matriculation examination in 1948 under Guwahati University, out of 25, 20 students passed in the examination. The State Government took over the school in 1950.

In 1948, the second high school was established at Lunglei. This was followed by Champai Gandhi Memorial High School in 1949, a high school in Sialsuk in 1952 and the St. Paul's High School founded by Holy Cross Society at Aizawl in 1954.

On 25th April 1952, the Lushai Hill District became an Autonomous District Council. On 1st August, 1961, another milestone was added in education, as primary education passed to the hands of the council.

On the eve of the inauguration of Mizoram as a Union Territory, there were as many as 80 high schools and 3 colleges. Up till the year 2012, the number of high schools rose to 521. A separate Directorate of Education was set up in 1972. For the qualitative improvement of teacher education, the first training college for secondary school teachers was established at Aizawl in March 1975, which was graded into a "College of Teacher Education (CTE)".

The State Council of Educational Research and Training (SCERT) was set up in 1980 in Aizawl, as an academic wing of Directorate of Education. SCERT is responsible for qualitative improvement of school education from primary to higher secondary schools, non-formal education and teacher education. It is also responsible for successful implementation of various education projects sponsored by the Central Government, UNICEF, as well as the State Government. On 22nd May, 2008, SCERT was separated and given a fully fledged Directorate. The Vocationalization scheme was set up as its constituent unit known as the State Institute of Vocational Education (SIVE) in 1990.

2. Structure of School Education in Mizoram

The office of school education for Mizoram was started in 1973. It became a separate Directorate of School Education in 1989 and is located at Aizawl. The department looks after elementary, secondary, higher education, language development, adult education and physical education, within the State. The Directorate administers the entire state and is divided into 4 education districts, namely (1) Chhimtuipui District, (2) Lunglei District, (3) Aizawl East District, and (4) Aizawl West District. The structure of education in the State is based on the national level pattern with 12 years of schooling (10+2), consisting of eight years of elementary education, that is, five years of primary and three years of middle school education for the age groups of 6-11 and 11–14 years, respectively, followed by secondary and higher secondary education of two years each, besides two years of pre-primary education. The entry age in class 1 is 5+. Pre-primary classes form age group 3 to 4. The higher secondary school certificate enables pupils to pursue studies either in universities or in colleges for higher education in general academic streams and in technical and professional courses.

Mizoram Board of School Education is an autonomous academic body under the purview of the Department of Education, Government of Mizoram. It is an authority on conducting state level examinations in schools. The Mizoram State Board of School Examination evaluates students' progress by conducting two board examinations, one at the end of class 10 and the other at the end of class 12. All recognised schools belong to one of the following accreditation systems:

1. Mizoram Board of School Education - for all years of study
2. Central Board of Secondary Education - for all years of study

At the elementary level, private schools use English as a medium of instruction, while the government run schools mostly use Mizo as a medium. At higher levels, English language is the main medium.

3. Trends in secondary education

III. TrAs per the state Economic Survey 2014-15, the number of schools has increased, from 4020 in 2013-14 to over 4202, during the academic year of 2014-15. Out of these 4202 schools, 1946 were primary schools, 1514 were middle schools, 610 were high schools and 132 were higher secondary schools. Out of these, 54 percent of them (including schools under SSA & RMSA) are run and managed, either by the State Government or Central Government (Government of Mizoram, 2015-16).nds in secondary education

3.1. Access to secondary education:

Table 2 : Number of Secondary Schools in Mizoram

Year	Number of Secondary Schools	Number of Primary Schools
2012-13	599*	3019
2013-14	583	2922
2014-15	610	3067
2015-16	615	3072

*Source: Compiled from U-DISE Flash statistics for respective years. * The data for 2012-13 in SEMIS (584) is inconsistent with data in U-DISE.*

As shown in Table 2, the number of secondary schools in the state has increased from 599 in 2012-13 to 615 in 2015-16, while the number of primary schools has increased from 3019 to 3072 in the same period. The ratio of primary to upper primary/secondary schools has been consistent around 1.3 : 1.5 in all the years studied. The number of upper primary/secondary schools, per 1000 children, has increased from 17 in 2005-2006 to 30 in 2015-16. However, despite this significant increase, the number of secondary schools has remained comparatively less which indicates that the increase is mainly attributed to upper-primary schools.

Table 3 : Percentage of schools established since 2006

Year	Percentage of schools established since 2006
2012-13	19.2
2013-14	20.07
2014-15	23.44
2015-16	25.04

Source: Compiled from U-DISE Flash statistics for respective years

The above Table 3, shows that there has been a gradual increase in the number of schools established since 2006. However, the data on number of secondary schools and percentage of schools established since 2006, seems to be inconsistent. The increase in 2015-16 is less when compared to the increase in the previous year.

Table 4 : Percentage of Secondary Schools in rural and urban areas

Year	Percentage of schools in Rural Areas	Percentage of schools in Urban Areas
2012-13	47.26	52.74
2013-14	48.28	51.72
2014-15	46.77	53.23
2015-16	47.68	52.32

Source: Compiled from U-DISE Flash statistics for respective years and author's calculation based on unpublished U-DISE raw data.

Table 4 above, shows the access to secondary schools by their rural-urban location. The distribution of schools among rural areas and urban areas has remained almost same over the years. The secondary schools in urban areas constitute more than 50 percent of the total schools in the State. This distribution of secondary schools seems to be proportionate to the share of urban and rural population in Mizoram which is 51.51 percent and 48.49 percent respectively, according to the Census, 2011.

Table 5 : District-wise availability of Secondary Schools

Year	2012 – 13	2013 – 14	2014 – 15	2015 – 16
Aizawl	195	194	198	198
Kolasib	39	39	39	41
Mamit	45	45	45	48
Champhai	72	75	82	85
Lawngtlai	48	45	53	54
Lunglei	110	110	114	116
Serchhip	38	38	38	37
Saiha	36	36	36	35
Total	583	582	605	614

Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data.

The above Table 5, shows the district-wise access to secondary schools. Aizawl and Lunglei have the largest share of secondary schools available in the State over the last 4 years. However, this is proportionate to the population of the Districts. Districts, which have been stable in terms of providing access for secondary education are Kolasib, Mamit, Serchhip and Saiha.

3.2. Equity

Equity in the field of education has always been the focus of educational policies. It is often used, interchangeably, with equality in terms of opportunity, resources, inputs, processes, immediate and long term outcomes. However, it is important to recognize the subtle difference that exists between equity and equality. While equality implies equal access for all, equity ensures intervention to bring the marginalized at par with the rest of the society.

Before discussing the status of secondary education in terms of equity in Mizoram, an overview of the current trends in enrolment in secondary education is essential.

Table 6: Gross Enrolment in Secondary Schools

Year	GER
2012-13	39485
2013-14	40558 (2.71%)*
2014-15	40711 (0.37%)
2015-16	41534 (2.02%)

*Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data. *Numbers in bracket indicate the percentage increase in enrolment compared to previous year.*

Gross enrolment ratio (GER), is total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population, corresponding to the same level of education in a given school-year. School-age population, is population of the age group which officially corresponds to the relevant level of education.

It is evident from the above Table 6, that the total enrolment in secondary schools is increasing, year on year. The percentage increase in enrolment in 2015-16 is 2.02 percent compared to the percentage increase of 0.37 percent in 2014-15. The percentage increase was highest in the year 2013-14 (2.71 percent) of all the years studied.

The Gross Access Ratio (GAR) for Mizoram is 39.27 percent, and more new schools are required in Mizoram, however, due to very small habitations, it may not be viable to open new schools. The State should provide transport allowance or hostel facilities to students, to overcome the problem.

Table 7 : Net Enrolment Ratio

2012 – 13		2013 – 14		2014 – 15		2015 – 16	
Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
45.43	49.40	51.85	56.19	54.31	60.17	56.60	63.70

Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data.

The Net Enrolment Ratio (NER), is defined as enrolment of the official age-group for a given level of education, expressed as a percentage of the corresponding population. The Table 7 above, shows NER in secondary schools in Mizoram.

Net enrolment ratio seems to have increased, for both boys and girls, at the secondary level of education in Mizoram. Table 7 shows, that Girls had a higher NER than boys. However, NER for both boys and girls, are well above the national average, which is 50.66 for boys and 51.93 for girls in 2015-16.

Table 8: Percentage Enrolment by Social Groups

	General (1.5%)(a)	SC (0.03%)	ST (94.5%)	Other Backward Class (2.62%)	Muslims (1.35%)
2012-13	0.80	0.35	98.55	0.29	0.04
2013-14	0.90	0.48	98.36	0.27	0.09
2014-15	1.10	0.90	97.77	0.23	0.21
2015-16	1.04	1.69	96.80	0.46	0.15

Source: Compiled from U-DISE Flash statistics for respective years

Note (a): Numbers in bracket indicate proportion of social groups among total population of state.

With regard to enrolment by various social groups, the above Table 8 shows, that there has been a greater share of Scheduled Tribes (STs) in all the years being studied in the report. However, over the years, their proportion has reduced marginally, whereas the proportion of students from other social groups has increased over time, even if they remain a minority in the State. According to the Census, 2011, ST population constitutes 94.46 percent of the total population of Mizoram, whereas, SC constitute 0.03 percent of the total population and others constitute 5.51 percent. The major share of STs in enrolment, seems to be proportionate to its population. Muslims have the lowest enrolment ratio of 0.15, when they constitute 1.35% of the population. Mizoram has the lowest SC population in the country, constituting 0.03% of the State's population, but enrolment among SCs seems to be good, with an enrolment ratio of 1.69 in 2015-16.

3.3. Teachers in the secondary education system in Mizoram

This section analyses the teachers in secondary education in Mizoram by their numbers, gender, and qualification. However, data is not available on the number of teachers, for every subject like mathematics, science, social science and English.

Table 9 : Number of Teachers - Gender-wise

Year	Male	Female	Total
2012-13	2828 (65%)	1535 (35 %)	4363(100%)
2013-14	2842 (65.54%)	1494 (34.46%)	4336(100%)
2014-15	2925 (65 %)	1575 (35 %)	4500(100%)
2015-16	2,853 (64.93 %)	1,541(35.07%)	4,394(100%)

Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data.

The above Table 9, shows that the share of male teachers has gone down, while that of female teachers has marginally gone up. On the whole, the total number of teachers has gone up from 4363 to 4394. The point to be noted here is that, when it comes to elementary education, the share of female teachers is much higher. In 2015-16, the share of female teachers in elementary education is 46.6 percent and it has been consistently above 45 percent for the past 3 years.

Table 10 : Percentage of Secondary Teachers by Academic Qualification

	Below Graduation	Graduate	Post-Graduate	M.Phil	PhD / Post-Doctoral
2012-13	5.18	69.75	24.59	0.30	0.18
2013-14	4.27	70.73	24.45	0.37	0.18
2014-15	4.87	69.16	25.42	0.40	0.16
2015-16	4.30	68.96	26.29	0.34	0.14

Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data.

Source: Compiled from U-DISE Flash statistics for respective years and authorsThe above Table 10, shows the distribution of teachers by their academic qualification. For all the 4 years studied, majority of teachers in secondary schools (more than 2/3rd) are graduates, 1/4th teachers have a post-graduate degree followed by below graduation, while PhD and postdoctoral degrees account for the least share.calculation based on unpublished U-DISE raw data.

Table 11 : Percentage of professionally qualified teachers

Year	Percentage of professionally qualified teachers
2012-13	41.97
2013-14	40.77 (-1.2%)
2014-15	51.33 (10.56%)
2015-16	55.46 (4.13%)

Table 11 shows percentage of professionally qualified teachers. It has increased from 2012-13 to 2015-16. However, the increase in percentage of professionally qualified teachers in 2015-16 is less than half of increase in 2014-15.

Table 12 : Working conditions in government secondary schools

	Schools with 5 Subject teachers and a head teacher	Schools with less than 2 classrooms	Single teacher schools	Schools with 2 teachers
India	3,027(3.3%)	22,029 (24.3%)	6,329(7.0%)	6,731(7.4%)
Mizoram	167(59.6%)	2(0.7%)	0(0.0%)	0(0.0%)

Source: (Ramachandran, 2015)

Only 3.3 percent of government secondary schools in entire India meet the RMSA norm of five teachers (two Language teachers, and one teacher each for Mathematics, Social Science and Science) and a head teacher (Table 12), whereas, in Mizoram, 59.6% of the schools meet this norm. None of the government secondary schools in Mizoram are single teacher or 2-teacher schools.

3.4. Management

This section deals with the classification of secondary schools, its teachers and students by the management of the schools.

Table 13: Management-wise percentage of secondary schools

Management	2012-13	2013-14	2014-15	2015-16
Department of Education	46.74	48.03	45.90	45.53
Tribal/Social Welfare Department	0	0	0	0
Local Body	0	0	0	0
Private Aided	21.87	22.47	21.48	21.30
Private Unaided	28.05	28.47	30.98	31.54
Other Government Managements	0.17	0	0	0
Central Government	0.83	0.86	1.64	1.63
Unrecognised	-	0	0	0
Recognised Madarsas	-	0	0	0
Unrecognised Madarsas	-	0.17	0	0

Source: Compiled from U-DISE Flash statistics for respective years

The above Table 13 shows, that majority of the secondary schools in Mizoram, are run by Department of Education, followed by private unaided and private aided. The point to be noticed is, that the share of private unaided schools is gradually increasing, year on year, whereas the percentage of schools run by state education department and private aided is decreasing.

Table 14 : Percentage of enrolment by Management at Secondary School Level

	2015-16	2014-15	2013-14	2012-13
Department of Education	45.15	44.68	45.80	46.31
Tribal/Social Welfare Department	0	0	0	0
Local Body	0	0	0	0
Private Aided	23.99	24.54	24.09	24.05
Private Unaided	29.22	29.32	29.37	28.71
Other Government Managements	0	0	0	0
Central Government	1.63	1.46	0.74	0.93
Unrecognized	0	0	0	-
Madrasa Recognized	0	0	0	-
Madrasa Unrecognized	0	0	0	-

Source: Compiled from U-DISE Flash statistics for respective years

The above Table 14, shows that percentage of enrolment is highest in the State Education Department run schools, constituting almost 50 percent of the population, and it is increasing year on year. The private unaided and private aided schools, together constitute the remaining 50% of enrolment, but their percentage has decreased from 2014-15 to 2015-16. By looking at Table11 and Table 12 together, we can conclude that, although, the demand of private unaided schools is increasing year on year, the enrolment is higher in State Education Department run schools, which are well within the reach of poorer sections of the society.

4. Quality of secondary education

The Objective of RMSA is to enhance access to secondary education and to improve its quality. The implementation of the scheme started from 2009-10. It aims to provide a secondary school, within a reasonable distance of any habitation, which should be 5 kilometres for secondary schools and 7 -10 kilometres for higher secondary schools. The other objectives include, improving quality of education imparted at the secondary level through making all secondary schools conform to prescribed norms, removing gender, socio-economic and disability barriers, providing universal access to secondary level education by 2017, i.e., by the end of 12th Five Year Plan and achieving universal retention by 2020. This section discusses the quality of secondary education in relation to infrastructure, repetition, drop-outs, achievement and percentage of teachers involved in non-teaching activities.

4.1. Infrastructure

This section gives an insight on the status of infrastructure in State's secondary schools such as availability of building, playground, drinking water facility, library, separate toilets for boys and girls, science laboratory, electricity, computer and internet connectivity.

Table 15 : Status of Basic Infrastructure in Secondary Schools

Year	Building	Playground	Drinking water facility	Library	Boy's toilet	Girl's toilet
2012-13	97.16	29.55	86.31	29.38	98.11	99.10
2013-14	100	30.53	89.37	39.45	99.48	99.48
2014-15	100	29.84	93.44	47.21	99.34	99.67
2015-16	100	30.57	94.63	52.85	98.70	99.51

Source: Compiled from U-DISE Flash statistics for respective years

The above Table 15, shows that 100 percent secondary schools have a building in Mizoram. In terms of the overall infrastructure, there has been progress over the last few years. More than 50 percent of the secondary schools have a library, whereas, less than 1/3rd of the schools have a playground. About 94 percent of the secondary schools have drinking water facility and 99 percent of the secondary schools have a separate toilet for boys and girls.

New schools and upgraded schools, constructed under the RMSA scheme, should have the following facilities:

1.) 4 class room for 2 section school / 2 classrooms for 1 section school 2.) 1 Science Laboratory 3.) Laboratories for vocational education, 4.) Headmaster room, 5.) Office room, 6.) Computer room, 7.) Art/craft/culture room, 8.) Library room, 9.) Separate toilet blocks for boys and girls and 10.) Drinking water facility.

Under RMSA, out of the 88 approved schools, construction of 8l new schools has been completed, with a completion rate of 92 percent. Construction in 7 schools is still to commence. Further, 98 percent of the strengthening works approved in 199 schools have been completed so far (till March, 2016).

Although, the toilets that are indicated as dysfunctional in UDISE, are actually, temporary enclosures and are not sanctioned, either under RMSA or Swachch Vidyalaya. The State Government has agreed to approve 16 toilet blocks in 12 schools, on a need basis, considering the enrolment and availability of other toilets in these schools.

Table 16 : Status of Laboratory and ICT Infrastructure in Secondary Schools

Year	Integrated science laboratory	Electricity and computer	Computer	Computer with internet	Student-classroom ratio (SCR)
2012-13	19.70	NA	0.33	0	28
2013-14	31.56	NA	9.95	2.92	29
2014-15	30.49	42.26	44.75	18.52	28
2015-16	36.00	48.78	48.94	19.19	27

Source: Compiled from U-DISE Flash statistics for respective years (NA – Not Available)

Status of ICT infrastructure, as reflected in the above Table 16, shows poor performance by the secondary schools with respect to availability of integrated science laboratory, though it has increased from 19.70 percent in 2012-13 to 36 percent in 2015-16. Only 48.78 percent of secondary schools have electricity and computers. The percentage of schools with electricity and computers has increased from 42.26 percent in 2014-15 to 48.78 percent in 2015-16. The percentage of schools having computer has increased from 0.33 percent in 2012-13 to 48.94 percent in 2015-16. Moreover, the number of schools with both computer and internet connectivity is disappointing. However, over the years, it has improved from zero schools in 2012-13 to 19.19 percent having the facility in 2015-16.

4.2. ICT in Education

Overview of Government's Policy towards Technology in Education

It is useful to note, that the Government of India's Information and Communication Technology (ICT) in schools scheme, that is now subsumed in the RMSA, aims to provide opportunities to secondary stage students, to build their capacity in ICT skills and make them learn through a computer aided learning process. The ICT in Schools scheme was launched in December 2004 and revised in July 2010; subsequently in 2013, it was brought within the ambit of the RMSA. The scheme is a major catalyst to bridge the digital divide amongst students of various socio economic groups and other geographical locations that act as barriers. The scheme provides support to States/UTs to establish computer labs on a sustainable basis.

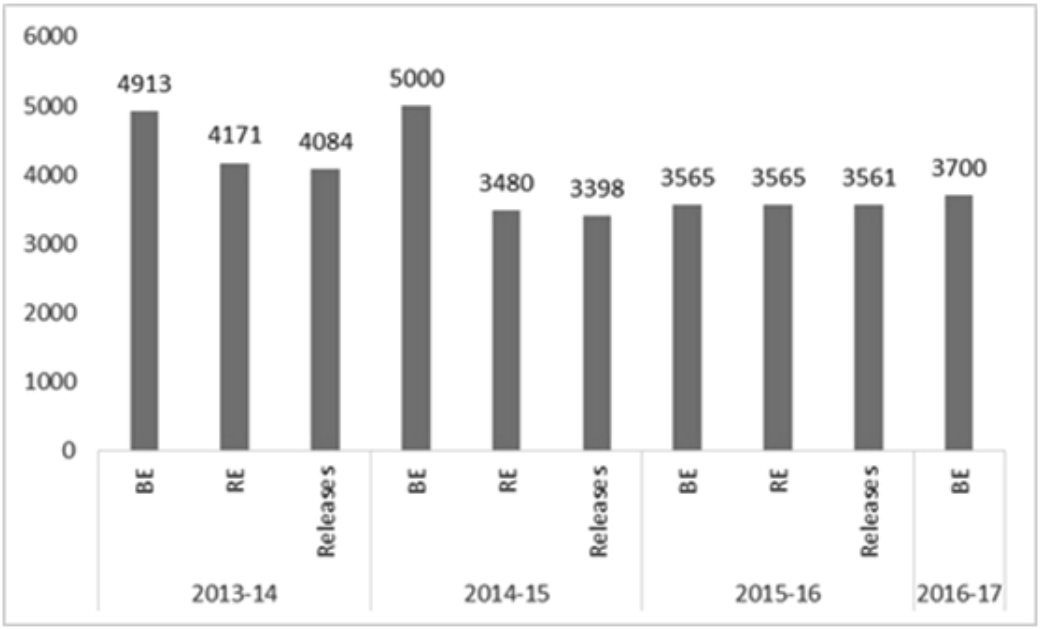
In order to enable good quality secondary education, accessible and affordable to all in the age group of 14-18 years, the RMSA framework stresses on provision of required infrastructure (especially library, science and mathematics laboratories, computer lab); providing teachers in all the subjects – especially mathematics and science; remedial courses to enable students to reach grade IX level and review of the curriculum to meet the NCF 2005 norms. The RMSA framework, also calls for the need to reform the examination system to move away from rote learning. More attention should be paid to interventions such as adolescent education programmes, school-level counseling and sensitization of the school head and teachers. The framework also emphasizes the importance of learning assessment in the school and periodic state level assessment to get an understanding of student learning levels so that it can feed into research on where students make mistakes, thereby influencing teacher support material and continuing professional development of teachers (RMSA 8th JRM Aide Memoire, September 2016).

An important component of quality improvement initiative under RMSA relates to the professional development of teachers through in-service training. Since 2009-10, approval has been granted for training over 4 million teachers and head teachers. These programmes are designed to strengthen teacher capabilities in teaching subject contents, especially mathematics, science and social science; new pedagogical approaches, inclusive education, and learner-centred classroom transactions (RMSA 8th JRM Aide Memoire, September 2016).

Budgetary Provisions for Technology in Education

Figure 1, outlines the overall allocations towards RMSA for the last four years; the graph clearly shows a downward trend in outlays for the scheme. As per the scheme guidelines, State Governments can spend on the two broad heads of non-recurring and recurring heads, subject to an overall maximum limit of Rs. 6.40 lakh for non-recurring and recurring grant of Rs. 2.70 lakh per annum for 5 years.

Figure 1: Budgetary Allocations to RMSA (in Rs. Crore)



Source: http://rmsaindia.gov.in/en/component/content/article.html?id=105

Table 17 : Financial Assistance under ict@school for Mizoram (Rs. In Lakh)

Year	Released	Utilized	Expenditure(a)
2009-10	301.50	301.50	-
2010-11	408.06	106.56	-
2011-12	672.84	672.84	
2012-13	248.45	0	672.83
2013-14	73.13	-	331.59
2014-15	0	-	0
2015-16(As on 24/7/15)	0	-	-
Total	1703.98	1080.9	

Source: Lok Sabha Unstarred Question No. 2737, dated on 13.03.2013,Lok Sabha Starred Question No. 231, dated on 23.07.2014 & Lok Sabha Starred Question No. 1471, dated on 29.07.2015, www.indiastat.com

Note (a): The Expenditure includes the unspent of previous year, state share and central share and is based on expenditure reported by states for appraisal.

As evident in the above Table 17, in 2010-11 almost 3/4th of the amount released under ICT@School scheme remained unutilized. In 2012-13 and 2013-14 the funds were not utilized at all. Overall, until July 2015, Rs.10.80 crores has been spent out of the Rs.17.03 crores released.

4.3. Repetition

Table 18 : Percentage of repeaters(a) by social group

	General	SC	ST	OBC	Muslim
2012-13	5.39	0.69	92.60	1.32	0
2013-14	2.32	0.14	97.37	0.17	0
2014-15	1.62	0.88	97.45	0.05	0
2015-16	0.62	0.17	99.22	0	0

Source: Compiled from U-DISE Flash statistics for respective years.

Note (a): Pupils from a cohort enrolled in a given grade at given school years who study in the same grade in the following school year

According to Table 18, percentage of repeaters in the secondary level for General category has reduced from 5.39 in 2012-13 to 0.62 in 2015-16. However for Scheduled Tribes the rate has increased from 92.6 percent in 2012-13 to 99.22 percent in 2015-16. OBC has also seen a decline in their repetition rates over the last few years. The percentage of repeaters among SC has reduced from 0.69 in 2012-13 to 0.17 in 2015-16.

Table 19 : Transition rate from elementary to secondary school

Year	Boys	Girls	Total
2012-13	79.33	78.93	79.14
2013-14	92.86	95.12	93.95
2014-15	94.28	96.73	95.49

Source: Compiled from U-DISE Flash statistics for respective years.

The above Table 19, indicates that the transition rate from elementary school to secondary school is improving year on year. The transition rate which was 79.14 in 2012-13 has increased to 95.49 in 2014-15. Girls have better transition rate compared to boys in two of the three years studied.

4.4. Drop-outs

The overall drop-out rates, for the secondary education in Mizoram, have declined from 21.42 in 2012-13 to 7.35 in 2015-16, and this is shared by both boys and girls. For boys, the decline was from 22.18 to 10.91, while for girls, it is from 20.65 to 3.55. The Table 20, also shows that boys have been dropping out more than the girls, in each of the years studied.

Table 20: Average annual drop-out(a) rates by gender

Boys				Girls				Total			
2012-13	2013-14	2014-15	2015-16	2012-13	2013-14	2014-15	2015-16	2012-13	2013-14	2014-15	2015-16
22.18	20.00	23.02	10.91	20.65	17.37	20.73	3.55	21.42	18.70	21.88	7.35

Source: Compiled from U-DISE Flash statistics for respective years and authors calculation based on unpublished U-DISE raw data.

Note (a): Pupils enrolled in a given grade at a given school year who are no longer enrolled in the following school year

The following Table 21, explains the drop-out by the caste. Drop-out data for 2013-14, shows that only students from ST and OBC have dropped out. Drop-out rate of girls are lower than that of boys in both ST and OBC, however, OBC as a whole, has a higher drop-out rate of 29.63 compared to 22.55 for ST. The drop-out data for 2014-15 shows that the drop-out rate in ST has increased from 21.31 in 2013-14 to 22.07 in 2014-15.

Table 21: Annual drop-out rate by social groups

Year	SC			ST			OBC			Muslims		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
2013-14	-	-	-	22.55	20.05	21.31	25.00	33.93	29.63	-	-	-
2014-15	14.20	-	6.01	20.87	23.25	22.07	-	0.00	-	43.24	51.02	47.67

Source: Compiled from U-DISE Flash statistics for respective years - States reporting negative dropout have not been reported.

4.5. Learning Achievement

The Mizoram State Board of School Examination evaluates students' progress by conducting two board examinations, one at the end of class 10, and the other at the end of class 12. The following Table 22, shows the pass percentage of boys and girls in the Class 10 board exams. As reflected in the table below, the pass percentage has increased from 73.56 percent in 2012-13 to 82.9 percent in 2014-15. The pass percentage is more among boys as compared to girls.

Table 22: Pass percentage at secondary levels

Year	Boys	Girls	Total
2012-13	75.42	71.81	73.56
2013-14	81.97	80.03	80.97
2014-15	83.85	82.50	82.90

Source: Compiled from U-DISE Flash statistics for respective years

Achieving good quality educational outcomes for all, is the most cherished objective of policy makers and educationalists in a democratic country, such as India. It is important for all students to attain certain specified and valued learning standards, after a period of 10 years of schooling, irrespective of their diverse social, cultural and economic backgrounds. In light of this, the Ministry of Human Resource Development (MHRD) had entrusted the Educational Survey Division of the National Council of Educational Research and Training (NCERT) to conduct a nationwide achievement survey of students at the end of Class X, on a sample basis. The survey investigates the student achievement in five subjects: English, Mathematics, Social Science, Science and Modern Indian Language.

Table 23 : Subject-wise Mean Achievement Score in Class X

	English	Mathematics	Science	Social Science
Mizoram	279	245	233	235
India	250	250	250	250

Source: NAS (class X), 2015

The above Table 23, shows the achievement level of the students in Mizoram in Class 10 board exams compared to the national average.

- The average achievement score of Mizoram (279) in English is significantly above that of the overall national achievement score (250).
- The average achievement score of Mizoram in Mathematics (245) is not significantly different to that of the overall national achievement score (250).
- The average achievement score of Mizoram in Science (233) is significantly below that of the overall national achievement score (250).
- The average achievement score of Mizoram in Social Science (235) is significantly below that of the overall national achievement score (250).

Table 24 : Subject-wise Mean Achievement Score in Class VIII

	English	Mathematics	Science	Social Science
Mizoram	244	249	253	238
India	247	245	251	247

Source: NAS Class VIII, 2014(Cycle 3)

The above Table 24, shows the achievement level of the students in Mizoram in Class 8 exams compared to national average.

-The State's average score in English (244) is not significantly different to that of the overall national average (247).

-The State's average score in Mathematics (249) is not significantly different to that of the overall national average (245).

-The State's average score in Science (253) is not significantly different to that of the overall national average (251).

-The State's average score in Social Science (238) is significantly below overall national average (251).

Reading Table 23 and Table 24 together, we can conclude, that the average achievement score of Mizoram in Class 10 board exams has increased to 279 from 244 in class 8. However, it has decreased in Mathematics and Science from 249 and 253 in class 8 to 245 and 233 in class 10, respectively. Even in social science, the average score of Mizoram has decreased from 238 in class 8 to 235 in class 10.

4.6. Percentage of secondary teachers involved in non-teaching assignment

Table 25 shows, that the percentage of teachers involved in non-teaching activities has increased, while the number of days, has decreased year on year. However, data for 2015-16 is not available.

Table 25: Percentage of teachers involved in non-teaching assignment

2012-13		2013-14		2014-15	
Teachers	Days	Teachers	Days	Teachers	Days
2.58	6	7.60	6.46	13.27	4

Source: Compiled from U-DISE Flash statistics for respective years

There are several non-teaching functions, within the school, including administrative support, organising events, managing mid-day meals, managing construction, collecting and maintaining data about school students, organising events, facilitating visits of officials, distribution of uniforms, books, etc. These are, typically, functions of the head masters, but given the fact that in most States, support staff has not been appointed in government schools, it is, but natural, that the head masters turn to teachers. Some of these tasks are quite sensitive, as they involve managing large sums of money, supervising other workers and maintaining multiple records.

Studies have shown, that science and mathematics teachers, are more likely to be deputed to these non-teaching positions, because of their ability to manage numbers and data. When teachers are unable to get a transfer of their choice or when they have missed their chance, they arrange for a deputation to their preferred location through personal networking. Those teachers get deputed to work in the SSA / RMSA Directorate, or sent to SCERT or CHTs. (Ramachandran, 2015)

73 Head Masters (HMs) out of 88 and 451 Subject teachers out of 486 approved under RMSA are in position, leaving 15 posts of HMs and 35 posts of Subject Teachers lying vacant. It has been further reported, that a total of 247 teacher positions are lying vacant in the State. As per the figures available, out of 451 teachers recruited in newly upgraded 88 schools, only 62(12.68 percent) have B.Ed and M.Ed qualification. This has raised serious concern over the quality of teachers. Further, it has come to notice that the HMs and teachers in RMSA schools are appointed on contractual basis and termed as RMSA Teachers/HMs. According to information provided by the State, there is a general perception that schemes such as SSA/RMSA are for a limited period of time, hence, the State has reservations in giving clearance for appointing regular Teachers/ HMs in RMSA schools.

4.7. Financing

This section deals with the Education expenditure budget of the State. However, this section at present, is based on the actuals of 2010-11 and 2011-12, Revised Estimates (R.E) of 2012-13 and Budget Estimate (B.E) of 2013-14. More recent data would give a better understanding of the education expenditure in Mizoram.

Table 26, shows that although, there has been a decrease in amount spent by Mizoram government on Education as a whole, what is worth noting is that the share of non-plan expenditures which was decreasing to the increase of share of plan expenditures for previous two years, has increased in 2013-14.

Table 26: Total Plan Budgeted Expenditure on Education by all Departments (Rupees in Thousands)

Year	Total expenditure on education	Percentage of Plan expenditure	Percentage of Non-Plan expenditure
2010-11 (Actual)	5129295	30.06	69.94
2011-12 (Actual)	6231204	41.99	58.01
2012-13 (R.E)	7636541	43.43	56.57
2013-14(B.E)	7383710	35.30	64.7

Source: Compiled from Analysis of budgeted Expenditure on Education 2010-11 to 2013-14

Table 27: State's Public Spending on Elementary versus Secondary Education (Rupees in Thousands)

Year	Sp Spending on Elementary Education	Se Spending on Secondary Education
2011-12 (Actual)	2767577.00 (49.40)(a)	1452852.00 (25.93)
2012-13 (R.E)	3260896.00 (47.39)	1740614.00 (25.29)
2013-14 (B.E)	3315130.00 (48.24)	1701924.00 (24.77)

Source: Compiled from Analysis of budgeted Expenditure on Education 2011-12 to 2013-14, MHRD

Note (a): Percentage to total Expenditure on Education is mentioned in brackets.

The above Table 27 shows that, in comparison to elementary education, share of secondary education in the State budget has been nearly half of elementary education in all the 3 years studied. However, in terms of absolute spending, expenditure on elementary education dropped during 2011-12 and increased further in 2012-13 and 2013-14. On the contrary the expenditure in secondary education has decreased in 2013-14.

Table 28: Heads of Public Spending on Secondary Education (Rupees in Thousands)

Heads of expenditure	2011-12 (Actual)	2012-13 (R.E)	2013-14 (B.E)
Direction, Inspection & Administration	24638.00	34540.00	40250.00
Government Secondary Schools	956675.00	1190440.00	1220970.00
Assistance To Non-Govt. Secondary Schools	370114.00	392010.00	343640.00
Scholarships	220.00	400.00	400.00
Teacher's Training	26885.00	31220.00	18780.00
Non Formal Education	5716.00	8050.00	7700.00
Other Expenditure	68604.00	83954.00	70184.00

Source: Compiled from Analysis of budgeted Expenditure on Education 2011-12 to 2013-14

The above Table 28, explains the various heads of expenditure under secondary education. The major expenditure has been made under government secondary schools in all the years studied, whereas, the least has been spent on non-formal education.

As of March 31st 2014, Mizoram has received Rs.175.89 crore financial assistance from Government of India under RMSA scheme.

5. Conclusion

According to the Secretary, School Education, Mizoram, poverty and unsatisfactory foundation of education till class VIII are reasons for dropout in their State ((MHRD, 2016). There are also concerns raised over the method of capturing data and quality of data. Children moving from class VIII to IX need to be tracked and analysis has to be done to find out the concerned areas where special attention is required. Different groups of children may be formed, as per their potential and need, thereafter, remedial classes for class VIII syllabus may be initiated, during the summer holidays. The Gross Access Ratio (GAR) for Mizoram is 39.27 percent and more new schools are required in Mizoram; however, due to very small habitations, it may not be viable to open new schools. The State should provide transport allowance or hostel facilities to students to overcome the problem.

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CLI CONNECTED LEARNING INITIATIVE

Mizoram Technology Readiness Report

January 2017

An Initiative seeded by

TATA TRUSTS

RE-IMAGINING FUTURES
TISS

Founding Partners

Massachusetts Institute of Technology

Mizoram Technology Readiness Report

Selection of schools for CLIx intervention – a timeline

Mizoram has the second highest literacy rate in the country and it is therefore believed that Mizoram can also be one of the most IT literate states in the country.	June-July, 2014
Aizawl district chosen for intervention as it has almost 1/3rd of the population of the state and has high telephone density.	August 2015
58 secondary schools, which were covered under either ict@school phase 1 or phase 2, were surveyed for the availability of basic infrastructure	August 2015
30 schools were finally selected for intervention	October, 2015
Gaps in ICT infrastructure identified and necessary infrastructure required for CLIx intervention procured	July-Nov, 2016

Source: Hnamte, Lalbiakdiki (n.d.) Report of The Field Study in Mizoram for TATA-MIT Initiative. Aizwal: Mizoram University and CLIx internal reports

7. Introduction

Overview of CLIx

The Connected Learning Initiative (CLIx) is an outcome of a collaboration between Tata Trusts (India), Massachusetts Institute of Technology (MIT, Cambridge, Mass., USA) and Tata Institute of Social Sciences (TISS, Mumbai, India). CLIx has been created to provide young people from under-served communities opportunities for participation in quality education through the meaningful integration of technology.

CLIx is geared to provide engaging, hands-on learning experiences in Mathematics, three subjects in Science, and Communicative English, as well as digital literacy through the i2C (Invitation to CLIx) platform, integrated with value education and skills relevant to the 21st century. In the first phase, these resources are being offered to students of government secondary schools in the four Indian States of Chhattisgarh, Mizoram, Rajasthan and Telangana, in their respective regional languages.

As a platform for innovation in education, CLIx also supports the professional development of in-service teachers, making substantial contributions to teacher education in Indian languages. Research activities and collaborations around CLIx 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 open education, providing students with a significantly higher level of knowledge and skills in key areas, more than existing systems and pedagogies have been able to achieve.

The objectives of the report

- To give a brief overview of ICT@Schools scheme in Mizoram.
- To give a snapshot of the process followed to select schools for intervention.
- To estimate the type of infrastructural requirements that may be needed in addition to the infrastructure already present in the selected secondary schools of Mizoram to effectively run CLIx intervention.

ICT@Schools Scheme

Recognising the critical role of 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 that 1 to 3% of the budget be spent on providing computers in secondary and senior secondary schools over the subsequent five years. Following this recommendation, the Government launched its flagship ICT scheme for schools, the 'ICT@Schools', in 2004, 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 the ratio of 75:25 between the Central Government and the States. However, for States in the North-Eastern region including Sikkim, this ratio is 90:10.

Table 1 shows the difference between infrastructure provisions under ICT@Schools scheme and the necessary requirements for CLIx intervention. Multimedia devices like speakers, camera and headsets, LAN interface, uninterrupted power supply and separate labs physics, chemistry and biology are additional requirements for CLIx intervention.

Infrastructure Status

Table 29 : Infrastructure provisions under revised ICT@school scheme and requirements for CLIx

Requirement	Revised ICT@Schools scheme	CLIx requirements	Remarks
Hardware & Software	10 PCs or 10 nodes connected through a server per school, printers, projector, etc. Keyboards customized for use in the regional languages.	- 3 CPUs working in case of NComputing or at least 7 computers - Keyboard - Projector - Printer/Scanner - Audio System and Camera (if provided) are working - 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 future. Wireless links would also be explored.	Functional Internet connection with a speed of at least 2Mbps. 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	Wherever the power supply is unreliable, it is proposed to provide assistance for purchase of a generator, as a backup only and also its recurring cost, subject to a maximum of Rs.1000 per month, in addition to Rs.1000/- per month for the electricity charges. In areas where there is no power supply, solar generated power should be made use of.	UPS present with all PCs.	Uninterrupted power supply is necessary for CLIx intervention.
Computer Room/Lab	The computers would be installed in one of the safe rooms in the school. 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/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@Schools scheme	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 a combined science lab.

*Rashtriya Madhyamik Shiksha Abhiyan

The Central Government initially recommended that States with limited capacity adopt the BOO/BOOT (Build Own Operate and Transfer). 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 teachers.

Studies have reported that school Principals have low levels of awareness towards 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. In order to create greater school level ownership, the States must empower Principals to interact with and hold the BOOT operator accountable for the quality of service provision. This tripartite arrangement between the State, the BOOT operator and the school Principal will create an environment conducive to school level ownership, planning and accountability. It will enable the States to strengthen their evaluation processes by articulating a clear set of demands from the schools. It will also enable Principals to encourage teachers and students to be active participants in integrating technology in curriculum transaction and school processes (ICT Evaluation Report, NCERT, 2014).

Table 30 : Financial Assistance under ICT@Schools for Mizoram (Rs. In Lakh)

	Released	Utilized	Expenditure(a)
2009-10	301.50	301.50	-
2010-11	408.06	106.56	-
2011-12	672.84	672.84	
2012-13	248.45	0	672.83
2013-14	73.13	-	331.59
2014-15	0	-	0
2015-16(As on 24/7/15)	0	-	-
Total	1703.98	1080.9	

Source: Lok Sabha Unstarred Question No. 2737, dated on 13.03.2013, Lok Sabha Starred Question No. 231, dated on 23.07.2014 & Lok Sabha Starred Question No. 1471, dated on 29.07.2015, www.indiastat.com

Note (a): The Expenditure includes the unspent amount of the previous year, State share and Central share and is based on expenditure reported by States for appraisal.

As evident in the above Table 2, in 2010-11 almost 3/4th of the amount released under ICT@Schools scheme remained unutilized. In 2012-13 and 2013-14, the funds were not utilized at all. Overall, until July 2015, Rs.10.80 crores have been spent out of the Rs.17.03 crores released.

Table 31 :Year-wise Detail of Schools covered under ICT in Mizoram

Year	Secondary school	Higher-sec school	Total
2006-07	30	-	30
2007-08	-	-	
2008-09	-	-	
2009-10	99	1	100
2010-11	18	19	37
2011-12	171	10	181
Total	318	30	348

Source: ICT@Schools evaluation report, NCERT, 2014

Table 31 gives a snapshot of the year-wise number of schools covered under ICT@Schools scheme in Mizoram. So far, as many as 348 schools are covered under ICT@Schools scheme in Mizoram out of which 318 are secondary schools and 30 are higher secondary schools. However, this number does not match with the number claimed by the government which says 382 schools are covered under ICT@Schools scheme in Mizoram as on July 1, 2014 (Lok Sabha Unstarred Question No. 449, dated on 14.07.2014.)

Table 32 : Student to computer ratio in schools selected for intervention

Sl. No	School Name	No. of functional PCs	Student to computer ratio	Internet connectivity
1	Govt. Mizo H.S.	30	26.47	Yes
2	Govt. Chaltlang H.S.	10	14.00	Yes
3	Govt. Sakawrtuichhun H.S.	10	3.40	No(b)
4	Govt. Chawnpui H.S.	10	2.00	Yes
5	Govt. Kulikawn H.S.	16	2.75	No
6	Govt. Dinthar H.S.	10	1.70	No
7	Govt. Republic H.S.	10	10.40	No
8	Govt. KVM H.S.	9	4.00	No
9	Govt. KM H.S.	10	19.80	Yes
10	Govt. JL H.S.	8	17.63	No
11	Govt. RM H.S.	10	2.60	Yes
12	Govt. Aizawl H.S.	10	2.80	Yes
13	Govt. Hrangchhuana H.S.	16	1.81	No
14	Govt. Gorkha H.S.	10	2.10	No
15	Govt. Bawngkawn H.S.	9	3.78	Yes
16	Govt. Bungkawn H.S.	8	1.63	Yes
17	Govt. Melriat H.S.	10	3.20	No
18	Govt. Pianghleia H.S.	10	4.10	Yes
19	Govt. Zemabawk H.S.	13	11.46	Yes
20	Govt. Mamawii H.S.	10	8.30	Yes
21	Govt. Bethlehem H.S.	15	5.33	No
22	Govt. Model H.S.	10	9.00	No
23	Govt. Hrangchhunga H.S.	7	5.43	No
24	Govt. Tanhril H.S.	9	2.44	No
25	Govt. Durtlang H.S.	10	4.20	Yes
26	Govt. Sihphir H.S.	10	2.40	No
27	Govt. Central H.S.	10	14.20	No
28	Govt. Maubawk H.S.	8	2.88	Yes
29	Govt. Sairang H.S.	10	2.70	No
30	Ramhlun H.S.	15	4.80	No

Source: CLIx implementation team's survey report

Note (b): Schools with 2G internet connection are considered to be not available.

The ICT@Schools scheme stipulates that each school be provided with requisite infrastructure in the form of hardware and software (10 PCs, accessories like printers, projection systems, etc.), internet connectivity, power supply and computer labs. Table 4 indicates that the number of computers available is not enough to ensure that all students get access to the machines. The student to computer ratio is as high as 26.47 in one of the schools. The ICT@Schools evaluation report (NCERT, 2014) also mentions that the number of computers supplied to the school are very less as compared to the total strength of the school. Internet connectivity was not available in more than 50% of the schools selected for intervention.

Table 33: Gaps in ICT infrastructure before CLIx intervention

	Lab Server	Switch for LAN	CAT5e LAN Cable	ADSL2 Router/Modem	RJ45 Pin – LAN	Headphones	Headphone Splitter	USB Keyboard/Mouse Combo	SMPS 450W	Cabinet/ Tower case	UPS Batteries	2GB DDR2 RAM	18.5 inch Monitor	Motherboard DDR2 RAM support	Motherboard DDR3 RAM	500GB Hard Disk	USB Cable for connecting phone/camera	Additional Computers
Govt. Mizo H.S.	X	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Chaltlang H.S.	X	X	X	✓	X	X	X	✓	X	X	X	X	✓	✓	✓	✓	X	✓
Govt. Sakawrtuichhun H.S.	X	✓	✓	✓		X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Chawnpui H.S.	X	✓	✓	✓	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Kulikawn H.S.	X	✓	✓	✓	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Dinthar H.S.	X	X	X	X	X	X	X	X	X	X	X	✓	X	✓	✓	✓	X	✓
Govt. Republic H.S.	X	X	✓	X	X	X	X	✓	X	X	X	✓	X	X	✓	✓	X	✓
Govt. KVM H.S.	X	✓	✓	X	X	X	X	✓	✓	✓	✓	X	X	✓	✓	X	X	X
Govt. KM H.S.	X	✓	X	✓	✓	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. JL H.S.	X	X	X	X	X	X	X	✓	X	X	✓	X	✓	✓	✓	✓	X	X
Govt. RM H.S.	X	X	X	✓	X	X	X	✓	X	✓	✓	✓	✓	✓	✓	X	X	✓
Govt. Aizawl H.S.	X	✓	✓	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Hrangchhuana H.S.	X	X	✓	X	X	X	X	✓	X	X	X	X	✓	X	✓	✓	X	✓
Govt. Gorkha H.S.	X	✓	✓	✓	✓	X	X	✓	X	✓	✓	✓	✓	✓	X	✓	X	✓
Govt. Bawngkawn H.S.	X	✓	✓	✓		X	X	✓	X	✓	X	✓	✓	✓	✓	✓	X	X
Govt. Bungkawn H.S.	X	✓	X	✓	X	X	X	✓	X	✓	✓	✓	X	✓	✓	✓	X	X
Govt. Melriat H.S.	X	✓	X	✓	X	X	X	✓	✓	✓	X	✓	✓	✓	✓	✓	X	✓
Govt. Pianghleia H.S.	X	✓	X	✓	X	X	X	X	X	X	✓	✓	X	✓	✓	✓	X	✓
Govt. Zemabawk H.S.	X	✓	✓	✓	X	X	X	✓	X	X	X	X	✓	X	✓	✓	X	✓
Govt. Mamawii H.S.	X	✓	✓	✓	✓	X	X	✓	X	X	✓	✓	✓	✓	✓	✓	X	✓
Govt. Bethlehem H.S.	X	X	X	X	X	X	X	✓	✓	✓	X	✓	X	✓	✓	X	X	✓
Govt. Model H.S.	X	X	X	X	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Govt. Hrangchhunga H.S.	X	X	X	X	X	X	X	X	✓	✓	X	✓	✓	✓	✓	X	X	X
Govt. Tanhril H.S.	X	X	X	X	X	X	X	X	✓	✓	X	✓	✓	✓	✓	X	X	X
Govt. Durtlang H.S.	X	✓	X	✓	X	X	X	✓	✓	✓	X	X	✓	✓	✓	✓	X	✓
Govt. Sihphir H.S.	X	X	X	X	X	X	X	✓	X	X	X	✓	✓	✓	✓	✓	X	✓
Govt. Central H.S.	X	X	X	X	X	X	X	✓	✓	✓	✓	✓	✓	X	✓	✓	X	✓
Govt. Maubawk H.S.	X	X	X	X	X	X	X	X	✓	✓	X	X	✓	✓	✓	X	X	X
Govt. Sairang H.S.	X	X	X	X	X	X	X	✓	✓	✓	X	✓	✓	✓	✓	✓	X	✓
Ramhlun H.S.	X	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓

Table 33 indicates the gaps in ICT infrastructure in the 30 schools selected for CLIx intervention in Mizoram. The gaps are mapped for 18 key computer hardware specifications necessary for CLIx intervention. The ones marked $\times$ indicate the gaps in specific hardware in corresponding school and the ones marked $\surd$ indicates presence of computer hardware in the school.

Table 34 : Budget Summary for procurement of ICT infrastructure

Sl. No.	Devices	Number of Units	Unit Cost (Rs)	Total Cost (Rs)
1	Lab Server (Branded Dell/ HP)	30	38500	1155000
2	Switch – LAN	14	1850	25900
3	Cable – LAN	17	1600	27200
4	ADSL2 Router/Modem for Wireless connection	14	2750	38500
5	RJ45 Pin - LAN setting	798	8	6384
6	Headphones with mic - 2/terminal	688	475	326800
7	Splitter per terminal - 1/terminal	333	100	33300
8	USB Keyboard/Mouse Combo	19	500	9500
9	SMPS	23	600	13800
10	Cabinet/Tower	17	1450	24650
11	UPS Batteries	53	4450	235850
12	2GB DDR2 RAM	12	1400	16800
13	Monitor	8	5600	44800
14	Motherboard DDR2 RAM	8	2750	22000
15	Motherboard DDR3 RAM	1	3250	3250
16	Hard Disk	6	3500	21000
17	USB Cable	60	100	6000
18	Computer Set	12	25000	300000
			Total Cost :	**Rs.23,10,734**

Source: North East Initiative Development Agency (NEIDA) Quotation price comparison summary schedule

Table 34 shows the number of units of each device required for CLIx intervention and its cost. CLIx has now procured the entire necessary infrastructure at a cost of Rs.23,10,734 from the vendor, Computer House, Millennium Centre, Aizawl.

Table 35 : Current status of ICT infrastructure after upgradation for CLIx intervention

	Lab Server	Switch for LAN	CAT5e LAN Cable	ADSL2 Router/Modem	RJ45 Pin - LAN	Headphones	Headphone Splitter	USB Keyboard/Mouse Combo	SMPS 450W	Cabinet/ Tower case	UPS Batteries	2GB DDR2 RAM	18.5 inch Monitor	Motherboard DDR2 RAM support	Motherboard DDR3 RAM	500GB Hard Disk	USB Cable for connecting phone/camera	Additional Computers
Govt. Mizo H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Chaltlang H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Sakawrtuichhun H.S	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Chawnpui H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Kulikawn H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Dinthar H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Republic H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. KVM H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. KM H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. JL H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. RM H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Aizawl H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Hrangchhuana H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Gorkha H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Bawngkawn H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Bungkawn H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Melriat H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Pianghleia H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Zemabawk H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Mamawii H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Bethlehem H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Model H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Hrangchhunga H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Tanhril H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Durtlang H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Sihphir H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Central H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Maubawk H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Govt. Sairang H.S.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ramhlun H.S.	X	√	√	√	√	X	X	√	√	√	√	√	√	√	√	√	X	√

Source: CLIx data, 2016

Recommendations to the Mizoram Government on Technology in Education

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

CLI CONNECTED LEARNING INITIATIVE

Connected Learning Initiative In Mizoram

January 2017

An Initiative seeded by

TATA TRUSTS

RE-IMAGINING FUTURES
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CLIx in Mizoram

Introduction

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

Overview of CLIx

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

CLIx offerings in year 1 and 2

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

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

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

Table 36 : Progress and milestones achieved in CLIx

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

CLIx Implementation

Teacher Professional Development (TPD)

Source: CLIx internal data, 2016

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

Table 37 : TPD workshops

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

Student Module Rollout/Implementation

Source: CLIx internal data, 2016

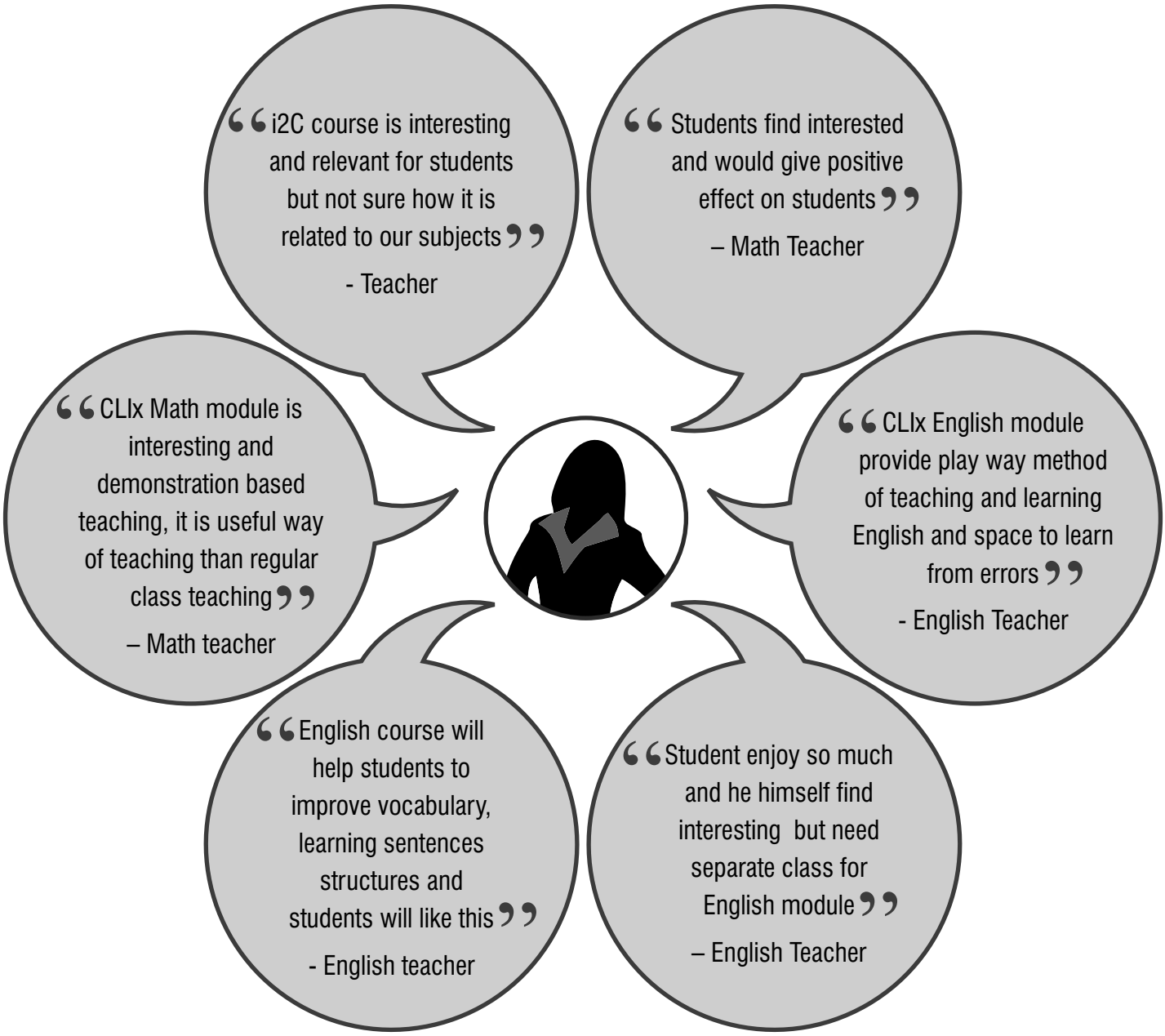
Student rollout is conducted through the teachers implementing modules with their students. After school lab readiness and detailed discussions with the teachers and headmasters on time tabling, teachers implemented modules in their schools. Invitation to CLIx (i2C) has been implemented in most of the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

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

Table 38 : Student roll out

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

Teachers' Comments



Challenges faced in implementing CLIx

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

i. Teachers' level – The teachers during training and especially post training, were quite confident to transact the module with students. However there were few challenges that were observed during student roll out.

a) Teachers' anxiety for technology or technology based teaching.
b) Teachers perception of separate ICT class for any technology/ICT based teaching.
c) Teacher's' inability to relate i2C (Digital literacy) to their subject areas and thus their disinterest in rolling out i2C in their schools.
d) Expectation from teachers for presence of the local team member during the module roll out in schools.
e) Declining confidence in teachers for rolling out modules in school because of the gap between TPD/Trainings and module delivery.
f) Delay in module delivery and pressure on teachers to complete the syllabus making teachers unable to accommodate CLIx modules.
g) Gap between teachers' understanding of CLIx and their expectations and CLIx approach on integration of technology in curriculum and pedagogy.

ii) ICT infrastructure in schools - The training for TPD and i2C for teachers were done at the computer laboratories in the chosen institute or college, hence there were no infrastructural issues faced in conducting the trainings successfully. However, for the roll out of i2C to students, the implementation team faced several constraints owing to the inadequate infrastructure available at the school. Some of the issues are -

a) Challenges in transacting the modules and limited access to computers by students because of high computer student ratio (1:3 - 1:5) in some schools.
b) Not enough physical space in the computer lab of some schools to accommodate one entire section of students (average class size is 40).
c) Low maintenance of computer labs by schools and authorities (HMs) not sure of provisions for maintenance.
d) Non functional computer labs largely due to budget constraint in upgrading and making them functional.
e) Constant technical issues arising in relation to the functioning of computer labs.
f) Lack of continuous internet connectivity. Modules have to be uploaded on all the machines or servers. Uploading, updating and data retrieval is a manual process.

iii) Administrative-

a. Grouping a section of student in two or more groups to access the computer lab is challenging.
b. Timetabling - incorporating CLIx modules (block periods) in the existing timetable has been very limited

Recommendations

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

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

1. The state government should enhance the existing ICT infrastructure in schools. Specifically, it should:
   - Provide adequate number of computers to schools based on student enrollment, to improve the computer-student ratio at least to 1:2 (at present it is 1:5 or even worse).
   - Replace five and above years' old non-functional machines with new machines of the latest configuration.
   - Ensure the computer lab is of appropriate size to accommodate all students at one time.
   - Ensure internet connectivity to schools for connected learning experience, access to open educational resources and information, easy updating of content and data retrieval.
   - Provide computing device (laptop) for teachers to engage in online professional courses and for the development of educational resources
   - Provide power backup to the computer labs to avoid any data loss, provide uninterrupted learning experience and ensure safety of machines.
   - Provide on-going maintenance of the computer lab.

2. The ICT@School scheme must ensure that part of the in-service training include teachers using ICT facilities in their schools or homes for accessing online courses, open educational resources (e.g. the NROER among other resources) relevant for their subjects, with credits/certificates awarded for completion of such courses and assignments. ICT should also be used for teacher professional development.

3. As the 7th JRM on RMSA noted, the state government should review, with the help of subject specialists and IT experts (including from TISS - CLIx), the relevant IT solutions/software available that can enable students to build their knowledge and skills starting from their existing level towards their grade appropriate level.

4. The School Education department must issue a GO / circular to all schools requesting adequate i.e. at least 30% of the teaching time per subject to be apportioned for computer-aided education. This needs to be done in consultation with school teachers and Principals.

5. The School Education department must submit a state specific costed ICT plan as part of the AWPB submission and seek greater flexibility in terms of use of their budgets.

6. Latest available government data reveals that no allocation was made towards ICT@School within the integrated RMSA for Mizoram (in 2015-16). The three departments of School Education, Planning & Programme Implementation and Finance must convene a joint meeting to understand reasons for non-allocation towards ICT, and ensure an allocation for ICT in the 2017-18 budget.

7. In Mizoram, ICT@School was initially managed by SCERT and the outright purchase method was used. The scheme was subsumed in RMSA w.e.f. 2014-15 and not much has been done so far under RMSA. There is a need to address this gap on an urgent basis.

Annexure 1: Details of CLIx offering 2017-18

Student Offerings

(1) Invitation to CLIx - Digital Literacy course

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

i. Introduction / Indic Typing
   i. Drawing and Designing – Inkscape
   ii. Measuring and Observing – Spreadsheet
   iii. Dynamic Mathematics – Geogebra
ii. Programming activities – Turtle

1. Simulations – Turtle
2. Mapping your world – Open Street Mapping

(2) English

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

Modules to be offered:

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

(3) Mathematics

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

i. Re-interpreting the Curriculum: Strengthening the intended curriculum by building modules that use parts of the textbook content as the basis for building foundational concepts, strengthening reasoning ability, and understanding core ideas of mathematics

ii. Transforming the Pedagogy: Learning through meaningful explorations and games, discussion of mathematical ideas

Continuous professional development of Math teachers

Modules to be offered:

i. Geometric reasoning
ii. Proportional reasoning

(4) Science

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

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

(5) Values

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

Teacher Professional Development

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

i. 6 credits course (Foundation and Subject)

ii. 17 credits course (Foundation, Subject, Elective & Action Research)

Teacher/Faculty Fellowships

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

Develop Local Leadership and Expertise

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