In-service Teacher Training for Public Primary Schools in Rural India

Findings from District Morigaon (Assam) and District Medak (Andhra Pradesh)

Huma Kidwai, Denise Burnette, Shreyanka Rao, Seema Nath, Monisha Bajaj and Nirupam Bajpai

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LIST OF ACRONYMS

AP	Andhra Pradesh
ASER	Annual Status of Education Report
BRC	Block Resource Center/Coordinator
CCE	Continuous Comprehensive Evaluation
CGC|SA	Columbia Global Centers	South Asia
CRC	Cluster Resource Center/Coordinator
CTE	College of Teacher Education
DIET	District Institute of Education and Training
DISE	District Information Systems for Education
DPEP	District Primary Education Project
DRP	District Resource Person
EVS	Environmental Science
FGD	Focus Group Discussion
HDI	Human Development Index
IASE	Institute of Advanced Studies in Education
ICT	Information Communication Technology
IRB	Institutional Review Board
KMO	Kaiser-Meyer-Olkin
MDEP	Model Districts Education Project
MDG	Millennium Development Goals
MHRD	Ministry of Human Resource Development
NCERT	National Council of Educational Research and Training
NCF	National Curriculum Framework
NCTE	National Council for Teacher Education
NPE	National Policy on Education
NUEPA	National University of Educational Planning and Administration
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PPS	Probability Proportionate to Size
PROBE	Public Report on Basic Education
PTA	Parents Teachers Association
RIE	Regional Institute of Education
RP	Resource Person
RTE	Right to Education (Act)
RVM	Rajiv Vidya Mission
SCERT	State Council of Educational Research and Training
SMC	School Management Committee
SSA	Sarva Shiksha Abhiyan
TTI	Teacher Training Institute
TET	Teachers Eligibility Test
TLM	Teaching Learning Material
UEE	Universal Elementary Education

ACKNOWLEDGMENTS

EXECUTIVE SUMMARY

India has witnessed several monumental changes in the field of Elementary education in the last decade. The ratification of the Right of Child to Free and Compulsory Education Act in 2009 changed the policy landscape and opened up avenues for different stakeholders to have a series of opportunities to strengthen the quality dimensions of primary education in India. However, given the enormity of the task much remains to be done to improve the quality of in-service teacher training in rural India.

The paper represents an amalgamation of different viewpoints of teachers, cluster resource coordinators, resource persons, and staff members from district and state level offices of SSA, DIET, Department of Education and SCERT, on the challenges and opportunities usually associated with the in-service teacher trainings in public primary schools. The research methodology employed for this papers follows the mixed-method design, combining qualitative data from individual interviews (n=16) and focus group discussions (n=20), and observations with a cross-sectional survey of a random sample of primary school teachers (n=789) in the two districts. To guide this research, the following research objectives were identified:
1. To understand the role of teacher training in the existing pedagogic practices present in schools
2. To analyze the co-relation between the textbooks, and teacher training, and student learning in Assam and Andhra Pradesh
3. To explore ways to revamp the existing in-service teacher training programs in Assam and Andhra Pradesh so as to better support the teaching learning processes at schools.

The data collected through this research indicates that in-service teacher training is not reflective of the principles proposed in the curriculum. There are severe gaps that impact the quality outcomes adversely. The teachers feel that the training they receive at the Mandal/Cluster level is not the same that was first intended to be delivered at the state/national level. The dilution in the dissemination of training is another reason for sub-par teacher training practices. Hence, the in-service teacher training expectations and the realities are divergent. As a result, despite a burst of interventions such as the RTE 2009 and CCE 2012 to improve the quality of education, the impact is minimal.

The quantitative data indicates that reasons for choosing to teach stem from influential role models and altruistic impulses. Teachers are overall quite satisfied with teaching as a profession, more so in Medak. Majority of them, from both the districts, would recommend teaching as a profession. Another important finding is that the lack of multi-grade teaching and multi-varied role of teachers impact their performance in classrooms.

The paper concludes with a list of recommendations to the local governments and education authorities that it has arrived upon from a consolidation of findings from different sources. It encourages the district education unites to view educational needs of their respective region through an integrated approach. It encourages the local offices to partner with other actors in the field to better understand educational quality and achievement and its determining factors: teacher training, school participation, district level education and budget planning, school environment, and monitoring and evaluation.

1. INTRODUCTION

Over the past two decades, India has made significant advances in school education in respect to overall literacy, access and enrolment in schools, and infrastructure. The two major accomplishments in the recent years is the political recognition of Universalization of Elementary education (UEE) as a legitimate demand and the state commitment towards UEE in the form of the Right of Children to Free and Compulsory Education. This has led to a higher demand of qualified elementary school teachers. Over the past decade, access to education was one of the only topics that were being addressed by the Government of India. However, increasingly the shortcomings of what actually takes place inside a classroom has come to the forefront of the national debate on education. Questions are being raised on whether the current cohort of teachers is being trained properly to meet the ever-increasing demands of being educators. Most of the discourse about in-service teacher training taking place in India has shown severe inadequacy where teachers feel incompetent to conduct their classes as the trainings provided are insufficient or ineffective or irrelevant.

Policy literature and reports indicate the glaring disconnect between what teachers learn in the teacher training programs and what they eventually teach in the classrooms. This policy-implementation gap is particularly wide in rural schools' opportunities and access to training sessions and materials is not as common as it is in metropolitan regions. Similar observations in operational sites for Model Districts Education Project have compelled us to ask the following broad questions:

1. What factors contribute to the existing gaps between teacher training and implementation of new concepts in the public primary schools of rural Assam and Andhra Pradesh?
2. What factors are making training supportive of enhanced teacher practices in public primary schools of rural Assam and Andhra Pradesh?

Based on perceptions of teachers, cluster resource coordinators, and other relevant educational functionaries in the offices of SSA, DIET and SCERT, this paper attempts to examine (1) role of teacher training in the existing pedagogic practices present in schools, (2) the relationship between the textbooks, and teacher training, and student learning in Assam and Andhra Pradesh, and (3) ways to revamp the existing in-service teacher training programs in Assam and Andhra Pradesh so as to better support the teaching learning processes at schools.

1.1 The Columbia Global Centers | South Asia (Mumbai)

The Columbia Global Centers | South Asia (CGC|SA) is the fourth center Columbia University has launched around the world. The Center, headquartered in Mumbai, India, provides a base for scholarly activities throughout South Asia and advances the University's academic partnerships and programs in the region. The Center's activities are organized around four pillars: Research, Education, Applied Scholarship, and Outreach. Activities of the CGC|SA include a wide range of disciplines, from education to health to sustainable development, and represent partnerships with several schools and institutes at Columbia University, and in the region.

1.2 Model Districts Education Project (MDEP)

MDEP | Access to Achievement is a collaborative, five-year demonstration project of the Columbia University Global Center | South Asia, the Government of India, and key education stakeholders in selected rural districts of India. Building on the experience of the Global Center's Model District project to improve maternal and child health outcomes in India, MDEP aims to use current scientific evidence and best professional practices to develop, recommend, monitor, and evaluate a high quality, cost-effective, transferable and scalable model of primary education. Selected districts will serve as regional pilots for scaling up improvements. Currently, the project is present in Morigaon, Assam and Medak, Andhra Pradesh. However, this working paper, and continued work during the course of the project, seeks to contribute to discussions of what is required to strengthen primary education systems for India's rural citizens, and aims to inform policy makers, program managers, and health researchers.

1.3 Purpose of the project

This paper is third in the series of research studies conducted under the Model Districts Education Project (MDEP) for Columbia Global Centers | South Asia (Mumbai). The purpose of the proposed project is to improve the quality of primary education by developing and testing a multi-level, evidence-based model of primary education that is "locally owned and operated" yet readily adaptable for other locales. There are two specific aims, each with discrete, measureable outcomes:

1. to improve the quality of student learning
2. to lower dropout rates

The project seeks to demonstrate that a relatively modest, targeted program of innovations and resources geared toward *community building*, *teaching and learning*, and *educational programming, coordination, monitoring, and evaluation* will significantly improve the two outcomes of interest, while simultaneously being cost-effective and readily scalable. The project is thus also expected to facilitate India's progress towards Millennium Development Goals which address issues of universal access to primary education and related outcomes by the year 2015.

1.4 Purpose of the paper

As mentioned earlier, this working paper is third in the series of three[1] research studies conducted under MDEP's first year's commitment to understand and analyze the primary education scenario in the two districts. The research is focused on understanding the key challenges and opportunities that the administrative systems and policies and the contextual particularities of the two sites pose for developing relevant student curricula and effective teacher training programs. These papers are expected to build the foundation for an action oriented research project on rural primary education through which MDEP aspires to support the local structures and public provisions of primary education in Assam and Andhra Pradesh.

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[1] The other 2 being:
   a.   Cross-country comparative review of public primary education
   b.   Study of textbooks in public primary schools of District Morigaon and District Medak

2. CONTEXT OF PRIMARY EDUCATION IN INDIA: RECENT DEVELOPMENTS

The education landscape in India has changed enormously since its independence. This difference was brought about in various forms and levels, impacting the scope and quality of both demand and supply sides of public primary education in India. Bolstered by the increasing evidence to prove a connection between education and development (Dreze and Sen, 2013), as well the human rights approach to look at development from a social perspective (De, Khera, Samson and Kumar, 2011), both national and international stakeholders have strongly pushed for a more comprehensive approach to education in the country.

This decade has witnessed tremendous change in the landscape of Indian education. Education surveys from the 1990s show abysmally low levels of achievements for India in the field of education (De, Khera, Samson, and Kumar, 2011). For years India was focusing on issues of access, trying to universalize enrolment in primary schools. In response to the National Policy on Education (1986), the late 1980s and the early 1990s saw a plethora of new schemes implemented to extend the coverage of quality primary education. The District Primary Education Programme (DPEP) was one of the key programs initiated at the district level in many states of the country. The focus of this program was to provide universal access to primary education. This focus on primary education benefitted significantly from the rising global action on education following the Education for All Conference in Jomtein in 1990.

DPEP expanded its coverage across districts progressively through a phase-wise approach until it was subsumed by Sarva Shiksha Abhiyan (SSA) in 2001. SSA retained most of the DPEP goals extending it beyond primary (grades 1-5) to elementary (grades 1-8) school. These goals and aspirations matched well with the priority goals reinforced by the Dakar World Education Forum and the Millennium Development Goals (MDG) Summit in 2000. The coordination of national and international development priorities helped the Indian government to raise significant financial support for the education sector. SSA became the overarching mission under which different education programs were planned and implemented at the central as well as the state level. While some attention was paid to improving the quality of education in schools, the predominant focus of the mission remained to increase enrolments in elementary schools. In order to track and project progress to keep up with international comparisons on MDGs, a comprehensive database on schools was developed under the District Information System for Education (DISE). DISE has played an instrumental role in helping the states identify and relate different variables in educational access, resources and achievement. This development has provided a large scale empirical basis to emphasize the need to move beyond enrolment and ensure quality of experience and learning at a school.

With the introduction of Rights to education Act (2009), for the first time in the history of education in India the rights framework for education has made it compulsory for the State to "ensure learning of equitable quality for all children" (MHRD, 2011, p. 56). This is a major departure from the age old tradition of giving preference to 'merit' and segregating children into schools of different quality based on their proven skills and abilities. The previous

"selective" system of education provided highly resourced model schools to the most 'able' children. The current Right to Education Act questions the notion of merit and reminds us of its strong relation with social advantage (MHRD, 2011). The Right to Education Act has further strengthened the arguments made by the National Curriculum Framework of 2005 and the resulting move towards Continuous Comprehensive Evaluation (CCE) policy[2].

This last decade has seen enormous investment in the field of elementary education. However, financial allocations still remain inadequate. It is also important to note that despite large investments in education there has been no significant increase in the percent GDP allocation for education since 1996 (De, Khera, Samson and Kumar, 2011). Similarly, despite the breakthroughs in the strengthening of the legal framework to provide equitable access to primary education, enforcing these legal provisions remains a major challenge. There exists a mix of progress and problems in every facet of educational development in India today. The education sector has made a sudden and immense progress in enabling almost universal access to primary schooling. However, the development in quality aspects of schooling has not kept pace with access. This widening gap between access and quality, if not filled in time, can possibly reverse the developments made so far.

There is wide variation across states in having achieved standard quality indicators – both tangible (infrastructure, student-teacher and student-classroom ratios, teaching-learning materials, etc.) and intangible (quality of teachers, interpretation of curriculum, relevance of curriculum, etc.). The following sections describing the educational contexts of District Morigaon and District Medak are reflective of many such inconsistencies in educational achievement.

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[2] Further discussed in Section 4

3. CONTEXT OF PRIMARY EDUCATION IN MEDAK AND MORIGAON

3.1 Overview of District Morigaon and District Medak

Medak district ranks 20th among the state's 23 districts on educational attainment and is considered one of the "educationally backward" districts of Andhra Pradesh[3] (Government of AP, 2007). According to the 2011 Census report, the district is spread over an area of 9699 km^2 with a total population of 3,033,288. Females make 49.79% of this population and the sex ratio in the district is 952 per 1000 live male births (Census 2011). As per the census report, adult literacy stands at 61.52% with females constituting 51.37% of its share. The district is less than 100 kms from the capital city of Hyderabad with approximately 76% of the population living in rural areas (Census, 2011).

Morigaon district is the second smallest district of Assam (District Education Report, 2013) and is spread over an area of 1551 km^2 (Census, 2011). According to the Census, 2011, Morigaon has a population of 957,853 of which approximately 49% is female. The sex ratio stands at 967 females per 1000 males (Census, 2011). The average adult literacy rate stands at 69.37%, of which women constitute 64.99% (Census 2011). Although less than 100 kms from the capital city of Dispur, Morigaon is predominantly rural with over 92% of the population living in areas designated as rural (Census 2011).

Table 1: Descriptive indicators for District Morigaon and District Medak

Description	Morigaon	Medak
Area (km^2)	1551	9699
Total population	957853	3033288
Population density/km^2	617	313
% female population	49%	49.79%
Sex ratio (per 1000 male)	967	952
Total Adult literacy rate (%)	69.3%	61.52%
Female literacy rate (%)	64.99%	51.37%
Distance from the state capital (kms)	<100 kms	<80 kms
% urban population	7.66%	24%

(Census of India, 2011)

Medak district is considered one of the "educationally backward" districts of Andhra Pradesh ranking 20th among the state's 23 districts on educational attainment (Government of AP, 2007). According to the 2011 Census report, the district is spread over an area of 9699 km^2 with a total population of 3,033,288. Females make 49.79% of this population and the sex ratio in the district is 952 per 1000 live male births (Census 2011). As per the census report, adult literacy stands at 61.52% with females constituting 51.37% of its share. The district is less than

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[3] On 30 July 2013, the Central government, in accordance with the Constitution, sanctioned the formation of the separate state of Telangana (the 29th independent state of India). The timeframe given for the creation of the new state is at least four months. The city of Hyderabad would serve as the joint capital of Telangana and Andhra Pradesh for the next ten years. Moving forward, the district of Medak would now be in the state of Telangana instead of Andhra Pradesh.

100 kms from the capital city of Hyderabad with approximately 76% of the population living in rural areas (Census, 2011).

Medak experiences a semi-arid tropical climate with persistent drought, unpredictable weather, limited and erratic rainfall. The temperatures range from 46 degrees Celsius in summers to 6 degrees in winters. The predominant sections of the population are traditional farmers and agricultural laborers cultivating *jowar*, paddy, groundnut, chillies, tomato, cotton and wheat. For educational administration, Medak is divided into four divisions – Jogipet, Siddipet, Medak, and Sangareddy. These divisions are further broken down to the level of *mandals;* there are 46 mandals in the district. Given that the district is fairly large in its geographic spread, different parts of the district are characterized by their own specific demographic profile, urbanization level and climatic conditions.

In contrast, Morigaon district experiences sub-tropical weather which is hot and humid in the summer and cold and dry in the winter. It faces heavy rainfall with the average annual rainfall recording between 1500mm and 2600mm (Morigaon portal, 2013). The humidity levels are usually recorded at 80% (District Education Report, 2013). During the monsoon season, most of the district areas get flooded (Morigaon District Government, 2013). This is a major deterrent to development and livelihood activities in the region. Agriculture is the primary source of livelihood for the people of Morigaon (District Education Report, 2013). For Department of education's administration purposes, Morigaon is divided into four blocks – Laharighat, Kapili, Mayong and Bhurbandha. Even though, these districts are within close proximity of each other, but they are distinct in its demographic and geographical profile. As a result, these factors have an influence on the educational profile of each block.

3.2 Human Development Indices for the two sites
As per the Human Development Indices for Morigaon and Medak (Table 2) reported by their respective governments, Medak seems to be performing better than Morigaon overall. In particular, Morigaon is lagging far behind Medak on the health dimension. On education index, there does not seem to be a significant difference between the two districts. However, as indicated in Table 3 on education indicators in the two districts, this comparison is likely to have changed over the last decade since the HDI indices were estimated.

Table 2: Indices of Human Development for District Morigaon and District Medak

Indices of Human Development	Morigaon (2001)	Medak (2003)
Human development index (HDI) value	0.494	0.550
Income index	0.562	0.461
Education index	0.551	0.523
Health index	0.371	0.667

(Govt. of Assam, 2003; Govt. of Andhra Pradesh, 2007)

However, it is important to note that while Morigaon ranked among the top five districts within the state on HDI indices, Medak ranked in the bottom five (Govt. of Assam, 2003; Govt. of Andhra Pradesh, 2007). This also indicates the relative performance of the entire states on HDI indicators. However, according the recent Economic Survey of India, both Assam and Andhra

Pradesh are among the low HDI states of the country with their values estimated at 0.444 and 0.473 respectively (Ministry of Finance, 2011).

3.3 Specific education performance indicators

As evident from Table 3, Medak seems to have been performing significantly better than Morigaon on almost all of the specified indicators with the exception of 'Net Enrollment Rate' and 'Access to Drinking Water'. However both the districts point to the extremely low rates of retention through primary school, with Morigaon at 60.2% and Medak at 69.5%. Similar to the trend revealed in Table 2 on HDI values for the two districts in relation to their respective State, Morigaon lies above the mean education figures in Assam while Medak falls far below several mean education statistics in AP. However, both the districts house a relatively higher proportion of primary school drop-outs in their states. Low retention and high incidence of school drop-outs become evident in the large disparity in net and gross enrollment rates, particularly in Morigaon. However, among the students that manage to attend school till grade 5, a fairly high percentage is able to progress to upper primary levels.

Table 3: Key education indicators from District Morigaon and District Medak

Key education indicators	Assam	Morigaon	AP	Medak
Student-level indicators				
– Primary enrolment rate, gross	136.1%	168.3%*	107%	120.6%*
– Primary enrolment rate, net	NA	100.0%*	85.7%	95.3%*
– Transition rate from primary school to UP school	88.7%	93.6%	93.3%	95.1%
– Retention rate	53.38%	60.2%	85.26%	69.5%
– Primary drop-out rate	11.7%	13.7%	6.2%	6.9%
School-level indicators				
– % primary schools with single teachers	20.5%	16.1%	11.7%	8.4%
– % primary schools with single classrooms	31.6%	30.4%	31.1%	22.3%
– Pupil teacher ratio	33	45	24	25
– Student classroom ratio	33	41	25	26
– % primary schools with girls toilets	49%	66%	51.4%	67.6%
– % primary schools with drinking water	76.3%	85.1%	85.9%	75.7%
Teacher-level indicators				
– % primary teachers with education above 12+3 level	13.09%	15.7%	80.19%	78.81%
– % teachers with professional teaching certification	65%	42.5%	99.6%	96.3%
– % female teachers	34.9%	33.1%	50.9%	51.2%

(District and State Report Cards, DISE, 2011-12; *statistics from 2010-11)

Most school-level and teacher-level indicators reveal the relatively disadvantaged position of Morigaon compared to Medak. However, for both the districts these indicators reveal many causes of concern. With significant proportions of schools still run by single teachers and in single classrooms, Morigaon and Medak are far from ensuring the rights of a child to quality education as mandated in the Right to Education Act of 2009. A direct bearing of this situation is evident from in the unfavorable pupil-teacher and student-classroom ratio in Morigaon. An incredibly high percentage of schools still lack in providing its female students with separate toilets, and safe drinking water to its students and teachers. It is widely believed in the

education sector across the developing world that absence of basic facilities like toilets and potable water is not only a health issue, but also one of the factors contributing to school dropout rate (Birdthistle, Dickson, Freeman, & Javidi, 2006; Amritha, 2013).

3.4 Key challenges to education in Morigaon and Medak

The MDEP team observed several educational issues were observed with Morigaon and Medak during field visits, interactions with the parents, students, teachers, teacher trainers, and education functionaries, and review of district and state produced policy literature and statistics. As mentioned earlier, early school drop-out is reportedly one the major concerns of primary education in Morigaon. The main reasons listed are early marriage in case of girls, to work as manual labor, to work in the fields and migration (Annual Work Plan and Budget, 2013). Additionally, annual floods damage schools when the rivers overflow during the monsoon season. During floods, schools are either damaged and submerged or used as refugee camps for displaced villagers[4]. Rehabilitation process takes time and the education system faces a major setback.

Apart from any environmental and household level hindrances, high school drop-out rates could also indicate the questionable efficacy of the education system that fails to prevent students from dropping out, if not contributing to it. In analyzing the factors contributing to early school-dropout, literature on rural education in India makes several references and supply-side factors such as poor school infrastructure, distance to school, lack of drinking water and usable toilets, uninteresting and irrelevant curriculum, teacher shortage and absenteeism, fear of teachers, teacher-led discrimination, neglect by teachers, etc. (Govindaraju and Venkatesan, 2010; Mukherjee, 2011). Table 3 summarizes many such school-specific and teacher-specific indicators that seem to be performing poorly for the two districts. Problems related to teachers' behavior with students and as professionals mostly remain unreported due to the limitations of self-reporting mechanisms normally employed for studies with teachers on school drop-out (Govindaraju and Venkatesan, 2010). Nevertheless, it is not an unfounded assumption that what is taught, how it is taught, and where it is taught are relevant factors necessary to retaining children through the entire schooling phase.

Another challenge is the lack of adequate coordination between the various departments working for education in Morigaon. This, reportedly, leads to delays and halts the progress of educational programs and schemes[3]. In both the districts, there have been several instances of programs and schemes being discontinued before completing a specified term of implementation. Many innovative programs undertaken during the last two decades were stopped due to lack of funds, lack of adequate teachers, change in the ruling government and its priorities, etc[5].

Similar to Morigaon, schools in Medak have been seen to lack in proper infrastructure such as building, classrooms, toilets, playground, etc. Even though there are schools in tribal areas in

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[4] Reported by parents and teachers during MDEP's field visits to schools in Morigaon, in December 2011 and June 2012
[5] Reported by education functionaries during MDEP field visits to Morigaon and Medak in Dec 2011 and June 2012

Medak, there are constraints of language, localized teaching material and communication gap between students and teachers[6]. Related issues have been observed in certain parts of Morigaon district where Assamese teachers are often unable to communicate with Bengali speaking communities3.

Monitoring mechanism of schools in Medak is underdeveloped which is made further difficult because of the large size of the district. As a result in the recent past, there have been numerous cases of non-availability or delayed supply of quality teaching material5. Reportedly, textbooks, stationary and other supplementary materials are often not supplied on time and in sufficient quantity. There is lack of sufficient and judicial use of TLM (teaching-learning material) grant and according to the recent news from the district the TLM grant has been cancelled in the proposed budget for the year 2013-14. Similar news has been received from Morigaon[7].

Overall, a combination of host of factors ranging from natural calamities such as floods and droughts, to school level deprivations such as lack adequate facilities and supplies, seem to work in tandem to keep the students and teachers from staying true to their intended goals of education. Lack of student and teacher motivation to attend school regularly has reportedly been a common observation of the community members and educational functionaries in both the districts[4].

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[6] Reported by parents and teachers during MDEP's field visits to schools in Medak, in December 2011 and June 2012
[7] Recent district-level budget announcements in Morigaon and Medak have cancelled the TLM grant; reported by district-level staff of MDEP, CGC

4. TEACHER PROFESSIONAL DEVELOPMENT

Teachers are undoubtedly the most crucial component of a schooling system. Teachers also happen to be the most costly resource in schools (OECD, 2005). Hence no education reform effort is effective unless the competency of the teachers is ensured. Teacher professional development should hence be considered a national priority from various social and economic perspectives. The following sub-sections provide a brief review of the existing teacher profile in India, key policies governing teacher training in the country, certain challenges facing teacher training opportunities in the country, followed by specific issues of the rural contexts with regards to teacher training.

4.1 Profile of public primary teachers in India

With the expansion of the government schooling system in India teachers have been recruited massively over the past two decades. As a result, the average profile of teachers in the country has changed in many ways. One such change is a direct consequence of the recruitment policies of the government under which the states chose to hire contract[8] teachers over regular hires. Some states like Madhya Pradesh and Chhattisgarh have stopped recruiting permanent teachers all together (De, Khera, Samson and Kumar, 2011). This new development changed the demographic profile of teachers significantly increasing the presence of women, lower age groups, lower caste groups, and more local recruits in the work force.

Furthermore, the 2006 Probe survey report revealed that the educational qualifications of regular and permanent recruits are not likely to differ significantly (De, Khera, Samson and Kumar, 2011). However, the latter has significantly greater experience with teacher training. SSA and DIETs have been working persistently to make up for the discrepancy in teacher training levels and to raise the education qualifications of all teachers, by offering in-service teacher training programs to all teachers.

4.2 Profile of public primary teachers in Morigaon and Medak

4.2.1 Gender profile of teachers

The DISE reports for 2011-12 reveal 48.7% and 34.3% for female teachers working in public primary schools in Morigaon and Medak respectively. At the state level, female teachers represent 36.95% of the public primary teacher workforce in Assam and 49.3% of the same in Andhra Pradesh.

Table 4: Percentage distribution of teachers by gender

District (State)	DISE 2011-12 (District)	DISE 2011-12 (State)
Medak (AP)	48.7%	49.3%
Morigaon (Assam)	34.3%	36.95%

DISE 2011-12

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[8] Contract teachers are locally recruited and appointed by the panchayat or village education committee or school management committee to a particular school. They are oaid less than regular teachers and they work on fixed contracts of usually one year (De, Khera, Samson and Kumar, 2011)

Nationally, the figures state that approximately 47% of the teaching workforce in public primary schools of the country is female. In either case, we can draw two inferences: (1) there is an evident gender discrepancy in the teaching workforce in public primary schools, and (2) there is significant difference between Morigaon and Medak, in Assam and Andhra Pradesh respectively, in their percentage female teaching force.

4.2.2 Teacher qualification: Education background

DISE national estimates for teachers' educational qualifications suggest relative positioning of Medak and Morigaon above and below the national average, respectively. The variation between the two districts and their respective state averages is substantial across the various levels of educational qualifications.

The most obvious variation appears to be in the category of teachers for whom the highest education achievement is not beyond secondary school (grade 10) completion. According to DISE 2011-12 data for the two districts approximately 49.61% of teachers in Morigaon are at the most secondary school educated as opposed to 2.82% in Medak). A similar nature of variation is reflected in the state-level averages estimated by DISE 2011-12 for Assam and AP.

Table 5: Percentage distribution of teachers by educational background

	DISE District		DISE State		DISE national
	Morigaon	Medak	Assam	AP	
Below secondary	6.5	0	5.98	0.01	2.19
Secondary (grade 10)	49.61	2.82	53.51	6.43	20.57
Higher sec. (10+2)	28.22	18.37	27.42	13.37	26.63
Graduate (10+2+3)	14.48	61.18	12.23	58.43	33.69
Post graduate + above	1.00	17.4	0.68	21.5	16.42
Other	0.19	0.29	0.18	0.26	0.31

DISE , 2011-12

This pattern of discrepancy trickles down through all the levels of educational achievement, all the way to graduate and post-graduate level. Survey data reveals a percentage difference of 46.6 and 16.4 points for graduate and post-graduate degree attainment respectively, in favor of Medak. This range is similar if not higher according to the DISE estimates for Assam and AP.

4.2.3 Teacher qualification: In-service teacher training

With the constantly evolving needs of education context and the prescribed curricula and pedagogy, ongoing trainings on old and new subjects of learning have been proven to have positive impact on students' learning outcomes (Hoque, Alam and Abdullah, 2011). Furthermore, given the alarmingly low educational qualifications of present teachers in the country, in-service teacher training is of crucial relevance. However, as we can see in table 6, less than 40% of the public primary school teachers in the country received any in-service training for the year 2010-11 (DISE, 2011-12). The percentage of primary teachers receiving any in-service training in Assam and AP, though marginally higher than the national average, are

fairly low at 44.3% and 45.5% respectively. However, the situation is worse in Medak as compared to its state average.

Table 6: Percentage distribution of teachers by in-service training received the previous year, primary only

	DISE District		DISE State		DISE national
	Morigaon	Medak	Assam	AP	
Male	49.8	43.4	44.2	55.0	42.2
Female	40.4	27.8	44.5	36.2	36.5
Total average	45.1	35.6	44.3	45.5	39.6

DISE , 2011-12

Additionally, we see significant gender variation among teachers attending in-service teacher training sessions in both the districts. There is a percentage difference of 9.4% and 15.6% points for 2010-11 in-service training attendance in favor of male teachers in Morigaon and Medak respectively.

4.3 The policy and structure of teacher training in India

The teacher education policy in India has evolved over time on the basis of recommendations discussed in Commissions on Education and subsequent reports that stemmed from the meetings. The important policy documents that have shaped teacher training policy are the Kothari Commission (1966), The Chattopadhyay Committee (1985), the National Policy on Education (NPE 1986/92), Acharya Ramamurthi Committee (1990), the Yashpal Committee (1993), and the National Curriculum Framework (NCF, 2005). Most recently, the Right of Children to Free and Compulsory Education (RTE) Act, 2009 which became effective on April 1st 2010 has had important implications for teacher training exercises in the country (MHRD, 2013). The Act calls for central control over the development and enforcement of teacher training standards. It institutes minimum qualification standards for teacher recruitment and mandated the existing teachers without minimum qualifications to acquire the same within five years of the Act ruling. Furthermore, the Act dictates specified pupil-teacher ratio to ensure that teachers have reasonable student load and that adequate number of teachers are recruited to meet the proportionate student population (MHRD, 2013).

The teacher education scenario of today is characterized by the extraordinary expansion of teacher training institutions. Following the developments led by movements such as DPEP in the 1990s and SSA in the 2000s the demand for teachers has been on a constant rise. The increasing demand for trained teachers and the perceived associations between teacher training and employability have led to innumerable teacher training institutions to crop up in the entire country. Within the public sector, following NPE 1986, government established a host of institutions like DIETs (District Institutes of Education and Training), IASEs (Institutes of Advanced Studies in Education) and CTEs (Colleges for Teacher Education) for providing in-service education to primary and secondary school teachers.

According to the National Teacher Education Curriculum Framework of 2009, till December 2009, the 599 districts in the country, District Institutes of Education and Training (DIETs) were

set up in 571 districts, of which 529 were functional (NCTE, 2009). DIETs were envisioned in the National Policy of Education (1986) and were created progressively across the country in most districts (NCERT, 2005). The main purpose of DIET was to strengthen elementary education and support decentralization of education at the district level. At present DIETs act as a link between block and cluster level centers and the state-level SCERT to enable exchange of education needs and ideas. It was visualized that DIETs will support the quality aspect of the universalization of education by supporting the local education system with the following inputs (MHRD, 2011):

- Providing pre- and in-service teacher training programs
- Organizing district and state level researches on educational indicators of access and achievement in primary education
- Networking across districts to share best practices in education
- Providing resource support to non-formal education sector by developing curriculum and relevant teaching learning materials
- Designing and developing training materials for teacher trainings

However, DIETs seem to be functioning under many constraints. The main problem facing DIETs is non-availability of qualified faculty (NCTE, 2009). Presently, most faculty appointed does not possess qualifications or experience in elementary teacher education (ibid.).

Education being a concurrent topic in India, policies about education is formed at both national and state level. Given the federal structure of Indian government, broad policy and legal framework on teacher education/training is formulated at the central government; implementation of various programs and schemes are largely overseen by the state governments. Within the broad mandate of improving teacher quality which will enable higher learning achievements of school children, twin strategy has been employed. The first strategy is to prepare teachers for the school system (pre-service training), and the second is improving capacity of existing school teachers (in-service training). As a whole, teacher training practices and institutions are in need for urgent and comprehensive reforms. There is need to bring greater convergence between "professional preparation" and "continuing professional development" of teachers at all stages of schooling in terms of level, duration and structure (NCTE, 2009).

The National Council of Teacher Education (NCTE), a statutory body of the Central Government is responsible for planning and coordinating development of teacher education in the country for pre-service training. The NCTE lays down norms and standards for various teacher education courses, minimum qualifications for teacher educators, course and content and duration and minimum qualification for entry of student-teachers for the various courses. It also grants recognition to institutions (government, government-aided and self-financing) interested in undertaking such courses and has in-built mechanism to regulate and monitor their standards and quality (NCTE, 2009).

At the National Level, the National Council of Educational Research and Training (NCERT) prepares a host of modules for various teacher training courses and also undertakes specific programs for training of teacher educators. Institutional support is also provided by the National University oF Educational Planning and Administration (NUEPA). Both NCERT and NUEPA are national level autonomous bodies. At the state level, the State Councils of Educational Research and Training (SCERTs), prepares modules for teacher training and conducts specialized courses for teacher educators and school teachers. At the district level, in-service training is provided by the District Institutes of Education and Training (DIETs). The Block Resource Centers (BRCs) and Cluster Resource Centers (CRCs) form the lowest rung of institutions in the vertical hierarchy for providing in-service training to school teachers. Apart from these, in-service training is also imparted with active role of the civil society, unaided schools and other establishments. The administration and organization of all teacher training activities are undertaken by SSA at the state and district level. SSA finances the trainings and organizes teaching materials and resources through district level resources, primarily the DIETs. Figure 1 shows the structural flow of in-service teacher training.

Figure 1: Structural flow of in-service teacher training for pubic primary teachers
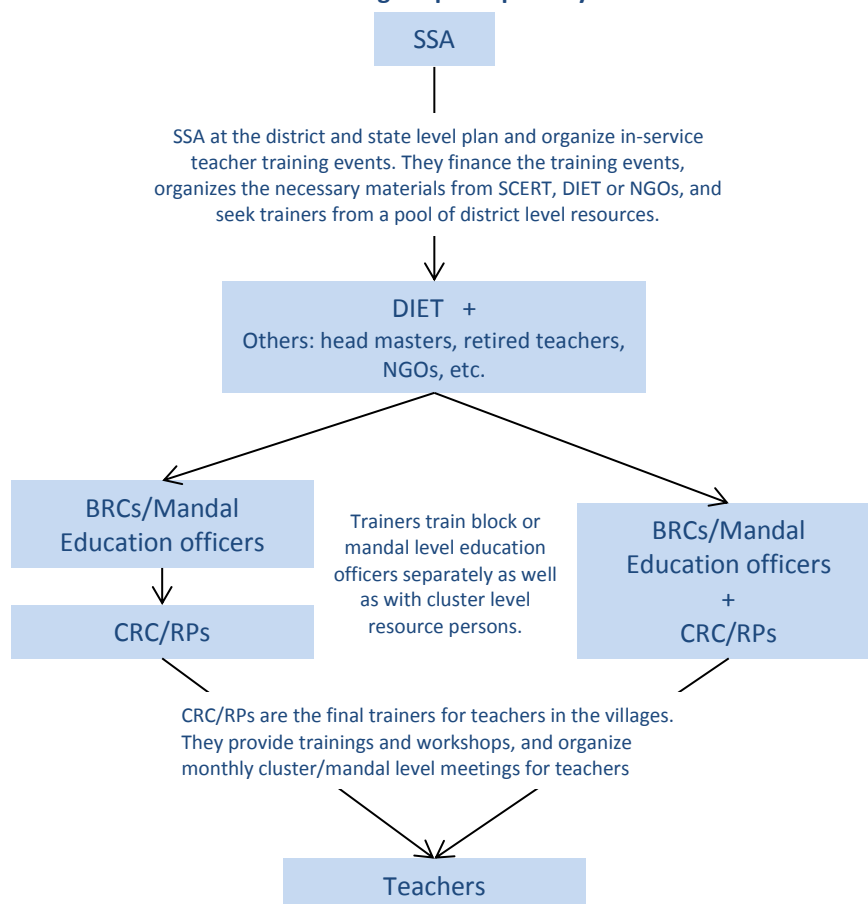
Budgeting for teacher training, like every other education work, is planned and decided at various structural levels. Figure 2 presents the flow of information and funding that supports planning and implementation of education in the villages.

Figure 2: Annual planning and budgeting across administration levels

Block offices report their educational plans and budget to the district	District office compiles block repots to develop District Work Plan & Budget	The state reports its overall district education needs to the center for funds
Block budget plan	District Budget Plan	State Budget Plan	Central Budget Plan
The district uses the funds on its planned items and distributes it block-wise	The state adds the central allocation to its budget and distributes it to its districts	The center allocates a portion of education budget to the state

Every year, a plan of action is developed at the sub-district or block level. Block level plans are compiled at the district level and submitted to the state. State governments have their own annual budgets for education that are supported by the center depending on the need and focus of the year at the state and national level. Once the national funds are disbursed to the state, district level allocations are made and further distributed according to the block needs.

4.4 Common concerns of teachers with in-service training for primary grades

Many problems of in-service training quality begin with the nature of pre-service training. There have been several instances where the teachers don't even have pre-service training before they are recruited as teachers. Initial training program of elementary education suffer from "isolation, low profile and poor visibility in view of it being a non-degree program" (NCTE, 2009, p. 11). Certification requirements for upper-primary and secondary schools are regarded with greater respect as evident from eligibility criteria of teacher applicants and greater income benefits on job. Previously, the only eligibility criteria for primary teacher applicants were certification of graduation from grade 10 or 12. However post NPE-1986, the DIETS have played an important role in elevating the issue of primary teacher education to national stage.

With the large and disorganized pre-service training sector in the country, there are few ways in which the content of pre-service training is linked with in-service programs. Opposed to ideal situation, in-service programs fail to build upon the essential learning from pre-service programs because lack of contextual connection between the two. Pre-service training may or may not address the needs of the teachers when they are in service. As mentioned in NCF-2005, "a major indicator of quality of training is its relevance to teachers' needs. But most such programmes are not organized according to actual needs" (p. 112).

Another major concern with teacher trainings – both pre- and in-service – is the inconsistency between the practiced training method and the proposed method of teaching. Most teachers who are currently being encouraged to adopt child-centered and activity-based learning methods are being trained in traditional lecture-based methods (NCF, 2005).

In a review of in-service training methods, NCTE (2009-10) posited that the existing in-service teacher trainings are too short to impact teaching methods. It cuts into teaching time as teachers are usually unwilling to come after school or during vacations. Curriculum, syllabi and

textbooks are never critically examined by the student teacher or the regular teacher. This leads to the inability of many teachers to interpret the textbooks in accord with the principles of NCF. Language proficiency of the teacher needs to be enhanced, but existing programs do not recognize the centrality of language in the curriculum. Teacher education programs provide little scope for student teachers to reflect on their experiences. It is assumed that links between learning theories and models and teaching methods are automatically formed in the understanding developed by student teachers. There is no opportunity for teachers to examine their own biases and beliefs and reflect on their own experiences as part of classroom discourse and enquiry.

5. STUDY RATIONALE AND OBJECTIVES

Student learning is influenced by many factors, including: students' skills, expectations, motivation and behavior; family resources, attitudes and support; peer group skills, attitudes and behavior; school organization, resources and climate; curriculum structure and content; and teacher skills, knowledge, attitudes and practices (OECD, 2005). Schools and classrooms are complex, dynamic environments, and identifying the effects of these varied factors, and how they influence and relate with each other – for different types of students and different types of learning -- has been, and continues to be, a major focus of educational research (OECD, 2005).

Our focus for this paper is to assess the efficacy of in-service teacher training and its consequent impact on the quality of student learning. There is a broad consensus that "teacher quality" is one of the single most important school variable influencing student achievements (De, Khera, Samson and Kumar, 2011). Many important aspects of teacher quality are not captured by the commonly used indicators such as qualifications, experience and tests of academic ability. Teacher characteristics that are harder to measure, but which can be vital to student learning include the ability to (1) convey ideas in clear and convincing ways, (2) create effective learning environments for different types of students, (3) foster productive teacher-student relationships, (4) be enthusiastic and creative, (5) work effectively with colleagues and parents (OECD, 2005).

Teachers are now expected to have much broader roles, taking into account the individual development of children and young people, the management of learning processes in the classroom, the development of the entire school as a "learning community" and connections with the local community and the wider world. Given the varied and multifarious nature of teachers' work, adequate training (both pre-service and in-service) need to be constantly re-worked to reflect the requirements of their job. The two MDEP sites to our two districts- Medak and Morigaon, we have noticed a major disconnect between the pedagogic practices and what the existing curriculum demand them to deliver.

Following several site visits, discussions, review of existing policies and literatures, and conducting focus groups with teachers, trainers, and policy makers from Assam and Andhra Pradesh, we have come to consensus on these questions:

1. What factors contribute to the existing gaps between teacher training and implementation of new concepts in the public primary schools of rural Assam and Andhra Pradesh?
2. What factors making training supportive of enhanced teacher practices in public primary schools of rural Assam and Andhra Pradesh?

To guide this research, the following research objectives were identified:

1. To understand the role of teacher training in the existing pedagogic practices present in schools
2. To analyze the co-relation between the textbooks, and teacher training, and student learning in Assam and Andhra Pradesh
3. To explore ways to revamp the existing in-service teacher training programs in Assam and Andhra Pradesh so as to better support the teaching learning processes at schools.

6. METHODOLOGY

6.1 Study Design

The study used a mixed-method design, combining qualitative data from individual and focus group interviews and observations with a cross-sectional survey of a random sample of 789 primary school teachers in the two districts. To refine the development of research questions that were relevant to all stakeholders and amenable to intervention, the project team initially completed extensive field work in the two study districts. This phase of the study involved in-depth interviews with key public education functionaries at the block, district and state levels and individual and focus group interviews with head masters; teachers and teacher trainers; School Management Committees; and parents of primary school children.

We also observed classrooms and other activities and assessed school- and community-based education facilities and infrastructure in villages throughout the two districts and consulted with national level policy makers and education scholars. Based on findings from these data, the MDEP team decided to focus its Year 1 activities on two core areas of public primary education—textbooks and teacher training. These two dominant themes represent the chief instruments of curriculum development, delivery, management and evaluation and are therefore central to any effort to improve the quality of education.

The purpose of the survey was to assess teachers' use and evaluation of: (1) Standard SCERT/NCERT textbooks in the four core curricular areas of primary education, i.e., native language, English, Mathematics and Environmental Science (EVS), and (2) Teacher training opportunities in their respective districts.

6.2 Ethics

District and state level administrators granted permission to conduct the research. The study was approved by the Teachers College, Columbia University Institutional Review Board.

6.3 Study Sites

The study was conducted simultaneously in two districts – Morigaon in the state of Assam and Medak in the state of Andhra Pradesh. Details of the two districts and the context of primary education in each district are described above. At the point of entry, the two districts had been serving as a site for the Columbia Global Center's Model Districts Health Project for one year. The Health project focuses on maternal and child health, and co-locating the primary education

project in these districts enabled us to build on existing relationships and to begin to develop synergies between the high-priority, interconnected fields of health and education in India's development agenda. The two sites vary on important dimensions relevant to public primary education, e.g., size, tribal populations, urban vs. rural population and socioeconomic status and resources.

6.4 Target Population and Data Sources

The study targeted three stakeholder groups in lower public primary education. Table 4 summarizes the type and distribution of data collected from each group.

Table 7: Summary of data sources

Target Group	Focus Groups	Interviews	Survey
Teachers			
• Medak	n= 6-10 (8 groups)		n=418
• Morigaon	n= 6-10 (4 groups)		n=371
Mandal/Cluster Resource Persons			
• Medak	n= 6-10 (4 groups)		
• Morigaon	n= 6-10 (4 groups)		
Education functionaries at SSA			
• Medak		n=1	
• Hyderabad (AP state office)		n=1	
• Morigaon		n=1	
• Guwahati (Assam state office)		n=0*	
Education functionaries at DIET			
• Medak		n=1	
• Morigaon		n=1	
Education functionaries at SCERT			
• Medak/Andhra Pradesh			
– SCERT, Director		n=1	
– SCERT, Curriculum Department, Head		n=1	
– SCERT, Teacher Training, Head		n=1	
– SCERT, Mathematics Coordinator		n=1	
– SCERT, English Coordinator		n=0*	
– SCERT, Regional Languages Coordinator		n=1	
– SCERT, Environmental Science Coordinator		n=1	
• Morigaon/Assam			
– SCERT, Director		n=0*	
– SCERT, Curriculum Department, Head		n=1	
– SCERT, Teacher Training, Head		n=1	
– SCERT, Mathematics Coordinator		n=0*	
– SCERT, English Coordinator		n=1	
– SCERT, Regional Languages Coordinator		n=1	
– SCERT, Environmental Science Coordinator		n=1	
TOTAL	**n=157, 20 groups**	**n=16**	**n=789**

Interview request declined

6.4.1 Focus Group Discussions

A total of 20 focus group discussions (FGDs), each comprising 8-10 participants, were carried out in the two sites. Two groups of participants were targeted – Teachers and Cluster / Mandal level Resource Coordinators. In Morigaon, eight FGDs were held, one with each respondent

group in each of the four educational blocks. To accommodate the larger teacher population in Medak, 12 FGDs were held. Two were organized in each of the four educational divisions for teachers, along with 1 FGD in each division for resource persons. Approximately 8-10 individuals participated in each FGD.

All FGDs were conducted in the local language by trained, experienced researchers. Questions used to guide the discussions centered on the challenges faced by teachers and resource persons with regards to the existing textbooks and teacher training opportunities and are presented in Appendix 1.2. Block Resource Coordinators announced the FGDs to teachers and resource persons, who then volunteered to participate. No remuneration was provided. Most FGDs were held in Block-level education offices; a few were held at schools. With informed consent, sessions were audio-recorded for verbatim transcription / translation.

Using an interactive Microsoft excel sheet, we drew on both "pre-determined" and "emergent" coding strategies (Izzo, 2006, p. 67).With respect to the former, we used a set of pre-determined codes to organize transcribed text in accord with the main research questions; a more detailed set of codes and sub-codes then emerged in successive rounds of coding. After coding 4 FGD and 5 in-depth interview transcripts, we developed and refined a more comprehensive coding scheme that included attributes that could be used to sort data and examine it for themes and patterns, e.g., data collection site, respondent characteristics, response nature (recommendation, complaint, anecdote, etc.), and curricular subject.

6.4.2 Key Informant Interviews
To ensure representation of all relevant positions, we sought to interview key personnel in education departments from state to district levels. Key informants were nominated from three relevant offices: (a) Sarva Shiksha Abhiyan (SSA) / Rajiv Vidya Mission (RVM) at the District and State Levels, (b) DIET offices in each district, and (c) SCERT offices at the state level. We requested 20 interviews; four were declined. Of the 16 completed, nine were in Medak and Andhra Pradesh and seven were in Morigaon and Assam. Interviews were semi-structured and designed to elicit information on:
- Common challenges pertaining to in-service teacher training for primary teachers
- Institutional role in designing and implementing in-service teacher training programs at the State and District levels
- Ways to revamp the existing in-service teacher training programs in Assam and Andhra Pradesh so as to better support the teaching learning processes at schools

Interview schedules were further tailored to the category of respondent (Appendix 1.1). Almost all interviews were conducted in English, but transcribing, coding and analyzing processes were basically the same as those used in the FGDs. Table 4 shows the type and distribution of interviews.

6.4.3 Survey
The unit of analysis for the survey was teachers. All who were employed in lower primary or lower / upper primary schools and who had taught at least one of the four core subjects in

grades 1 – 5 during the last 5 years were eligible to participate. The 2010-2011 DISE data show 6,354 eligible teachers in Medak and 2,119 in Morigaon.[9] Because it was not feasible to compile a sampling frame of all teachers, we used a two-stage selection strategy. We first established the number of teachers to be sampled per district, and then allocated this number proportionately among the two districts' respective educational divisions.

Stage1: Sample Size and Power Analysis
We used the online sampling calculator Raosoft to determine the desired sample size. With a 95% confidence level and 5% error rate, the target was 400 respondents in Medak and 300 in Morigaon. A 5% oversample was added to allow for refusals and non-completers. Finally, we used G*Power 3.1.5 to confirm the adequacy of this sample size for total sample and for subgroup analyses. For an OLS regression with 20 predictors, a medium effect size of .15 and an objective to detect a predictor that accounts for at least 5% of unique variance in an outcome, the sample size to achieve power of 0.80 is 157; for 10 predictors a sample size of 118 is required. The projected sample size was thus deemed more than adequate.

Stage 2: Sample Allocation
Figures 2 and 3 show how the sample was allocated among educational divisions in Medak and Morigaon respectively. Medak has four administrative zones, each divided into sub-units referred to as mandals. Morigaon has four blocks, subdivided into clusters. The 2010-2011 DISE data showed 2,662 eligible schools in Medak and 1,856 eligible schools in Morigaon.

To illustrate the sampling process in Medak, the 2,662 eligible schools are distributed in 46 mandals within the four zones. As these units are of unequal size, we used a probability proportionate to size (PPS) selection strategy to create a self-weighted sample based on the proportional distribution of schools in the target population. Specifically, we divided number of schools in each mandal by the total number of schools to be selected in the district, then used these weights to determine the number of teachers to recruit from each mandal.

For example, there are 42 eligible schools in Alladurg mandal. The probability of selecting one from the 2,662 study-eligible schools in Medak is .016 and the number of teachers to be selected from the mandal is 6 (400 * .016). We used a random number generator to select schools sequentially, with a plan to continue random selection until we reached the target number of teachers in the mandal. However, due to wide geographic dispersal of schools, a relatively small number of schools in each of the 46 mandals in Medak and 63 clusters in Morigaon, and the limited number of eligible teachers in many schools, it proved far more practical to invite all eligible teachers in each randomly selected school to participate. The final sample included at least the targeted number of teachers per school.

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[9] The reliability of DISE data are routinely examined in Post-Enumeration Surveys (PES). The PES report for 2010-2011 data found no significant deviations in the DISE and PES surveys in Assam. Andhra Pradesh was not assessed in the 2010-2011 report, but the overall deviation of data on all comparable items in 2011-2012 was 7.32% -- within the 10% range of permissible percentage of deviation.

Figure 3: Sample allocation in Medak District, Andhra Pradesh


```
                        Medak
                       N=2662

   Jogipet         Medak          Sangareddy       Siddipet
 (610 schools)  (627 schools)    (818 schools)   (607 schools)

 10 mandals     10 mandals       14 mandals      12 mandals
                         ← PPS →
 96 teachers    98 teachers      128 teachers    96 teachers

                    Total = 418
                     Teachers
```
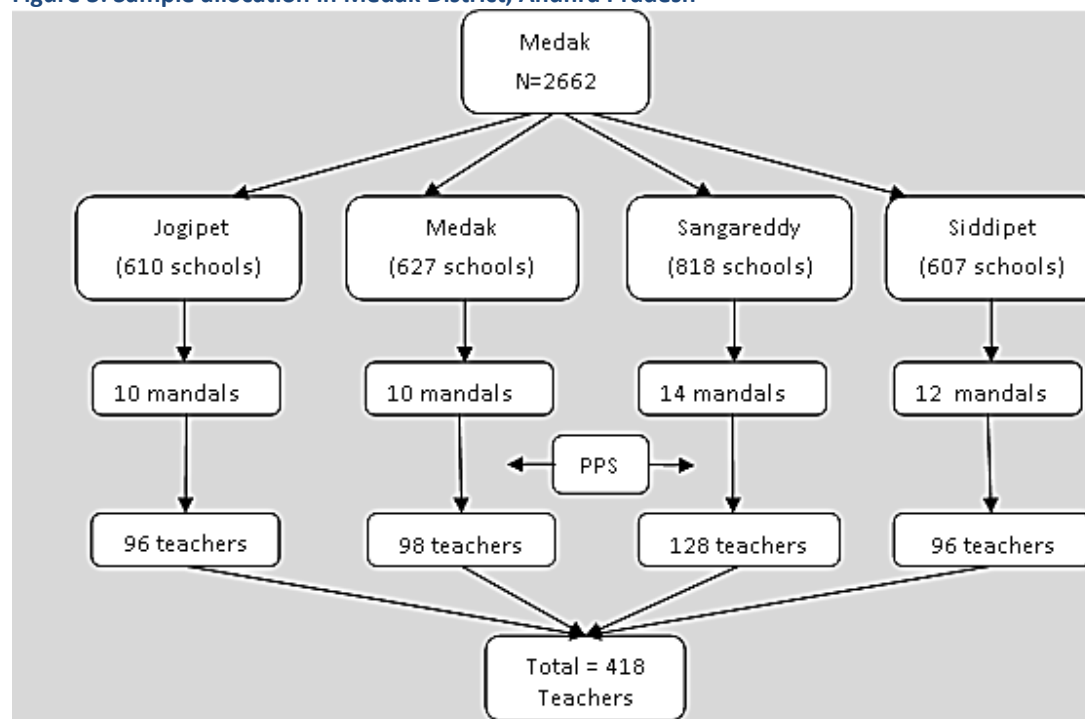
Figure 4: Sample allocation in Morigaon District, Assam


```
                        Morigaon
                        N= 1856

  Bhurbandha        Kapili         Laharighat       Mayong
 N = 422 schools  N=99 schools   N=762 schools   N=573 schools

  17 clusters     4 clusters      22 clusters     20 clusters
                         ← PPS →
  77 teachers    30 teachers     145 teachers    119 teachers

                    Total = 371
                     teachers
```

28
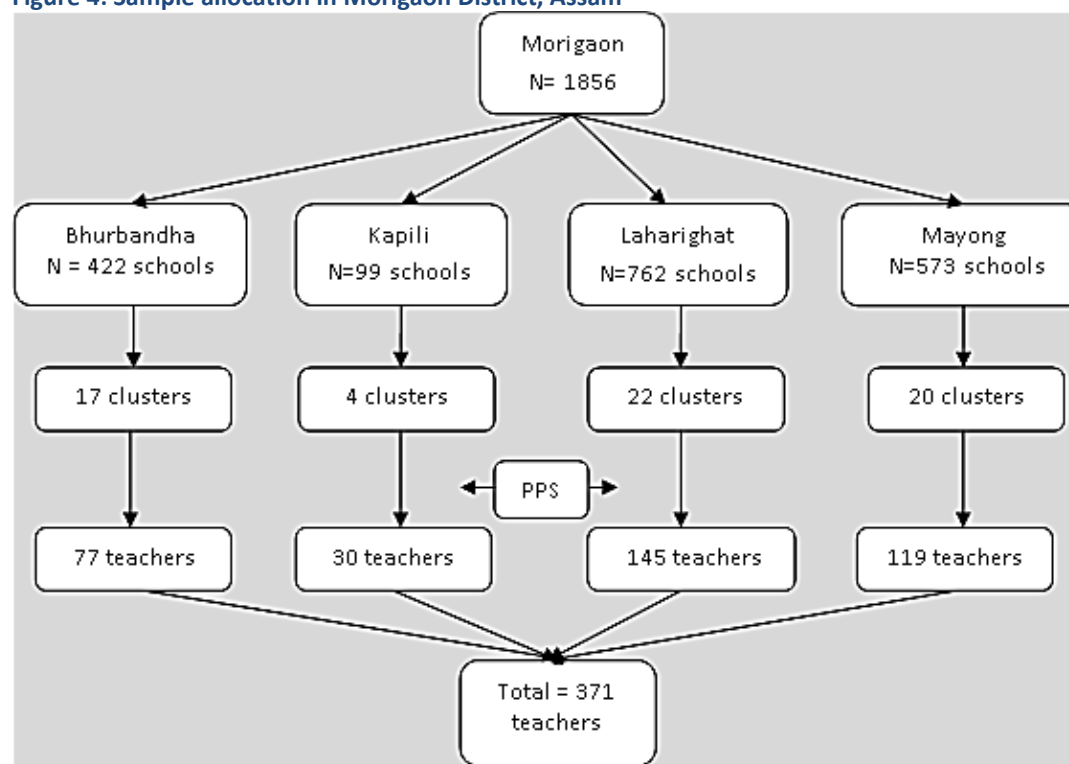
6.5 Data Collection

Local research teams were hired and trained to conduct the surveys with teachers. To ensure anonymity, no identifying information was collected on survey instruments and care was taken to safeguard the privacy of consent forms and study documents. A total of 789 surveys were distributed to the sampled teachers and they were given the option to complete the instrument and return it immediately or submit it when the researcher revisited their school 2-3 days later. The final response rate was 100%.

Translation

Bilingual research assistants from the same communities as the study population translated the instrument from English to Assamese (Morigaon) or Telugu (Medak). Four experienced professionals, including two university professors in Morigaon and two senior educators in Medak then back-translated the instrument to English. Based on their discussion and the incorporation of information from pilot studies in each district, the research team reconciled minor inconsistencies and adjusted the instrument accordingly.

Instrumentation

The survey instrument comprised three sections (Appendix 1.3). Section 1 asked about socio-demographic characteristics and included a brief set of items on teaching experience and satisfaction with the job and with the profession. Section 2 requested information on teachers' experiences with and evaluations of textbooks and Section 3 asked similar questions about in-service teacher training. Sections 2 and 3 had Likert-type response formats (1 = Strongly agree; 2 = Agree; 3 = Disagree; 4 = Strongly Disagree) and an open-ended option for comments.

In Section 2, 18 items asked respondents to report on their use of and satisfaction with SCERT textbooks in each core area of the primary school curriculum in which they had taught in prior five years. As noted, these areas are native language (Assamese or Telugu); English, Mathematics and Environmental Science. Language items include teachers' ratings of their confidence in teaching speaking, writing and reading skills. Section 3 consists of 31 questions which evaluate the effectiveness of various domains of in-service teacher training in the district.

Pilot Studies

Pilot studies were conducted with 20 primary school teachers in each Model District. The purpose of the pilots was to test and solicit feedback and suggestions on the data collection instrument and its administration. Participants suggested several minor changes in wording to make the instrument more locally sensitive, comprehensible and reliable. A few recommended changes applied to both districts while others were district-specific. For example, a participant in Assam recommended a formatting change to break the repetition in the survey and improve comprehension, which applied to both sites. Participants in both sites also recommended yes/no responses instead of a Likert scale format. We decided to retain the latter format in hopes of achieving more variation, but ultimately found little. Participants in both sites also urged us to administer the survey in the native language and neither site expressed a preference for one method of distributing and collecting the surveys over others. On average, participants finished the survey instrument in about 30 minutes.

7. FINDINGS

7.1 Descriptive and analytical statistics

Univariate statistics were used to describe the sample and to inspect distributional properties of the measures; measures which violate assumptions of statistical models used for inference and parameter estimation were transformed accordingly. Based on theoretical considerations and bivariate analyses, we developed multivariate models. Ordinary least squares regression was used to examine continuous outcome measures and logistic models for dichotomous outcomes.

Missing Data: The variable 'Relat to PTA' has 6. 7% missing data; all others have fewer than 5 % missing data.

Table 5 presents a description of the study sample. A clear majority of respondents, nearly two-thirds in both sites, were male. Teachers in Morigaon were significantly older and had more years of teaching experience than those in Medak. Morigaon teachers also had far lower levels of formal education and teacher training—about one-third had completed only 10th standard, the same proportion as held a Master's degree in education in Medak.

This significant gap is also reflected in levels of training to be an educator. Between one quarter and one third of respondents in both districts were qualified TET teachers[10].

Table 8: Demographic and Background Characteristics N (%) or M (SD) (N=789)

Variable	Medak	Morigaon	Total	Significant Test
Gender				
Male	249(62.6)	224(60.4)	473(61.5)	NS
Female	149(37.4)	147(39.6)	296(38.5)	
Age	38.0 (8.6)	43.5(10.8)	40.7(10.1)	t = 17.76; df = 758, p < .001
Education				
Class 10	0(0.0)	123(33.2)	123(15.6)	x^2 =274.86; df =3;
Class 12 / diploma	75(18.1)	135(36.4)	210(26.7)	p < .000
Bachelor	206(49.6)	100(27.0)	306(38.9)	
Master or higher	134(32.3)	13 (3.5)	147(18.7)	
Teacher training				
Diploma education	120(28.9)	68 (18.3)	188(23.9)	x^2 =498.1; df = 3;
BA/MA Education	272(65.5)	8 (2.2)	280(35.6)	p < .000
Other	22(5.3)	179 (48.2)	201(25.6)	
None	1 (0.1)	116 (31.3)	117 (14.9)	

---

[10] Teachers recruited after qualifying Teaching Eligibility Test (TET) are called TET teachers. While this practice of recruitment existed in Andhra Pradesh since 2008, it was recently instituted in Assam in 2012.

Study-eligible teachers were required to have taught in Class 1-5 during the previous 5 years. As seen in Table 6, nearly twice the percentage of Medak teachers had taught in multi-grade classrooms, which is also reflected in their lower likelihood of teaching single grades.

Table 9: Grade level(s) taught in last 5 years

	Medak	Morigaon	Total*	Significance Test
Class 1	104 (24.9)	156(42.0)	260 (33.0)	X =27.64; df=1; p <.001
Class 2	103 (24.6)	145 (39.1)	248 (31.4)	X =19.02; df=1; p <.001
Class 3	106 (25.4)	128 (34.5)	234 (29.7)	X = 7.88; df = 1; p <.01
Class 4	106 (25.4)	122 (32.9)	228 (28.9)	X =5.42; df=1; p = .01
Class 5	126 (30.1)	151 (40.7)	277 (35.1)	X= 9.62; df = 1; p <.01
Multi-grade	229 (54.8)	97 (26.1)	326 (41.3)	X=66.49; df =1; p <.001
Other grade	4 (1.0)	1 (0.3)	5 (0.6)	NS

* Totals do not sum to 100 % as teachers may have taught more than one grade level

At least four of every five teachers reported teaching core courses in the primary school curriculum in both sites (Table 7). A significantly greater percentage of those in Morigaon reported teaching English and subjects other than the core.

Table 10: Subject areas taught last 5 years

Taught courses	Medak	Morigaon	Total*	Significance Test
Native language	375 (89.7)	351 (94.6)	726 (92.2)	NS
English	345 (82.5)	330 (88.9)	675 (85.6)	M= 6.54; df=1; p <.01
Maths	365 (87.5)	329 (88.7)	694 (88.0)	NS
Environmental Science	339 (81.7)	324 (87.3)	663(84.0)	NS
Other subject	20 (4.8)	46 (12.4)	66(8.4)	M=14.55; df = 1; p <.001

* Totals do not sum to 100 % as teachers may have taught in more than one subject area.

Finally, to better understand their experiences in the profession, we asked participants about their sources of motivation for becoming a teacher and level of satisfaction with the job (Table 8). The most cited reason for choosing the profession, particularly in Medak, was the desire to contribute to society. Sizeable subgroups at both sites reported having been influenced by a teacher or being drawn to the profession by their potential to be a good teacher. Respondents were quite satisfied with their jobs, although more so in Medak; fully 90% said that they would recommend the profession to others.

Table 11: Motivation and satisfaction related with teaching as a job, N (%) or M (SD)

	Medak	Morigaon	Total	Significance
Motivation to be teacher				
– Teacher in their life	162 (38.8)	138 (37.2)	300 (38.0)	NS
– Needed job	7 (1.7)	6 (1.6)	13 (1.6)	NS
– Friend/family teach	48 (11.5)	43(11.6)	91 (11.5)	NS
– Felt I had potential	118(28.2)	94(25.3)	212 (26.9)	NS
– Job security	50 (12.0)	41 (11.1)	91 (11.5)	NS
– Contribute society	233 (55.7)	97 (26.1)	330 (41.8)	X^2=70.8; df=1;p<.001
– Other reason	5 (1.2)	2 (0.5)	7 (0.9)	NS
Satisfaction with teaching				
– Very satisfied	311 (74.6)	258 (69.9)	569 (72.4)	
– Somewhat satisfied	81 (19.4)	107 (29.0)	188 (23.9)	X =21.1; df=3;p<.001
– Somewhat or very dissatisfied	25 (6.0)	4 (1.1)	29 (3.7)	
Would recommend teaching to others	360 (92.5)	309 (92.8)	669 (92.7)	NS

Turning attention to the main research questions, we asked teachers to report on their experiences in-service teacher training in their districts. Teachers reported having participated, on average, in 14 trainings during the past five years. Participation levels were higher in Morigaon (M = 17.9, SD = 23.4) than Medak (M=10.8, SD = 14.1) (t= -5.07; df = 756; p < .001). In each district, 57% of teachers reported that trainings had improved their knowledge and skills for the classroom "very much". Among those who did not agree, Medak teachers were more likely to select "somewhat" and Morigaon teachers, "not much or not at all." (X^2 = 9.9; df=3; p =.01) (not shown in table).

Table 9 presents findings on specific types of knowledge and skills teachers acquired from in-service trainings. The overall mean for all items was 60.1 (S.D. = 13.6). With the exception of use of computer technology and working with students with diverse learning needs, 90% or more teachers strongly agreed or agreed that they had gained specific knowledge and skills for use in the classroom. Despite low variation on individual items (means ranged from 1 to 2), there were a number of district-specific differences at this level, but with no clear patterns.

Table 12: In-service training knowledge and skills obtained

	Knowledge and Skill Area	Medak M (SD)	Morigaon M (SD)	% SA /A	T-test
1	Use variety teaching and learning materials	1.7 (.61)	1.8 (.52)	94.1	NS
2	Select/adapt text materials	1.8 (.52)	1.9 (.47)	95.7	**
3	Plan effective lessons	1.8 (.58)	1.8 (.51)	93.5	NS
4	Prepare in-class assignments	1.8 (.57)	1.9 (.53)	91.7	**
5	Prepare homework assignments	1.9 (.61)	1.8 (.53)	92.5	*
6	Use Reading Enhancement Program to improve reading	1.9 (.62)	1.8 (.53)	91.4	*
7	Use ICT as learning aid	2.1 (.69)	2.2 (.70)	71.7	NS
8	Assess individual learning	1.8 (.60)	1.9 (.57)	91.8	**
9	Use Comprehensive Continuous Education principles	1.8 (.66)	1.7 (.55)	92.2	*
10	Collaborate with other teachers	1.7 (.59)	1.7 (.53)	95.7	NS
11	Collaborate with headmaster/ other leaders	1.8 (.65)	1.8 (.56)	92.2	NS
12	Provide parents information	1.7 (.61)	1.7 (.55)	94.1	NS
13	Collaborate with parents	1.7 (.63)	1.6 (.57)	94.5	NS
14	Collaborate with School Management Committees	1.7 (.59)	1.7 (.54)	95.4	NS
15	Collaborate with PTA	1.8 (.64)	1.7 (.57)	92.7	**
16	Collaborate with community	1.8 (.63)	1.8 (.56)	92.5	NS
17	Simulate critical, creative thinking	1.8 (.57)	1.8 (.52)	95.2	NS
18	Foster independent / collaborative	1.8 (.56)	1.7 (.53)	95.0	NS
19	Help students understand complex ideas	1.9 (.60)	1.7 (.57)	92.3	**
20	Stimulate student curiosity in learning	1.8 (.59)	1.7 (.55)	94.6	*
21	Encourage ideas and opinions	1.7 (.60)	1.7 (.51)	95.8	NS
22	Keep students engaged in work	1.8 (.58)	1.7 (.52)	95.5	NS
23	Foster development peer relations	1.7 (.63)	1.8 (.49)	94.5	NS
24	Work with students with special needs	2.0 (.73)	1.8 (.60)	84.6	***
25	Adjust class to diverse learning styles	1.9 (.66)	1.8 (.50)	90.1	**
26	Work with students with diverse learning styles	1.9 (.63)	1.8 (.56)	90.6	**
27	Classroom management and discipline	1.8 (.62)	1.7 (.54)	93.9	**
28	Manage classroom routine	1.8 (.62)	1.7 (.54)	94.1	NS
29	Use stories and anecdotes effectively	1.6 (.55)	1.8 (.53)	95.9	***
30	Support / care for students w/problems	1.8 (.64)	1.8 (.56)	92.2	NS
31	Use play/way methods effectively	1.7 (.62)	1.7 (.54)	94.5	NS
32	Develop age-appropriate curriculum	1.8 (.63)	1.7 (.55)	92.3	NS
33	Enable peer learning	1.7 (.60)	1.7 (.53)	95.0	NS
34	Foster moral, ethical, civic development	1.8 (.64)	1.8 (.52)	92.7	NS

SA/A = Strongly agree/Agree; * p < .05; ** p <.01; *** p <.001

To facilitate site comparisons and render the data more parsimonious for policy and planning purposes, we used exploratory factor analysis to reduce the 34 knowledge and skill items. Zero-order correlations ranged from .26 -.60 and all were significant at $p < .001$. The Cronbach's alpha coefficient was .97, high level of internal consistency that is suggestive of redundancy. We thus tested whether the data were appropriate for factor analysis. The Kaiser-Meyer-Olkin (KMO) of sampling adequacy and Bartlett's test of sphericity was .97. A KMO value > 0.9 indicates excellent adequacy, 0.7 to 0.9 is common adequacy, and < 0.5 is inadequacy (Pett, Lackey & Sullivan, 2003). Further, all communalities exceeded .8 (Velicer & Fava, 1998); no item cross-loaded on more than one factor and all loadings were at least .32 (Tabachnick & Fidell, 2001); and several variables loaded strongly on each of the three factors (Osborne & Costello, 2005).

We then used principal component analysis with varimax rotation to examine the factor structure of the scale, basing the number of factors extracted on the scree plot, eigenvalues > 1.0, percentage of explained variance and factor interpretability. Table 10 shows factor loadings, eigenvalues and percent of explained variance. The 34 items loaded cleanly on three factors, which accounted for 57.8 % of the variance in teachers' ratings of knowledge and skills gained from in-service training. Factor 1, "Student Development", encompasses knowledge and skills for fostering students' intellectual, social and civic development through effective pedagogy and classroom management. Factor 2 concerns the "School Environment" and includes knowledge and skills for organizing and delivering the curriculum and for collaborating well with one's peers and members of school leadership. The third factor captures elements of the school context, or the "Community Environment," including parents the School Management Committee, the PTA and the larger community. Scores on the three aggregate factors did not differ for the two sites.

Table 13: Factor analysis of Teacher Training Knowledge and Skills

	Knowledge and Skills	Component		
		1	**2**	**3**
1	Use supplemental TLMs		.719	
2	Select/adapt from texts		.687	
3	Plan effective class lessons		.646	
4	Plan effective in-class assignments		.645	
5	Plan effective homework assignments		.602	
6	Use Learning Enhancement Program		.693	
7	Use ICT (technology)		.591	
8	Assess individual learning levels		.513	
9	Use Comprehensive Continuous Education		.594	
10	Work with peer teachers		.484	
11	Work with school leadership		.560	
12	Work with parents			.507
13	Relationship with parents			.757
14	Relate with School Management Committee			.798
15	Relate with PTA			.808
16	Relate with community			.708
17	Stimulate creative/critical thinking	.605		
18	Foster independent and collaborative thinking	.650		
19	Help understand complex ideas	.664		
20	Stimulate curiosity about learning	.660		
21	Encourage ideas and opinions	.728		
22	Keep students engaged in work	.666		

23	Foster development of peer relations	.731		
24	Work with students with special needs	.664		
25	Adjust class to student learning	.632		
26	Work with diverse learning styles	.605		
27	Classroom management/discipline	.678		
28	Manage classroom routines	.676		
29	Use stories/anecdotes effectively	.513		
30	Support/ care students w/difficulty	.697		
31	Effective use of play-way methods	.663		
32	Develop age-appropriate curriculum	.688		
33	Enable peer learning	.690		
34	Foster moral, ethical, civic develop	.675		
	Eigenvalues	16.4	1.77	1.49
	Percent of variation explained	27.6	18.4	11.8

To summarize the findings on teacher training, study participants overall took good advantage of and highly endorsed the value of training opportunities to improve their classroom knowledge and skills. On average, they reported having attended two training sessions per year and with two exceptions, 90% or more agreed they had obtained useful knowledge and skills in the specific areas. Teachers in Morigaon had attended more sessions, yet they were more likely than those in Medak to report that sessions were of little or no benefit. Factor analysis of the 34 knowledge and skill items yielded three factors, which captured facets of student development, school environment and community environment. These factors did not differ between districts.

7.2 Qualitative research findings

Findings from the data collected through key informant interviews and focus group discussions (FGDs) seem to resonate well with the statistical findings derived from teacher surveys in both the sites. The following is a brief summary of our qualitative data that we have organized around the key research questions posed by this study.

What is the nature of in-service training program in terms of model, content, and usefulness of training in Morigaon and Medak?

- **Trainings in both districts follow a 'cascade model' for dissemination of training**: In case of Medak, training modules, schedules, and primary trainings are first administered at the state level where are few RPs from each district receive training, and then these RPs come back to their district and give training to selected District Resource Persons (DRPs). And then, these DRPs come back to their respective mandal and give trainings to teachers. In case of Morigaon, the model of training is similar to Medak's 'cascade system' however; the creating of modules and teacher training materials is more decentralized because of an active DIET. Hence, teacher training is better connected with the local needs. In our FGDs, the RPs in Medak have stated that they felt that "we are not trained on training content which was exactly taught or prepared at state level." Teachers felt, "in rural area every teacher has more than 2 classes to teach. In teachers training, modules are well prepared, but by the time it reaches us by passing all the stages like DRPs training and RPs training, it loses its originality, or subject content is diluted."

  > "The learning is conveyed in a relay system"- Teacher, Morigaon

- **Content of training is usually specific to subjects or new education policy.** The training topics includes the use of textbooks, the use and preparation of teaching learning materials, education policies such as the RTE Act and the NCF 2005, CCE 2012, new education programs such as the Reading Enhancement Program in Morigaon, Sneha Bala in Medak, school management and other general topics. Cluster level training in Morigaon includes use of textbooks, feedback sessions on the teaching methodologies and academic hard-spots encountered in the classrooms, role playing, model classrooms, new education policies and the use of TLM and School complex training in Medak usually cover training modules such as Demonstration classes, Brainstorming and problem solving sessions, Book review sessions, Moral stories session, Head Master success story sessions, and Teleconference/video conference with the district or state.

  > "… when the textbooks change or when the method of evaluation changes, we get trainings from the state level on how to bring those changes to the students.." Teacher, Medak

- **In-service training is considered useful by majority of the teachers.** Trainings are generally found to be very useful in developing key knowledge and skills to teach. Most teachers reported that trainings had significantly improved their knowledge and skills to teach. According to the quantitative data, study participants overall took good

advantage of and highly endorsed the value of training opportunities to improve their classroom knowledge and skills. On average, they reported having attended two training sessions per year and with two exceptions, 90% or more agreed they had obtained useful knowledge and skills in the specific areas. Among those who did not find training "very" useful, Medak teachers were more likely to find it "somewhat" useful while Morigaon teachers found it "not much" or "not at all" useful. Morigaon teachers found the training they received difficult to use in real classroom settings. This is so because of the fact that the teachers received training on the new textbooks after they were already introduced and even now they feel that they have not received adequate training on the use of these new textbooks. Medak teachers also felt that the training they received should be meant for real implementation. Therefore, the trainers need to think through the environment and circumstances the schools are set in. On average, sample teachers have attended almost 14 trainings during the last 5 years; significantly more in Morigaon than Medak.

What factors contribute to the existing gaps between teacher training and implementation of new concepts?

- **Budgetary constraints have impacted in-service teacher training negatively:** In case of Morigaon, the new budget for the year 2013/14 has reduced the number of training days. In general, there is a 6 day training for English (continuation of phrase 2 of British Council assisted English language training), 4 day training on teaching mathematics and the 10 one day monthly cluster level training, all of which have been reduced to twice a year. Also, the current budgets for both the districts have removed the TLM allowance completely. **"**There is insufficient support in terms of finances, whether it is school budgets or individual teachers' TLM budgets, or in terms of infrastructure – especially in the single-teacher schools."

  "Teachers have lost all the respect because not able to teach the multi-grade classes!"- Teacher, Medak

- **Teaching multiple classes and carrying out additional non-teaching activities impact the teacher performance negatively:** Teachers are expected to teach multiple grades at a time – 58% in Medak and 26.1% in Morigaon have reportedly taught more than one grade at a time during that past 5 years. There are no trainings on multi-grade teaching in Medak. Because there is no training on multi-grade teaching the teachers are unable to manage and teach according to the principles they have learned in training. In case of Morigaon, they have received 'bahu shreni pathdan' or multi grade teaching. However, the real issue here is the unfavorable student-teacher ratio in most schools; the number of teachers is not in proportion to the number of students due to shortage of teachers. Also, teachers are overloaded with many non-teaching activities for example- census data collection, election duty, polio drives, etc. There is also high rate of teacher absenteeism in both districts.

- **Training methods are not reflective of the proposed classroom pedagogy.** The teachers in both the districts feel that training should be delivered in methods that are more participatory and not-didactic. For instance, in Medak the RPs ask teachers to sit in training sessions, read the modules, and respond to questions. "They give us modules to

read and ask us to write answer to the questions. They say that, it helps us to remember when we teach in school. Reading and writing answers in training help us to teach in class."

- **The new teachers have no training on the current policies.** Another problem is that the new TET teachers joining every year have no induction training in case of Medak and 5 day training in case of Morigaon. In Morigaon, the teachers appointed through the Teachers Eligibility Test (TET) are learning on the job from their peers at the school. At the same time they are attending trainings conducted by the CRC's and are also pursuing their teacher training degrees after their appointment. Hence, they are unaware of important policies such as RTE, CCE, etc., as they are not covered in the pre-service/in-service training. A Medak state official in an interview stated, "Of course she is a trained teacher, but once she is recruited, there is not even an induction course for the teacher to tell her about the Right to Education Act, various programs that are going in the education department...what are his/her duties.."

- **Teacher trainers feel overwhelmed with their dual responsibilities of being trainers as well as teachers.** Both districts mentioned that the RPs/CRCs are also teachers and hence they have two responsibilities, teaching in the schools and monitoring the schools in their area and also conduct training and other administrative responsibilities. Both teaching and monitoring of the schools have to be done within school hours and hence while doing one, the CRCs/RP has to neglect one duty. As RPs/CRCs are trained only in one subject they suffer in the classrooms as they have to teach all the subjects in the school.

What factors make training supportive of enhanced teaching practice?

- **Teachers need more training in Math and English.** The introduction of the new textbooks in Morigaon has increased the need for training for English and Mathematics. Many teachers in the focus group discussions stated that they did not receive training before the introduction of the new textbooks and though they did receive some training later, there is a need for more training. For mathematics, the teachers often expressed that they felt that they needed specific training on lesson given in the textbooks as it is their first time teaching mathematics using an activity based textbook. Also, they wanted more training on how to deal with children if they are unable to understand certain concepts.

- **Teacher training sessions work as a feedback and networking sessions for teachers:** The school complex meetings in Medak and cluster level training meetings in Morigaon are working to foster peer to peer learning amongst the teachers. Through these meetings, teachers are able to learn skills from demo classes that are usually conducted by trainers. It not only works in increasing capacity of the teachers but also inculcates qualities of working in teams, problem-solving in groups, brain storming, and pushes teachers to be more imaginative with their teaching style. These trainings have also become a platform for teachers to be open about their concerns and provide excellent feedback system as the mandal/cluster officers and RPs work closely with these bodies.

- **Teacher trainings need to be organized better.** Teachers feel that they get the modules before the training session and not later. This way the teachers have some time to prepare before the training starts. A teacher in Medak stated, "On the same training, related training modules need to be provided before starting the program. There is gap in system, modules are supplied late. Modules should be given first and then training, that way a teacher can understand it easily and grasp the content which is taught in training." Teacher training to maximize on the time should be planned effectively to ensure that all the teachers have the materials beforehand.

- **Teachers draw motivation to teach from altruistic impulses:** The quantitative data indicates that reasons for choosing to teach stemmed from influential role models and altruistic impulses. Teachers are overall quite satisfied with teaching as a profession, more so in Medak. Majority of them, from both the districts, would recommend teaching as a profession. However, many SCERT/SSA/RVM feel that lack of teacher's motivation is a recognizable problem which needs to be worked on as according to one of the interviewees at SCERT, "One of the general problems is motivation of teachers".

8. CONCLUSION

The quality of in-service teacher training in India has repeatedly failed to match the expectations that have risen with the introduction of new textbooks and policies. As a result, a teacher is unable to transact in a classroom a lesson/concept as the training s/he received was not reflective of what is expected of him/her. According to the National Curriculum Framework for Teacher Education (2009), in-service teacher education broadly perform the following functions: (1) updates teachers on issues concerning content, methodology and evaluation, (2) upgrades serving teachers in tasks with which they are currently occupied, (3) initiates and orients teachers to new roles and technologies, (4) provides opportunities for unqualified or under-qualified on-the-job teachers to update and upgrade their knowledge (NCTE, 2009). However, the reality is far from this. The findings from the research indicate that both in Medak and in Morigaon, the in-service teacher training expectations and the realities are divergent. As a result, despite a flurry of interventions such as the RTE 2009 and CCE 2012 to improve the quality of education, the impact is minimal.

Through our research we have come to the conclusion that the existing in-service teacher training practices in both the districts are not effective. In Medak, the model of dissemination of teacher training is three tiered. The relay of information from the state to district to the cluster/mandal and then finally to the teacher leads to heavy dilution of any given training. Morigaon fares slightly better than Medak on this issue as it has an active and functional DIET in its district. In Medak, the DIET has not been functional for over a decade.

The findings from the quantitative data indicate that the study participants overall take good advantage and highly endorse the value of training opportunities to improve their classroom knowledge and skills. On average, they reported having attended two training sessions per year and with two exceptions, 90% or more agreed they had obtained useful knowledge and skills in the specific areas. Teachers in Morigaon had attended more

sessions, yet they were more likely than those in Medak to report that sessions were of little or no benefit. Factor analysis of the 34 knowledge and skill items yielded three factors, which captured facets of student development, school environment and community environment. These factors did not differ between districts. The quantitative data also suggests that reasons for choosing to teach stemmed from influential role models and altruistic impulses. Teachers are overall quite satisfied with teaching as a profession, more so in Medak. Majority of them, from both the districts, would recommend teaching as a profession.

Budgetary cuts have also had an adverse effect on the efficacy of teacher training. In both the districts the TLM funds for the year 2013-14 have been reduced. Also, in case of Morigaon, the new budget has reduced the number of cluster-level meetings/trainings from 12 to 2 a year.

To conclude, the data indicates that teachers find teacher training useful and expressed their need to have more training on multi-grade teaching, engaging with community, and student development. They also want more training in the subjects of English and Mathematics. However, lack of local participation in the decision making regarding teacher training will only serve to widen the gap between well intentioned policies and implemented realities.

9. MOVING FORWARD

This study has attempted to provide a clear picture of the challenges and opportunities of teachers, trainers, policy makers, students, and education officials in translating the intended values of a curriculum into training. While this study is by no means exhaustive, the next section offers some recommendations. We are cognizant of all the effort that is invested by the state and district governments of our two states, therefore, we are hoping that the following suggestion would inspire positive discourse and spur action in our sites.
The suggestions have been divided into sections to delineate the different aspects of in-service teacher training it attempts to impact.

On trainers:

- **Permanent Trainers at the district level.** The quality of trainers in both the districts has been scrutinized. The teachers in the FGDs have stated that RPs/CRCs have the same qualifications as them and have no training experience. Also, the RPs in Medak and CRCs in Morigaon feel over-extended with responsibilities and are unable to fulfill either one of their roles completely. Therefore, having permanent trainers at the district level whose sole responsibility will be to train teachers will minimize the challenge. Tamil Nadu has a similar practice, they recruit Block Resource Persons (BRPs) from the teachers' cohort and their main job is conduct schools visits, have monthly meetings with teachers, collect field data to monitor fund utilization, and provide statistics on various aspects of the school system (MHRD, 2011b).

- **Every training at the district level should have a state trainer.** Dilution of the training is one of the biggest concerns in AP. Having a state trainer oversee the training procedure.

- **Trainers should be subject specialists.** One of the teachers in Morigaon suggested, "Training should be delivered by subject experts, they will have more authority…Bring in subject experts who can contribute something that can be used at the ground level.

- **Efforts should be made to strengthen DIETs in order for them to fulfill their intended responsibilities.** DIETs are important centers through which innovations should be planned and channelized. However, we have found in our research that due to lack of funds or sufficient faculty DIETs are unable to perform to their maximum potential. In both the districts DIETs were severely understaffed. This was particularly true in the case for Medak.

On training model:

- **Find alternative models to the Cascade model for dissemination of teacher training.** In case of Medak, re-engaging DIET in the training process will help de-centralize the creating of training modules from the state level to the district level. In case of Morigaon, it would be helpful to strengthen DIET and engage community stakeholders like local NGOs to monitor the efficacy of the training program.

On training content and methodology:

- **Need for multi-grade, multi-level training.** Medak and Morigaon teachers have received minimal Multi-grade-multi-level (MGML) training to handle classrooms effectively. MGML pedagogy refers to the teaching of students of different ages, grades and abilities in the same group. This methodology is emerging as a widely popular alternative to the traditional teaching-learning methods in India. The underlying principles of this model aim to address the various problems of rural schools through a child-centered, multi-grade multi-level and a locally- sensitive approach.

- **Teachers need more training on student development.** Student development is defined here as encompassing the knowledge and skills for fostering students' intellectual, social, and civic development through effective pedagogy. Teachers expressed their desire to have training on these skills as they believe that it will enhance their teaching skills and they will become more effective as teachers.

- **Teachers need more training on how to foster a healthy School environment.** These skills are essential to nurture qualities of organizing and delivering the curriculum and collaborating well with one's peers and members of school leadership. School complexes and cluster level training are avenues for teachers to get some practical training on these skills. Such expertise is essential to make supplemental TLMs, plan effective class lessons, etc.

- **Teachers need more training on how to effectively interact with the Community.** Both the quantitative as well as qualitative data have indicated that teachers struggle with interacting with parents, SMCs, community. There is considerable research on how community can have positive outcome of learning outcomes if they are invested in what is happening inside a school.

On District Education Action Plan and Budget

- **Reallocation of Budget towards more trainings and funds for TLMs.** For the year 2013-14 both the districts TLMs funds were reduced by a significant margin. Through our research, teachers have expressed the importance of TLMs and the positive value addition it brings to a classroom. And in several instances, the teachers have asked for more TLM funds as they find them very crucial to learning.

- **Work with Districts on their Annual Education plan.** Every year, each district makes their respective an Annual District Education Work and Budget plans. To facilitate greater involvement, transparency, and accountability, it would be beneficial for local stakeholders to partner with the government as well as research groups such as CGC | SA. Such partnerships can provide varied perspectives and help the government make program plans and budgetary allocation on the basis of relevant policy research.

On Monitoring and Evaluation of Teacher training

- **Feedback mechanism for teacher training systems.** The school complex meetings in Medak and cluster level training meetings in Morigaon are working to foster peer to peer learning amongst the teachers. Through these meetings, teachers are able to learn skills from demo classes that are usually conducted by trainers. It not only works in increasing capacity of the teachers but also inculcates qualities of working in teams, problem-solving in groups, brain storming, and pushes teachers to be more imaginative with their teaching style. These trainings have also become a platform for teachers to be open about their concerns and provide excellent feedback system as the mandal/cluster officers and RPs work closely with these bodies.

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APPENDIX 1: SUMMARY OF RESEARCH DESIGN

UNDERSTANDING THE PROBLEM

- Reviewed relevant literature
- Visited villages, schools, relevant offices
- Carried discussions with teachers, functionaries, policy makers, scholars, etc.

DESIGNING THE STUDY

- Designed the research study and tools
- Translated the tools
- Sought permissions from relevant official authorities
- Piloted the tools
- Revised the tools and study accordingly
- Applied for and received IRB approval

COLLECTING DATA

- Hired local teams and trained them to carry out the surveys
- Contacted the sampled schools and surveyed the teachers

- Informed the prospective participants for interviews and FGDs and sought permissions
- Conducted interviews and FGDs

PROCESSING DATA

- Coded the survey responses numerically into SPSS
- Open-ended responses translated into English

- Translated and transcribed the interviews and FGDs in English
- Designed the coding scheme based on a mix of predetermined and emergent codes
- Coded the data qualitatively

ANALYSING THE DATA

- Carried statistical tests: descriptive statistics, t-tests, and factor analyses

- Conducted SWOT analysis of teacher training and curricular design systems

- Triangulated the data from different tools

PRESENTING THE FINDINGS

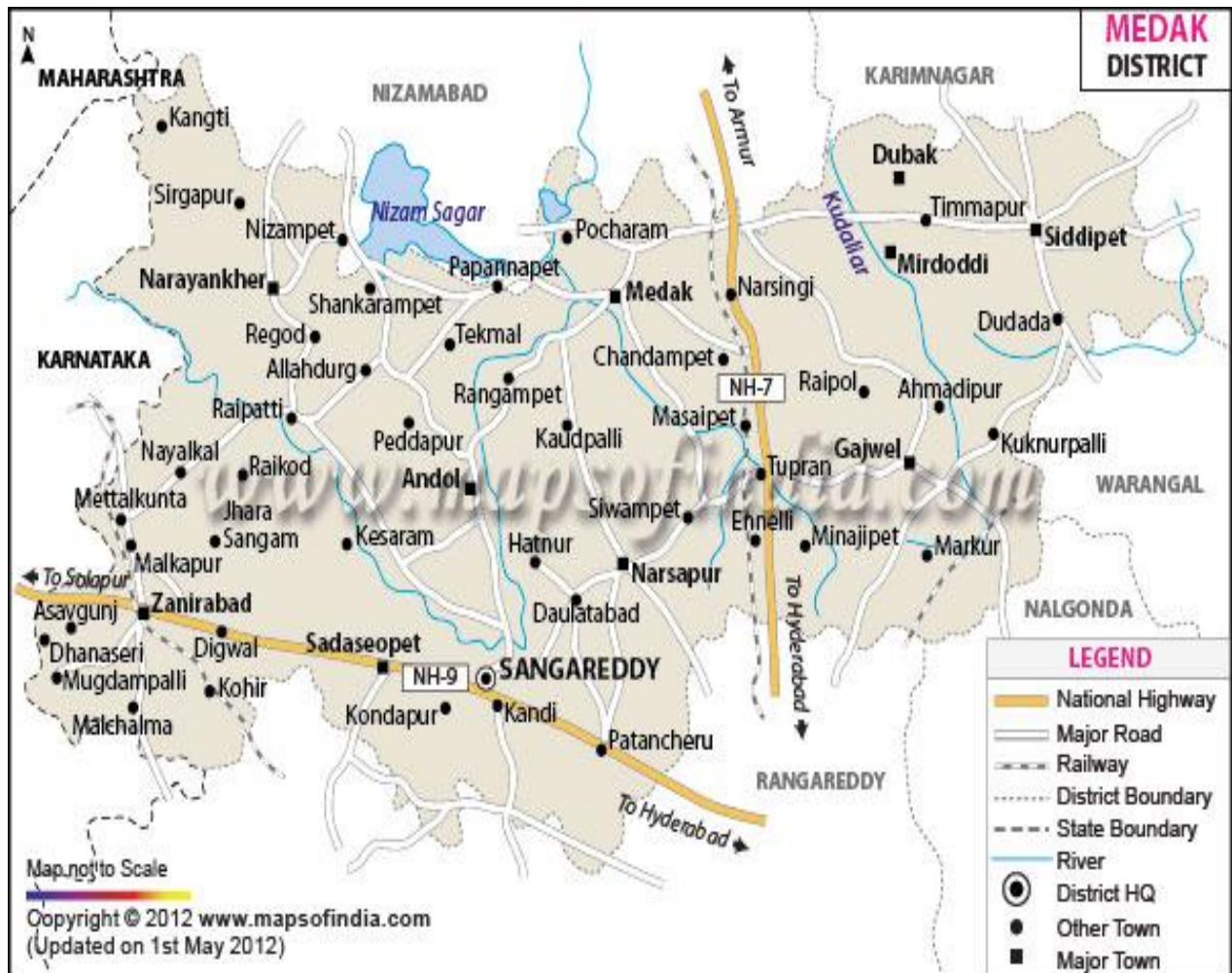- Identified key educational issues
- Drafted policy recommendations

APPENDIX 2: PHYSICAL MAPS OF MORIGAON AND MEDAK

2.1 Physical map of District Morigaon
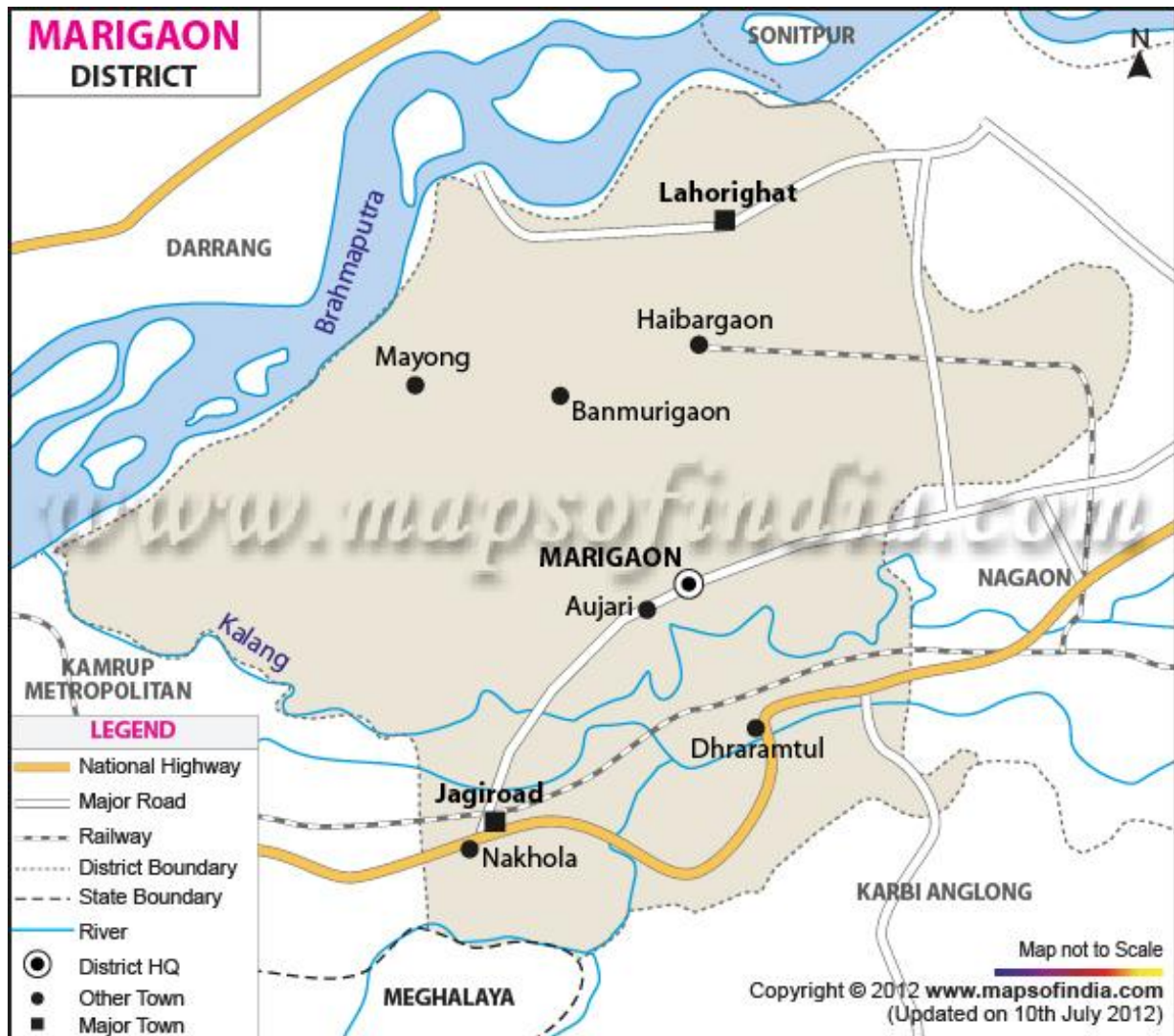
Retrieved on Aug 27, 2013 from http://www.mapsofindia.com/maps/assam/districts/marigaon.htm

2.2 Physical map of District Medak

Retrieved on Aug 27, 2013 from http://www.mapsofindia.com/maps/andhrapradesh/districts/medak.htm

APPENDIX 3: DISE 2011-12 REPORT CARDS FOR MORIGAON AND MEDAK

DISTRICT ELEMENTARY EDUCATION REPORT CARD : 2011-12

District	MARIGAON				State	Assam		
Primary cycle	1-4	Upper primary cycle		5-7	Ratio of girls to boys enrolment		(primary calsses)	1.02
Data reported from	Number of blocks		4	Number of Clusters	63	Number of villages	532	Number of schools	1853

Basic Data, 2011

Total population (in 000's)	958	% 0 - 6 population	16.6	% Urban population	7.7	Sex ratio	974	Sex ratio 0-6	950
Decadal growth rate	23.4	% SC pop. (2001)	12.9	% ST pop. (2001)	15.6	Overall literacy	69.4	Female literacy	65.0

Key Data: Elementary Education

School category	Total schools*			Rural schools*		Total enrolment*			Rural enrolment*		Teachers*		
	Govt.	Private	Unrec.	Govt.	Private	Govt.	Private	Unrec.	Govt.	Private	Govt.	Private	Unrec.
P only	1,050	17	312	1,039	16	104,198	1,370	23,465	103,149	1,335	1,908	111	841
P+ UP	33	14	0	31	13	7,802	1,642	0	6,873	1,538	275	148	0
P+UP+Sec/HS	1	20	0	0	14	1,026	5,394	0	1,026	3,430	31	325	0
UP only	147	213	6	143	211	24,040	22,282	476	23,662	21,968	949	1,534	45
UP + Sec/HS	32	5	3	29	3	6,200	782	221	5,925	582	379	64	37
No response	0	0	0	0	0	0	0	0	0	0	0	0	0

Performance Indicators

	School Category						Enrolment*				
	P. only	P + UP	P+sec/hs	U.P. only	UP+sec	All Schools	Grade	2008-09	2009-10	2010-11	2011-12
% Single classroom schools	30.4	0.0	0.0	4.9	0.0	23.6	I	41,010	32,793	38,457	33,116
% Single teacher schools	16.1	0.0	0.0	0.0	0.0	12.0	II	31,351	25,971	32,322	31,129
% Schools with girls toilets	66.0	91.5	90.5	66.9	92.5	67.7	III	27,329	22,502	28,203	27,640
% Schools with boys toilets	54.0	89.0	90.0	60.0	85.0	56.1	IV	25,647	21,519	25,249	24,703
% Schools with boundary wall	17.0	44.7	71.4	13.1	67.5	18.7	V	22,581	22,382	22,301	21,997
% Schools with drinking water facility	85.1	97.9	100.0	92.1	100.0	87.3	VI	21,420	20,735	21,211	20,936
% Schools with playground	40.0	42.6	42.9	61.2	75.0	45.0	VII	19,910	19,869	20,141	19,808
% Schools with ramps	45.0	61.7	4.8	36.1	12.5	42.5	VIII	12,225	13,117	16,210	19,569
% Schools with electricity	4.0	46.8	85.7	28.4	75.0	12.4	Total Pr.	125,337	102,785	124,231	116,588
% Schools with computer	0.0	34.0	42.9	22.4	47.5	6.8	Total U.P.	63,911	62,986	63,653	62,741
% No female teacher schools (tch>=2)	32.2	14.9	4.8	21.0	20.0	29.0					
% Govt. schools with kitchen-shed	82.0	84.8	0.0	41.5	40.6	76.2	Transition Rate (Pr. to U. Pr.)				93.6
% Govt. schools providing mid day meal	99.4	97.0	0.0	95.2	75.0	98.2	Retention Rate (primary level)				60.2
% Govt. schools with SMC	92.3	84.8	100.0	94.6	87.5	92.2	GER / NER		% Change in Enr.		
% Enrolment in Govt. schools	80.8	82.6	16.0	51.4	86.1	72.0			over previous year		
% Enrolment in single-teacher schools	13.0	0.0	0.0	0.0	0.0	8.4	2009-10	2010-11	2011-12	(Govt. Schools)	

SC, ST & OBC Enr.

	Primary	U. Primary	Muslim Enr.	Primary	U. Primary				
% SC enrolment	11.4	14.1	% Muslim enrolment	51.7	47.5	GER (Pri.)	140.5	168.3	child
% SC girls to SC enrolment	48.7	49.4				NER (Pri.)	100.0	100.0	pop.not
% ST enrolment	13.4	15.2				GER(U.Pri)	94.0	101.6	available
% ST girls to ST enrolment	48.7	49.7				NER(U.Pri)	83.9	85.6	
% OBC enrolment	8.6	11.9	% Muslim girls to muslim enrolment	51.2	60.0				
% OBC girls to OBC enr.	49.8	48.9							

GER / NER			% Change in Enr. over previous year (Govt. Schools)	
2009-10	2010-11	2011-12	Primary	U. Primary
			0.9	-6.6

Flow Rates

Grade	R.R.	D.O.R.	P.R.	Grade	Enrolment All	With Disability	
					Girls	Boys	Girls
I	0.4	18.9	80.7	I	16,266	240	143
II	0.2	14.5	85.3	II	15,391	261	234
III	0.2	12.4	87.5	III	14,113	290	246
IV	0.1	12.9	87.0	IV	12,684	319	234
V	0.1	6.3	93.6	V	11,414	239	201
I - V	0.2	13.7	86.1	VI	11,378	141	168
VI	0.2	6.8	93.1	VII	10,900	158	180
VII	0.2	3.1	96.7	VIII	10,730	145	152
VIII	1.3	#	#	Total	102,876	1,793	1,558

Indicators

	School category					
	P. only	P + UP	P+sec/hs	U.P. only	UP+sec	All schs
% Girls	50.7	51.3	43.2	56.0	51.1	51.7
Pupil-teacher ratio (PTR)	45	22	18	19	15	30
Student-classroom ratio (SCR)	41	33	27	35	19	37
% Schools with <= 50 students	21.9	2.1	0.0	3.3	0.0	17.0
% Sch. approachable by all weather roads	100.0	100.0	100.0	100.0	100.0	100.0
% Female teachers	33.1	35.5	52.5	24.6	25.8	30.5
% Govt. schools opened since 2003	22.0	3.0	0.0	0.0	0.0	12.5

% Schools with SCR >		% Schools with PTR >	
30 at Pri. Level	35 at U.Pri. Level	30 at Pr. Level	35 at U.Pr. Level
58.3	39.9	54.9	9.9

Average Instructional Days		% Pre-primary Schools at Primary Level
Primary	Upper Pr.	
218	222	53.6

Classrooms/Other Rooms

School category	Total classrooms	% good condition	% minor repairs	% major repairs	Other rooms
Primary only	3,183	53.3	20.1	26.6	241
Primary with upper primary	286	50.0	20.6	29.4	49
Primary with U.P. sec/higher sec.	239	61.9	27.6	10.5	83
Upper primary only	1,340	37.2	20.5	42.2	270
Upper primary with sec./higher sec	376	47.3	23.4	29.3	96

Position of Teachers by Educational Qualification (Other than Contractual-teachers)

School category	Below Sec.	Secondary	Higher secondary	Graduate	Post graduate	M. Phil.	Others	No response
Primary only	195	1,498	734	227	12	1	5	0
Primary with Upper Primary	6	37	139	221	16	2	1	0
Primary with U. P. & Sec/ H. Sec.	1	13	43	233	47	3	2	0
Upper Primary only	33	281	1,136	1,013	26	2	28	0
Upper Primary with Sec./Higher Secondary	2	21	57	315	43	6	12	0
Contractual-teachers	4	38	135	45	13	0	1	0

% Professionally Trained Teachers	
Regular	Contractual
42.5	13.1

Non-Tch Assignment	
Days involved	24
%Tch Involved	9.6

Gender & Caste Distribution of Teachers*

School category	Avg. No. of Tchs.	Regular teachers			Contractual-teachers			SC teachers		ST teachers		%Teachers Recvd in-service training	
		Total	Male	Female	No res	Male	Female	No res	Male	Female	Male	Female	Male	Female
Primary only	2.7	2860	1789	883	0	124	64	0	222	92	238	126	49.8	40.4
Primary with upper prim.	9.0	423	273	149	0	0	1	0	18	20	34	22	26.0	19.3
Prim.with U.P.& Sec/H.S	17.0	356	165	177	0	4	10	0	17	22	26	22	0.0	0.5
Upper Primary only	7.0	2528	1900	619	0	6	3	0	198	53	216	74	35.3	38.4
U. Primary with Sec./H.S.	13.0	480	333	123	0	23	1	0	29	8	25	17	4.2	3.2

Enrolment by Medium of Instructions*

		% Total Grossness	Primary	Upper Primary
			7.3	19.8

Category	Assamese	English	Hindi	Bengali	Bodo	% Schools Recvd (Previous year)		Incentives: No. of Beneficiaries		
						School dev. grant	T L M grant	Incentive	Primary	Upper primary
P. only	127939	176	194	436	288	62.2	59.0	Text books	134533	53791
P + UP	9378	0	0	0	66	66.0	68.1	Uniform	1997	1517
P+sec/hs	3990	1404	1026	0	0	0.0	0.0	Attendance	751	484
U.P. only	46206	188	109	204	66	82.2	83.3	Stationery	22863	11575
UP+sec	6971	232	0	0	0	25.0	30.0	Transport	15	14
								Residential	0	407

# = not applicable	na = not available	* Some totals may not match due to no response in classificatory data items

The study of in-service teacher training in public primary schools in Morigaon (Assam) and Medak (AP)

DISTRICT ELEMENTARY EDUCATION REPORT CARD : 2011-12

District	MEDAK					State	Andhra Pradesh	
Primary cycle	1-5	Upper primary cycle	6-8	Ratio of girls to boys enrolment			(primary calsses)	0.94
Data reported from	Number of blocks		46	Number of Clusters	457	Number of villages	1215	Number of schools	3871

Basic Data, 2011

Total population (in 000's)	3032	% 0 - 6 population	11.5	% Urban population	24.0	Sex ratio	989	Sex ratio 0-6	954
Decadal growth rate	13.6	% SC pop. (2001)	17.6	% ST pop. (2001)	5.0	Overall literacy	62.5	Female literacy	52.5

Key Data: Elementary Education

School category	Total schools*			Rural schools*		Total enrolment*			Rural enrolment*		Teachers*		
	Govt.	Private	Unrec.	Govt.	Private	Govt.	Private	Unrec.	Govt.	Private	Govt.	Private	Unrec.
P only	2,014	251	78	1,927	142	148,850	60,889	6,850	138,377	32,702	6,186	2,167	388
P+ UP	427	232	30	417	164	54,850	37,061	4,512	52,867	25,179	2,631	1,997	225
P+UP+Sec+HS	28	8	9	22	8	8,832	2,722	1,575	7,708	2,722	381	204	82
UP only	0	0	0	0	0	0	0	0	0	0	0	0	0
UP + Sec/HS	547	236	11	513	126	81,136	34,926	658	72,336	17,170	5,755	2,336	89
No response	0	0	0	0	0	0	0	0	0	0	0	0	0

Performance Indicators / School Category

Performance Indicators	P. only	P + UP	P+sec/hs	U.P. only	UP+sec	All Schools
% Single classroom schools	22.3	1.9	0.0	0.0	0.8	14.0
% Single teacher schools	8.4	0.6	0.0	0.0	0.0	5.2
% Schools with girls toilets	67.6	80.5	93.6	0.0	83.3	73.3
% Schools with boys toilets	64.0	77.0	81.0	0.0	78.0	68.2
% Schools with boundary wall	49.9	70.5	77.8	0.0	80.9	60.2
% Schools with drinking water facility	75.7	88.4	97.8	0.0	92.4	81.6
% Schools with playground	45.9	61.2	71.1	0.0	75.1	54.9
% Schools with ramps	8.5	15.1	11.1	0.0	15.6	11.2
% Schools with electricity	70.8	84.6	97.8	0.0	92.3	78.0
% Schools with computer	11.4	32.9	73.3	0.0	71.9	28.4
% No female teacher schools (tch>=2)	23.2	9.6	13.3	0.0	8.8	17.7
% Govt. schools with kitchen-shed	29.2	53.4	85.7	0.0	16.1	30.8
% Govt. schools providing mid day meal	97.3	99.3	7.1	0.0	94.1	96.2
% Govt. schools with SMC	73.4	80.6	21.4	0.0	72.6	73.8
% Enrolment in Govt. schools	68.7	56.9	67.3	0.0	69.5	66.3
% Enrolment in single-teacher schools	2.3	0.3	0.0	0.0	0.0	1.2

Enrolment*

Grade	2008-09	2009-10	2010-11	2011-12
I	75,224	76,877	74,736	70,332
II	54,279	54,671	60,005	59,979
III	52,803	52,788	55,813	58,583
IV	50,641	51,427	53,460	54,408
V	49,952	51,497	53,657	53,453
VI	49,584	47,374	48,966	51,089
VII	48,664	46,988	46,716	50,155
VIII	46,970	45,121	43,967	44,862
Total Pr.	282,899	287,260	297,671	296,755
Total U.P.	145,218	139,483	139,649	146,106

Transition Rate (Pr. to U. Pr.) 95.1
Retention Rate (primary level) 69.5

GER / NER

	2009-10	2010-11	2011-12
GER (Pri.)	114.3	120.6	child pop.not available
NER (Pri.)	90.0	95.3	
GER(U.Pri)	87.0	89.6	
NER(U.Pri)	66.1	69.4	

% Change in Enr. over previous year (Govt. Schools): Primary 0.6, U. Primary -3.9

SC, ST & OBC Enr.

	Primary	U. Primary
% SC enrolment	19.2	20.1
% SC girls to SC enrolment	48.9	50.1
% ST enrolment	10.5	6.1
% ST girls to ST enrolment	47.6	42.3
% OBC enrolment	56.8	59.1
% OBC girls to OBC enr.	49.0	50.3

Muslim Enr.

	Primary	U. Primary
% Muslim enrolment	12.5	11.0
% Muslim girls to muslim enrolment	49.3	52.0

Indicators / School category

Indicators	P. only	P + UP	P+sec/hs	U.P. only	UP+sec	All schs
% Girls	49.0	48.3	46.8	0.0	49.6	48.9
Pupil-teacher ratio (PTR)	25	20	20	0	14	20
Student-classroom ratio (SCR)	26	21	25	0	22	24
% Schools with <= 50 students	44.3	4.1	0.0	0.0	7.6	29.1
% Sch. approachable by all weather roads	100.0	100.0	100.0	0.0	100.0	100.0
% Female teachers	51.2	46.1	50.1	0.0	38.2	45.3
% Govt. schools opened since 2003	3.6	2.6	7.1	0.0	25.2	5.8

Flow Rates

Grade	R.R.	D.O.R.	P.R.
I	7.2	14.6	78.2
II	0.7	3.9	95.4
III	0.6	3.9	95.5
IV	0.3	1.7	98.0
V	0.3	7.7	92.0
I - V	2.2	6.9	91.0
VI	0.3	0.9	98.8
VII	0.3	6.2	93.6
VIII	0.2	#	#

Enrolment

Grade	All Girls	With Disability Boys	With Disability Girls
I	33,962	308	204
II	29,145	265	180
III	28,523	267	187
IV	26,486	204	180
V	25,973	177	152
VI	25,505	85	94
VII	25,090	96	109
VIII	21,883	65	64
Total	216,567	1,467	1,170

Classrooms/Other Rooms

School category	Total classrooms	% good condition	% minor repairs	% major repairs	Other rooms
Primary only	8,343	75.1	18.3	6.7	1,639
Primary with upper primary	4,502	82.9	12.8	4.3	916
Primary with U.P. sec/higher sec.	530	85.5	11.5	3.0	293
Upper primary only	0	0.0	0.0	0.0	0
Upper primary with sec./higher sec	5,368	78.9	13.6	7.5	2,140

% Schools with SCR > 30 at Pri. Level 33.4, 35 at U.Pri. Level 20.7
% Schools with PTR > 30 at Pr. Level 17.0, 35 at U.Pri. Level 4.1

Average Instructional Days: Primary 222, Upper Pr. 222
% Pre-primary Schools at Primary Level 9.0

Position of Teachers by Educational Qualification (Other than Contractual-teachers)

School category	Below Sec.	Secondary	Higher secondary	Graduate	Post graduate	M. Phil.	Others	No response
Primary only	0	193	1,323	3,982	1,096	13	9	0
Primary with Upper Primary	0	99	581	2,358	688	7	14	0
Primary with U. P. & Sec/ H. Sec.	0	4	18	154	295	17	2	0
Upper Primary only	0	0	0	0	0	0	0	0
Upper Primary with Sec./Higher Secondary	0	112	363	3,871	3,245	58	37	0
Contractual-teachers	0	298	836	2,375	384	7	2	0

% Professionally Trained Teachers: Regular 96.3, Contractual 92.0
Non-Tch Assignment: Days involved 19, %Tch Involved 6.3

Gender & Caste Distribution of Teachers*

School category	Avg. No. of Tchs.	Regular teachers Total	Male	Female	No res	Contractual-teachers Male	Female	No res	SC teachers Male	Female	ST teachers Male	Female	%Teachers Recvd in-service training Male	Female
Primary only	3.9	8741	3172	3444	0	1090	1035	0	692	571	418	128	43.4	27.8
Primary with upper prim.	7.4	4853	2057	1690	0	561	545	0	366	271	142	35	29.5	19.6
Prim.with U.P.& Sec/H.S	18.5	667	259	231	0	74	103	0	52	37	16	4	2.1	1.8
Upper Primary only	0.0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
U. Primary with Sec./H.S.	10.4	8180	4909	2777	0	143	351	0	512	389	184	61	26.3	18.7

Enrolment by Medium of Instructions*

% Total Grossness: Primary 20.7, Upper Primary 21.8

Category	Telugu	English	Urdu	Kannada	Others
P. only	153768	51435	10777	532	77
P + UP	62596	24491	8800	536	0
P+sec/hs	3119	9788	222	0	0
U.P. only	0	0	0	0	0
UP+sec	73097	39246	4345	32	0

% Schools Recvd (Previous year)

	School dev. grant	T L M grant
	80.0	70.0
	60.5	54.1
	20.0	13.3
	0.0	0.0
	57.4	56.0

Incentives: No. of Beneficiaries

Incentive	Primary	Upper primary
Text books	191099	115256
Uniform	145099	68920
Attendance	6733	4370
Stationery	5294	4804
Transport	208	815
Residential	887	3519

= not applicable   na = not available   * Some totals may not match due to no response in classificatory data items

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APPENDIX 4: AUTHORS' BIOGRAPHY

Huma Kidwai is a doctoral (EdD) candidate at Teachers College, Columbia University in the Department of International and Transcultural Studies. She is researching on the state-madrassa partnerships for educational reform and development in India. In 2013, she was awarded the American Institute of Indian Studies (AIIS) fellowship to conduct her data collection in India. Huma graduated from Harvard University with a Masters degree (EdM) in International Education Policy. She also holds a Masters degree in Child Development from Delhi University where she focused on Early Childhood Care and Education. Huma has worked at the World Bank in New Delhi as a research analyst with the Poverty Reduction Group. She has also worked on projects on health, education and other civil rights at the Praxis Institute for Participatory Practices in New Delhi. Currently Huma is working as a Research Associate at Columbia Global Centers for Model Districts Education Project.

Denise Burnette is Professor of Social Work at Columbia University. Dr. Burnette holds an M.S.S.W. (University of Tennessee), an International Masters in Mental Health Policy and Services (Universidade Nova de Lisboa) and a Ph.D. in Social Welfare (University of California, Berkeley) and certification in College and University Administration (Harvard University). As an International Scholar with theOpen Society, she has served in Mongolia and Albania. Dr. Burnette has held Senior Fulbright fellowships at Tata Institute of Social Sciences in Mumbai (2006-2007) and at the Centre for Research on HIV/ AIDS at the University of Botswana (2012-2013).

Shreyanka Rao is the Research Associate at the Columbia Global Centers' project for Model Districts Education Project. She has a Master of Arts in International Education Development (International Humanitarian Relief) from Teachers College, Columbia University. Before joining CGC, she worked with Columbia University to build a curriculum titled "Five Boroughs to the World" that will support Columbia University's World Leaders Forum project. She has also worked as a Child and Youth Protection and Development Intern at International Rescue Committee on the 'Education in Emergencies' course that is being offered at the University of Nairobi, Kenya. She has a B.A. in International Studies from Soka University of America, California. She minored in Spanish and spent a semester studying Human Rights at Universidad de Buenos Aires.

Seema Nath is a Research Assistant at Columbia Global Center | South Asia. Her main focus is to provide research and technical support to the Model District Education Project, 'Access to Achievement' which operates in two "Model Districts" in Morigaon (Assam) and Medak (Andhra Pradesh). She received her Master in Philosophy (MPhil) in Social and Developmental Psychology from Cambridge University, UK where she focused on autism research. She holds a Master's in Organizational Behavior from S.N.D.T University, Mumbai and has completed her B.A (Honors) Psychology from Lady Shri Ram College, Delhi University. Her research interests are international education development, theory of mind, memory in autism spectrum disorder and inclusive education.

Monisha Bajaj is Associate Professor of International and Comparative Education at Teachers College, Columbia University. Her research and teaching interests focus on peace and human rights education, social inequalities and schooling, and educational innovation in

the global South. Professor Bajaj is the editor of the *Encyclopedia of Peace Education* (Information Age, 2008) and is the author of a teacher-training manual on human rights education (UNESCO, 2003) as well as *Schooling for Social Change: The Rise and Impact of Human Rights Education in India* (Bloomsbury, 2012), which was awarded the Jackie Kirk Outstanding Book Prize of the Comparative and International Education Society. She has also developed curriculum--particularly related to the incorporation of peace education, human rights, and sustainable development--for non-profit educational service providers and inter-governmental organizations, such as UNICEF.

Nirupam Baipai is the Director of the Columbia Global Centers | South Asia and a senior Development Advisor at the Earth Institute at Columbia University in New York. He is also a member of the United Nations Millennium Project on the Millennium Development Goals, the internationally agreed goals to reduce extreme poverty, disease and hunger by the year 2015. Since June 2004, Dr. Bajpai has had the high honor and privilege of advising the Honorable Dr. Manmohan Singh, Prime Minister of India and several of his cabinet ministers, including the Minister of Health and Family Welfare. Earlier, between 1999 and 2004, Dr. Bajpai served as an economic advisor to the Honorable Atal Bihari Vajpayee, former Prime Minister of India and to several of his cabinet ministers, including the Ministers of Finance, Commerce and Industry, and Information Technology. Dr. Bajpai has led several teams of social and physical scientists to conduct research and advice several State Governments on **"Scaling up Services in Rural India"** wherein teams led by Dr. Bajpai were working with Rural Communities in India**.** Dr Bajpai's work most notably along with Professor Jeffrey Sachs has helped advice policymakers on a variety of issues relating to the Indian economy and India's economic reforms, both at the federal and state levels.