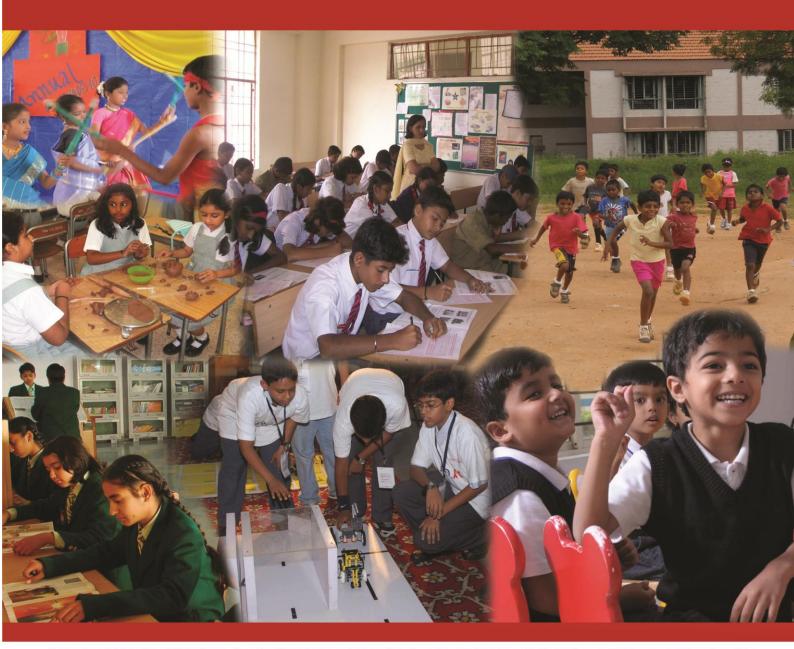
QUALITY EDUCATION STUDY

Student Learning Outcomes

El Working Paper Series - Issue 14



Educational Initiatives (EI) believes that significantly improved student learning can happen only through systematic research into learning which includes assessment, as well as areas like misconception research. This working paper series will share learnings from various past and present EI projects as well as path-breaking work in these areas elsewhere in the world. Please write to us at assessment@ei-india.com for questions or comments.



Educational Initiatives Pvt. Ltd.

www.ei-india.com

WHY THIS IDEA HAS LARGER RELEVANCE?

Quality Education Study (QES) aims to find answers to what constitutes 'quality education'. This study has been conceptualized and managed jointly by Wipro and Educational Initiatives (EI) and the execution was carried out by EI. This study was preceded by the 'Student Learning in the Metros' (SLIM) study, which was conducted by EI and Wipro in 2006. QES tries to expand the meaning of 'quality' in education to include educational outcomes beyond student performance in subjects and study the attributes of quality learning environments. Although myriad views exist on what constitutes quality education, majority of them relate it to be a reflection of the scholastic, co-scholastic and affective (specifically values and attitude) outcomes. Quality education is often closely linked with what experts refer to as, first, quality learning environments and second, holistic development of students (UNESCO, 2002).

In a limited sense, this study shares the findings based on the large scale study of the scholastic, co-scholastic and affective outcomes and the different aspects of the learning environments found in India's 'top' schools. These 'top' schools in our largest cities arguably represent the best education that is available in the county. In this working paper, we will discuss only the scholastic aspect of learning environment.

OBJECTIVES OF THE STUDY

The main objective of the study was to expand the understanding of quality in school education and the attributes of good learning environments. These could be further specified as follows:

- To identify, study and where possible measure some of the factors or parameters that are seen to occur in different learning environments.
- To provide information on different approaches and practices and their contexts
- To provide information on student learning levels
- To compare student achievement as seen in schools of different types, boards and regions
- To provide information on some values and attitudes that students seem to hold



Figure 1: Student writing QES Test

 To provide information on participation of students in the areas of learning not considered part of the core curriculum like sports, music, arts etc. and the supportive environments provided by schools for the same

SALIENT FEATURES OF THE STUDY

- Expert Panel: Experts included professors from premier research institutions in India and the USA, educationists from different NGOs
 working hands-on in the field of education, academic and pedagogy experts, child psychologists and school principals.
- Coverage: Overall about 23,000 students, 790 teachers and 54 principals from 89 schools participated in the study including six schools recommended by experts as schools providing different learning environments.
- Background Questionnaires: Three different background questionnaires, one each for student, teacher and school principal were
 developed based on detailed secondary research.
- Questions to Understand Students' Values and Attitudes: A section to gather information on students' perception and their attitude
 towards various social issues was also included.
- Focus Group Discussions (FGDs): A sub sample of 16 schools was selected for further collection of qualitative information through FGDs. In these schools, FGDs were carried out with students of classes 4, 6 and 8 as well as teachers handling these classes.
- Principal Interviews: The principals in the sub sample of 16 schools were also interviewed to gather their views on education, their own school, teachers and other staff.
- Specially Assembled Test Paper: The test consisted of questions carefully selected from a pool of ASSET items which have already
 been extensively tested with thousands of students. These questions checked if students are learning with understanding and are able
 to carry out higher order cognitive tasks. e.g., critical thinking. Few questions were also selected from international studies such as
 'Trends in Mathematics and Science Study' (TIMSS), 'Progress in Reading Literacy Study' (PIRLS) and national studies by El's SLIMS.
- A Secondary Study: A 'secondary study' to track progress in student learning was also carried out with some classrooms (sections) in the participating schools.
- A Writing Task: An essay writing task was included in the secondary survey to reveal insights about the writing competencies of students in these top schools.
- Completely Invigilated Tests: All the tests were invigilated by El trained representatives.
- Analysis: Advanced analysis was carried out on the collected data to extract patterns related to different aspects of the study.

KEY MESSAGES FROM THE STUDY

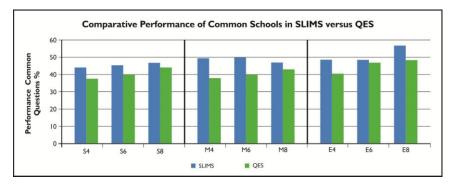
- Students in the 'top schools' of our country exhibit rote learning. Performance of class 4 was found to be below international average. Students seem to perform on par with international average in class 8, mainly due to their higher achievement in procedural questions (i.e., questions that require straightforward use of techniques or learnt procedures to arrive at the answers). Misconceptions acquired in lower classes continue in higher classes without any correction in their learning. Performance of top schools here means the number of students who give the correct answer to a question.
- Students exhibited diverse thinking on questions on gender equality, acceptance of cultural and religious diversity, civic, citizenship and ecological responsibilities. Some of them indicate a bias which might over time grow into prejudices. It is possible that children are not getting exposed to different perspectives on these issues and thus their thinking is not well-informed.
- 3. Different aspects of learning environments such as principal's instructional leadership (leadership and support to teachers in academic areas), teacher beliefs in constructivist teaching and learning practices, principals' feelings of self-efficacy are associated with better student achievement. Classrooms where teachers and principals do not believe in physical punishment, where students feel involved in the classroom practices and believe that their teachers treat everyone equally also seem to be linked to greater student performance.
- 4. A majority of principals think that co-scholastic areas are relevant for building students' self-confidence, self-control, sportsmanship, solidarity, teamwork, competitiveness and health. Data reflects that there is no major emphasis in the school curriculum on these areas. Among co-scholastic areas, sports, art and craft are given higher emphasis than music, dance, drama and debates.
- 5. A few background factors such as students spending at least 60 minutes each day reading material other than textbooks, students being able to read as well as do their homework independently, being taught by maths teachers with a masters degree in education, students being able to share their school problems with their parents are associated with greater student achievement.

MAIN FINDINGS OF STUDENT LEARNING OUTCOMES

- 1. Performance is lower when compared to international standards: Students in 'top' schools of India performed lower than the international average on questions used from studies such as 'Trends in International Maths and Science Study' (TIMSS) and 'Progress in Reading Literacy Study' (PIRLS) at class 4 level, while they performed on par at class 8 level. The improvement in class 8 level was due to the higher performance observed on procedural questions.
- 2. Drop in learning levels from a previous study (SLIMS 2006 –India Today cover story): In all the papers tested and on common questions from the previous SLIMS study, students performed lower in the Quality Education Study and the fall was higher in Maths 4, Maths 6, and English 8. The SLIMS study (carried out by EI and Wipro in 2006) assessed students in India's top schools for their conceptual understanding and found that our top schools don't promote conceptual learning in students. QES results show that there has been a further drop from the already unsatisfactory levels of 2006.
- 3. Significant differences in schools affiliated to different boards and in different cities: The findings from board-wise comparison reveals that schools from Council for the Indian School Certificate Examinations (CISCE) and Central Board of Secondary Education (CBSE) performed among the top 2 and the differences with other boards were statistically significant. CISCE also performed significantly better than CBSE. The comparison of scores reveals that students from Kolkata and Delhi performed signicantly better than Mumbai, Chennai and Bangalore. Mumbai performed at par with overall average of these five metros. Bangalore performed significantly lower than other metro cities. Kolkata had a large number of ICSE schools while Delhi had mostly CBSE schools which could be the reason for their higher performance.
- 4. Students exhibit rote learning and perform comparatively better in questions that are procedural or do not involve deeper understanding or application of concepts.
- 5. Practical competencies such as map reading, using good language while writing, measurement, general awareness of well known facts, etc are not developed well.
- 6. Students seem to harbour a number of misconceptions in the different subjects. As students move to higher classes, although the overall performance improves, the number of students holding on to same misconception continues, which indicates that if a student develops a misconception in a lower class, then it is more likely to continue in higher classes too without getting corrected.
- 7. Boys were seen to perform better than girls in Maths and Science at class 8 level, while no such significant differences were found in other classes or subjects such as English and Social Studies.

PERFORMANCE COMPARISON – SLIMS 2006 Vs QES 2011

The previous El-Wipro study, Student Learning in Metros (SLIMS) carried out in 2006 and published in India Today as a cover story brought into attention the status of student learning in the 'top' schools of the five metros. Out of the 89 schools tested in the year 2010 in the Quality Education Study (QES), 64 schools were common to both studies. In all the papers tested, students performed lower in the Quality Education Study (2010), and the fall was higher in Maths 4, Maths 6, and English 8.



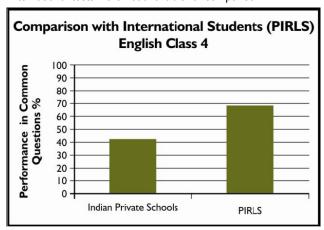
The results were further analysed at question level to check if there is any pattern in the performance. 54 questions (about 5 per class and subject) were kept common between SLIMS and QES. It was observed that students performed lower in 48 out of the 54 questions. The 6 questions in which QES showed comparatively higher performance tested students are:

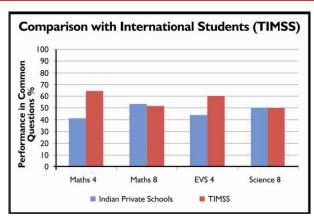
	Question	QI	ES	SLII	MS
+	The length of this pencil is about	Α	4	Α	7
ass 4		В	16	В	11
Maths Class 4	A. 4 cm	С	67	С	77
Mat	C. 6 cm D. 7 cm	D	3	D	3
	Nandita cut off a square of side 1 cm from a rectangular sheet as shown:	A	10	A	7
∞		A	10		'
Slass	What would be the change in perimeter as compared to the original sheet?	В	27	В	23
Maths Class 8	A. It would remain the same. B. It would increase by 2 cm. C. It would decrease by 2 cm. Rectangular sheet Sheet after square piece is cut off	С	35	С	46
	D. It would decrease by 3 cm.	D	23	D	23
∞	(-7) - ? = 14	А	21	Α	24
Maths Class 8	A . –7	В	21	В	21
aths	B. 7 C. 21	С	21	С	21
Σ	D. –21	D	33	D	31
& s	When we see with only one eye (by covering the other eye with our hands), what is the difference in what we see?	Α	45	Α	64
Clas	A. There is no difference.	В	10	В	6
Science Class 8	B. We cannot distinguish colours.	С	21	С	17
Sci	C. We cannot distinguish depths. D. We cannot distinguish heights.	D	16	D	12
∞	What will happen if a solid having When a solid is placed in a liquid having LOWER density as the liquid is When a solid is placed in a liquid of HIGHER density, it floats.	Α	12	Α	8
Slass	placed in it?	В	21	В	17
Science Class 8	A. It will sink. B. It will float.	С	30	С	28
Scie	C. It will stay in any position within the liquid.D. A solid cannot have the same density as a liquid.	D	29	D	44
8 S 8	Which of these words is OPPOSITE in meaning to "incessant"?	А	19	Α	20
ı Cla	A. relentless B. intermittent	В	29	В	30
English Class 8	C. ceaseless	С	25	С	28
莭	D. perpetual	D	19	D	21

INTERNATIONAL COMPARISON

To understand how students in our 'top' schools of our country are performing when compared with International Counterparts; questions from Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS) were repeated.

At class 4 level, students from 'top' schools of India performed lower than the international average (in all questions included) in all the 3 subjects tested - English, Maths and Science. However, at class 8 level, students performed on par with their average international counterparts. As PIRLS is carried out only for class 4 age groups, common questions from international tests were not available for comparison.





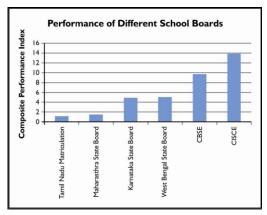
Common	questions rep	eated from	TIMSS/PIRLS
Class	English	Maths	Science
4	7	7	7
8	NA	9	8

It was found in the previous 'Student Learning in Metros' study carried out by EI in 2006 and released in public domain, that students in India's 'top' schools were underperforming compared to their international counterparts at class 4 level. While the condition of underperformance is still observed in class 4 in the QES results, it is also evident that students in these schools are catching up at class 8 level and are performing similar to the overall international average.

Research indicates that having a strong foundation in a first language (mother tongue), especially during the early years of school, is crucial to a child's educational success. (UNESCO, 2008; K.Heugh et al., 2007; H.Alidou et al., 2006; N.Dutcher, 2004; A.Fafunwa et al., 1989). English is not the mother tongue or language spoken at home of students in these schools, but the medium of instruction is English, so students who are learning other subjects in this language will not have a natural advantage to absorb the learning more deeply. This lack of mastery in the language which is the medium of instruction could also be one the reasons that students are underperforming their international counterparts at class 4 level. At class 8 level, students may have picked up adequate mastery in English which in turn could possibly aid the acquisition of learning in other subjects too. A closer look at guestion level in class 8 also revealed that the improvement was largely in questions that were text-bookish and not on understanding based questions.

PERFORMANCE OF DIFFERENT METROS AND DIFFERENT BOARDS

The performance of the five metro cities was also compared and shown below as composite performance index. The comparison of scores reveals that students from Delhi and Kolkata performed significantly better than Mumbai, Chennai and Bangalore. Mumbai performed at par with overall average of these five metros. Bangalore performed significantly lower than the other metro cities.



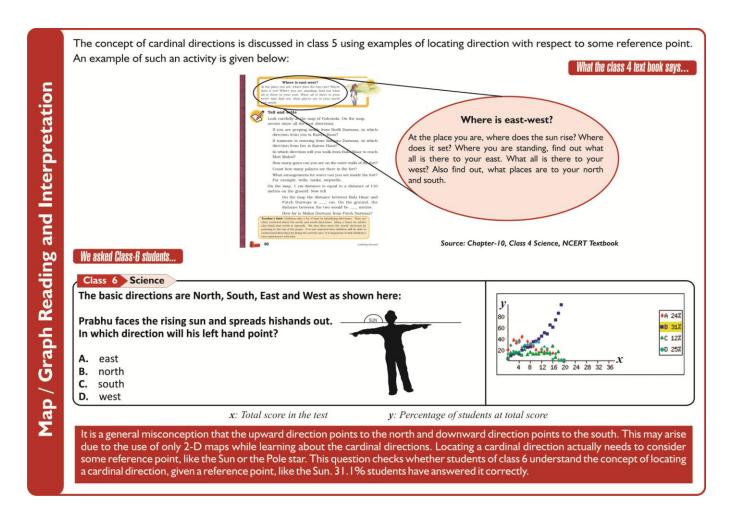
Note: The IGCSE (Cambridge) was not included in the comparison, as the number of students was less than 0.5% of overall sample.

Performance Index 10 8 Composite Schools that participated in the 2 study were affiliated to two all 0 India boards - The Central Board

12

Performance of Different Cities

of Secondary Education (CBSE) and Council for the Indian School Certificate Examinations (CISCE); one international board - IGCSE (Cambridge); and state boards of Maharashtra, Karnataka, Tamil Nadu (Matriculation) and West Bengal. The findings from board-wise comparison reveals that schools from Council for the Indian School Certificate Examinations (CISCE) and Central Board of Secondary Education (CBSE) performed among the top 2 and the differences with other boards were statistically significant. CISCE showed significantly better performance than CBSE. Amona state boards. schools from Tamil Matriculation showed the least performance.



RECOMMENDATIONS FOR IMPROVING STUDENT LEARNING OUTCOMES

Large scale awareness campaign among schools on notions of quality: While there may be many notions on the constituents of
quality education, there is likely to be unanimous agreement in that schools should be places where students develop holistically and
maximise their potential.

How well students understand what they learn will be important for building individuals who are capable thinkers. Schools are also places where many of the societal notions on issues such as poverty, religious and cultural intolerance, biases against gender and differently-abled persons, disregard for civic and citizenship responsibilities and many others can be challenged and overturned by building awareness among students.

Large awareness campaigns involving schools and school heads should be rolled out where there is discussion and elaboration on the understanding of what a good school and quality education means. Schools should be encouraged to use the outputs of the study that highlights the gaps in student learning and the misconceptions students have in different subject areas.

- Periodic benchmarking on all aspects of educational quality: Systems that embrace change through data generation, use and self-assessment are more likely to offer quality education to students (Glasser, 1990). Regular and periodic study can focus improvement efforts on all dimensions of system quality related to learners and learning environments.
- Providing effective teacher support: Understanding the learning gaps and misconceptions among students can provide an opportunity for teacher capacity building. Inputs regarding learning gaps and misconceptions can be built into an effective teacher training and support system to move the system towards better quality learning. Student interviews and group discussions held to understand student thinking on various concepts could be included in pre-service teacher training and also as an activity that practicing teachers could be encouraged to do. Practices which make a teacher more reflective and research-oriented in a classroom context could be analysed and considered.

EDUCATIONALIST VIEWS ON QES

- 1. Dr. Krishna Kumar, Former Director, NCERT: "This study verifies what we knew all along, our prior knowledge borne out of familiarity to the system. It is NEWS for India's TOP schools, who really didn't believe that they are at that place where this study shows them. In a highly divided and divisive society, this study has brought about some semblance of the sanity which can only be brought by that integration which believes that we are part of the same vision that the constitution gives us for creating thoughtful citizens. This study has shown that there are problems across all schools and that every child ought to have developed certain skills, like intellectual and conceptual by the end of primary schools. But that doesn't seem to happen. And the study shows that when Indian children begin to catch up with some of these international norms, they catch up not because of their better ability to do those concepts questions, but because of their ability to do better in procedural questions, still the deficit of concepts continues..."
- 2. Ms. Shaheen Mistri, Founder, Akanksha Foundation: "This study has brought about a lot of things that have made me think, like gender diversity, sensitivity, acceptance of diversity in classrooms. There are lot of things that I connected with. Some of them connected themselves to my head and some to my heart. They made me think about why are our kids thinking in a certain manner about diversity, like 70-80% of kids thought of differently abled children as burdensome, unhappy or not able to do well in studies. This study has brought into notice the fact that there are very important things to consider while we educate our children, like social and cultural values, attitudes, gender sensitivity and acceptance of diversity."
- 3. Ms. Vyjayanthi Sankar, Vice President Large Scale Assessments, Educational Initiatives: "Even teachers who believe in constructivism in teaching, that is, in providing opportunities for students to construct their own knowledge, often are unable to translate their beliefs into classroom practice. Our teachers need good role models and suitable ways in which topics can be dealt with in classrooms. The fulfilment of these needs will enable students to improve their understanding and knowledge."
- 4. Mr. Sreekanth Sreedharan, Manager, Wipro Applying Thought in Schools: "In the public discourse, there is a feeling that everything is fine in the better private schools as far as student learning outcomes are concerned. This study helps us understand where we stand on three aspects: how our students tackle conceptual questions, how they fare in comparison with international levels, and whether learning levels have improved or fallen over a period of time within the country."
- 5. Ms. Devi Kar, Principal, Modern High School for Girls: "I congratulate the team WIPRO and El for attempting such a kind of study, because you will notice that we have never had anything like this. We have not had any attempt to measure the quality of education imparted in schools. Thanks for bringing up and doing this study. Thanks for sharing all the findings with us."
- 6. Ms. Seema Jerath, Principal, DLF Public School: "I congratulate WIPRO and EI on this QES study because of the depth of the study and its transparency. Actually I think, to a certain extent, it does shake us out of something that we call a status quo and they just started a debate, triggered a discussion and there's a huge takeaway that will probably come out of this. I think the story has just begun with the study that they have done. The QES actually leaves us with a lot more to do."
- 7. Mr. Bratin Chattopadhyay, Santiketan: "I congratulate this team of WIPRO and EI for doing a commendable job. What impressed me is that these kinds of studies are generally done by the states, which are available as Management Information Systems (MIS). Now here is a report which raises a lot of questions about the quality of education currently imparted in schools. It is proposing a different standard of quality. In no other report have I found so much weightage on the issue of value education and non-scholastic values. I thank the team for going beyond the normal examination results in measuring the quality of education in schools."
- 8. Principals at Various QES Seminars: "QES was a reality check to tell us where we stand. It was an eye-opener. Till now, we thought what we were imparting to be the best quality education. Thanks for educating us that we need to improve a lot and to try and make us understand the concept of quality education."

QES IN – MEDIA

It is said that to bring change in any system, you have to be the change and lead it. Any change starts from advocacy and spreading awareness. The findings of this study have been covered extensively in several national dailies and magazines like The Hindu, Mint, Outlook and Bangalore Mirror. The articles can also be found on our blog: http://blog.ei-india.com/2012/04/ei-in-press/. The news articles can be downloaded from the following links:

- 1. http://www.thehindu.com/opinion/op-ed/article2707183.ece
- 2. http://www.thehindu.com/opinion/editorial/article2717948.ece#comments
- 3. http://www.ei-india.com/wp-content/uploads/QES Coverage in LiveMint-in.pdf
- 4. http://www.outlookindia.com/article.aspx?279778
- http://www.bangaloremirror.com/index.aspx?page=article§id=1&contentid=201204032012040311381288232f3aa4

ABOUT EI

Quality Education Study (QES) is a large scale research effort jointly managed by Wipro and executed by EI. This study was conducted across all the five metro cities in India- New Delhi, Mumbai, Kolkata, Chennai and Bengaluru. Overall about 23,000 students, 790 teachers and 54 principals from 89 schools participated in the study including six schools recommended by experts as schools providing different learning environments. Three different background questionnaires, one each for student, teacher and school principal were developed based on detailed secondary research. The test consisted of questions carefully selected from a pool of ASSET, TIMSS, PIRLS and national studies by EI such as Student Learning in Metros (SLIM) study. We hope to bring you findings from different aspects of the study in next few issues. For more log onto www.qualityeducationstudy.com.



We are an educational research organization that focuses on learning research through assessments. El has been started by a group of IIM Ahmedabad alumni with first-hand experience of setting up and running educational institutions. It has been formed with a mission to work towards qualitative improvement in India's educational system and our vision is "A world where children everywhere are 'Learning with Understanding'".

SOME PROJECTS OF EI:

Gunotsav for Primary and Secondary Schools of Gujarat (2011 onwards): As a part of the Government of Gujarat's initiative to ensure quality education of students in government schools and to increase awareness for quality in the education community, the government carries out 'Gunotsav' a quality improvement programme in which students are assessed every year since 2009. Since 2011, El has been involved in supporting the existing Gunotsav programme for 33,900 primary schools in Gujarat. This has been extended to cover 20,000 secondary schools.

Municipal Corporation Greater Mumbai – Assessment of Student Learning (MCGM) (2009-2010): This study was a census study covering class 3 and class 6 for all government schools of Greater Mumbai. The actual number of test takers was 88,035 from 799 government run schools in 24 wards of Mumbai. El also carried out field audits during test conduction to identify gaps in the test administration process. The tests covered 4 languages – Marathi, Urdu, Hindi and English.

Teacher Needs Assessment (2008 onwards): This is a census study that has been initiated by the Royal Education Council, Government of Bhutan. In this project all teachers of Bhutan are assessed for their general ability, competence in subject knowledge and pedagogical practices.

Bhutan Annual Status Student Learning Study (2008 onwards): This study was done in partnership with Royal Education Council and Ministry of Education, Bhutan. Nearly 34,000 students in classes 4, 6 and 8 are tested for learning in Language, Maths and Science in 424 schools.

UNICEF Learning Assessment Study for Quality Education (2005-2006): This study assessed mathematics and language acquisition among primary school children in the UNICEF quality package schools in 13 states of India. The tests were standardised across 9 languages and involved very intricate development cycle involving language experts from all over India.

Andhra Pradesh Randomised Evaluation Study (2004 onwards): Done in partnership with Harvard University, Azim Premji Foundation, World Bank and the Government of Andhra Pradesh, this is a longitudinal study across 8-9 years and covers currently 100,000 elementary school kids and measures the impact of various inputs (e.g., block grants, additional teachers) with outcome-based teacher incentives.

EI'S PRODUCTS AND SERVICES:

ASSET: is an objective-type, multiple-choice test for students of Classes 3 to 10. Scientifically designed, ASSET assesses students' level of proficiency in the skills and concepts underlying the school syllabus and provides them feedback about their strengths and weaknesses. Know more about ASSET at www.ei-india.com/asset/

Mindspark: is a computer based self-learning programme that helps the child improve her skills. It allows each student to follow a learning path that is based on her need. Mindspark is available for Maths for classes 1-10 in English version. Mindspark can be accessed at www.mindspark.in

Detailed Assessment (DA): DA is designed to convert assessments, which are customized to syllabus and textbooks, into powerful learning tools - identification of learning gaps and remediation support within 24 hours! Know more about DA at http://www.ei-india.com/detailed-assessment/

Large Scale Assessments (LSA): LSA brings about educational transformation through learning outcomes measurement, direct interventions such as teacher capacity building and research into quality in education. The group largely works with system level issues with a special focus on improving policy. Know more about LSA at http://www.ei-india.com/large-scale-assessment/

Some Partners / Clients

Ī	Google Inc.	Government of Andhra Pradesh	Michael and Susan Dell Foundation	Suzion Foundation	RGSM, Chhattisgarh
	World Bank	Royal Government of Bhutan	WIPRO Applying Thought	UNICE, India	Teach For India
	MCGM, Mumbai	GSHSEB, Government of Gujarat	UNMCT (Torrent) Ltd	Hewlett Foundation	

CONTACT DETAILS: Educational Initiatives Pvt. Ltd

Head Office Ahmedabad	Bangalore Office	Delhi Office	Hyderabad Office
613-615 JB Towers, Opp. Doordarshan Tower, Drive-in Road, Ahmedabad 380054, INDIA Tel: 079 – 40269696, 40269625 Fax: 079 – 26841400	No.97, 2nd Floor, Robertson Road, Frazer Town, Bangalore-560005 INDIA Tel: 080 – 41657715, 64567049, 41237162	2 nd Floor, Building No. 16, Panchsheel Community Center Nr. Shahpur Jat Bus Stop, Hauz Khas, New Delhi – 110017, INDIA Tel: 011 – 41044952	Flat No 401/A, Shri S.K.Vihar, H.No:3-4- 578/1, Beside Sri Chaitanya College, Narayanaguda, Hyderabad-500029, INDIA Tel: 040 – 32419534

E-mail us at: assessment@ei-india.com Website: www.ei-india.com July 2012