Assess for Success
Improving Learning Gains in India

Year 1 Report

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Bridge International Academies opened 4 schools in India in 2016. After nine months of operations, results from early grade reading and maths assessments are promising. While students at Bridge and neighbouring schools started at similar levels, Bridge students outpaced their peers in making academic gains.

Differential gains are positive across almost all indicators. Upper Kindergarten students at Bridge could solve an additional 5.5 addition problems per minute than peers attending neighboring schools, while Standard 3 students solved an extra 2 subtraction problems per minute. Standard 3 Bridge students read 14 more sight words and 26 words in a story per minute. In fact, Standard 3 students at Bridge more than doubled their reading speeds in less than one year. While these results are preliminary and limited to two grades, they are suggestive of an overall pattern: students at Bridge have made meaningful progress towards achieving English literacy and numeracy.

1. Introduction

The mission of Bridge International Academies is to provide affordable, high-quality education to primary school students around the world. To hold ourselves accountable to this goal, we conducted a rapid cycle measurement on learning in Upper Kindergarten and Standard 3. Using the Early Grade Reading Assessment and Early Grade Maths Assessment (EGRA/EGMA), we measured the foundational literacy and numeracy skills of students attending both Bridge International Academies (Bridge) and neighbouring schools to understand both absolute and relative student performance. This program, called "Assess for Success", allows Bridge to quickly determine whether we are on track towards efficacy or whether course correction is necessary.

2. Project Background

Partnering with Other Low-Cost Private Schools

Our goal was to partner with one school in each of the communities we served. The comparison low-cost private schools were chosen based on research gathered by the Customer Insight team at Bridge. Low-cost schools were identified as private schools whose median monthly fee across all grade levels was less than INR 1000. From this list of schools, a shortlist was created with schools with median cumulative monthly fees (including tuition, books, exams, and classes) ranging between INR 600 to 800 per month, a comparable parent out-of-pocket cost to Bridge's average monthly fee.

From this shortlist, we spoke with leaders of schools located in close proximity to a Bridge International Academy (within 2.5 kilometers). Aside from providing signal on our effectiveness at delivering gains, Assess for Success also provided the opportunity to engage other local educators in a friendly race to the top. As part of our collaboration, we provided neighbouring schools with a report on the performance of their students. It is our hope that our continued partnership increases the capacity of these schools to make data-driven decisions and improve learning outcomes going forward.

Unfortunately, we were unable to find a local school to partner with near Yelamanchili (our 4th academy in Andra Pradesh). We decided to exclude Yelamanchili from our exercise because we did not have a comparison school. As a result, we have a total of 6 schools in this study: 3 Bridge academies (Giddalur, Bhimadole, Telaprolu) and 3 comparison low-cost private schools.

Timeline

Bridge conducted baseline assessments during weeks 4 to 6 of Term 1. Midlines were conducted during weeks 3 to 9 of Term 2 and endlines were assessed during weeks 8 to 13 of Term 3. Figure 1 shows the dates of each assessment round.

FIGURE 1: ASSESSMENT SCHEDULE

	Start	End
Baseline: Term 1	7/20/2016 (Week 4)	8/5/2016 (Week 6)
Midline: Term 2	10/31/2016 (Week 3)	12/21/2016 (Week 9)
Endline: Term 3	3/6/2017 (Week 8)	4/10/2017 (Week 13)

Sample

At each of the 6 schools, we assessed students in Upper Kindergarten as well as Standard 3. While we ideally would like to have a larger sample size with more schools and students, this rapid cycle measurement provides quick insights into student learning. Figure 2 and Figure 3 show the count of students by grade that we assessed at the beginning of the academic year, at midlines, and at endlines, and the number of students we assessed across all three assessments.

FIGURE 2: STUDENT COUNTS BY SCHOOL TYPE

	Bridge				Comparison			
	Baseline	Midline	Endline	# in All 3	Baseline	Midline	Endline	# in All 3
Upper Kindergarten	29	38	33	22	80	79	66	64
Standard 3	45	43	42	36	74	74	68	59
Total	**74**	**81**	**75**	**58**	**154**	**153**	**134**	**123**

FIGURE 3: TOTAL STUDENT COUNTS

	Totals			
	Baseline	Midline	Endline	# in All 3
Upper Kindergarten	109	117	99	86
Standard 3	119	117	110	95
Total	**228**	**234**	**209**	**181**

Although we aimed to assess all baseline students at midlines and endlines, some students were absent on the day of assessment. We did not collect information to determine whether it was a temporary absence or whether the student had moved to another school. To ensure the largest sample possible, assessors were told to first assess baseline students and then use any remaining time to randomly select students in the classroom to be assessed. Of the 228 students assessed at the baseline, 181 were assessed at the midline and endline.

Results in this report are from the students who were assessed all three rounds, but do not differ when including all students.

Instrument Used

Assessors were trained at baselines for 5 days to conduct the early grade reading and early grade assessment (EGRA) and early grade maths assessment (EGMA). These oral assessments were developed by the Research Triangle Institute (RTI) in conjunction with USAID and has been used by education ministries and multi-lateral agencies around the world.

EGRA measures foundational skills in literacy, testing students' ability to understand basic vocabulary and letter sounds, read simple words, and understand sentences and paragraphs. EGMA measures students' foundational skills in numeracy and mathematics, including number identification, addition, and subtraction.

Each of these foundational skills is tested with a different component of the assessment, referred to as a "subtask." The subtasks we used in the project are displayed in Figure 4. We selected the specific subtasks that would be appropriate for each grade level with input from members of the academic team and our review of the literature on student knowledge in India. The full assessment takes approximately 30 minutes per child.

FIGURE 4: EGRA/EGMA SUBTASKS

Assessment	Subtask	UKG	Std. 3
EGRA	Oral Vocabulary	X	
	Familiar Word Reading	X	X
	Passage Fluency		X
	Reading Comprehension		X
EGMA	Counting Circles	X	
	Number Identification	X	
	Basic Addition	X	X
	Basic Subtraction		X

3. Baseline Learning Levels

Baseline assessments showed that Upper Kindergarten students attending Bridge started with generally lower levels of learning. For Standard 3, the picture was more mixed. The difference between Bridge students and comparison students can be seen in Figure 5 and Figure 6 for Upper Kindergarten and Standard 3 respectively.

FIGURE 5: UPPER KINDERGARTEN BASELINE RESULTS

Type	Subtask	Bridge	Comparison	Difference
EGRA	Oral Vocabulary (% correct)	10.9%	25.5%	-14.56%**
	Familiar Word Reading #/Minute	0.4	1.2	-0.81
EGMA	Counting Circles	28.9	34.0	-5.06
	Number Identification #/Minute	6.1	9.1	-3.05*
	Basic Addition #/Minute	0.6	0.1	0.53**

** p<0.01, *p<0.05, + p<0.01

FIGURE 6: STANDARD 3 BASELINE RESULTS

Type	Subtask	Bridge	Comparison	Difference
EGRA	Familiar Word Reading #/Minute	24.9	28.3	-3.37
	Passage Fluency #/Minute	31.2	33.8	-2.59
	Reading Comprehension (% Correct)	32%	23%	8.95%*
EGMA	Basic Addition #/Minute	9.7	9.2	0.59
	Basic Subtraction #/Minute	6.2	5.3	0.92

** p<0.01, *p<0.05, + p<0.01

4. Results

Methodology

We apply a simple difference-in-difference technique to get signal on the performance of Bridge students relative to that of their peers attending neighbouring schools. It requires data at two points in time for each group of students. The first difference is the growth over time within each group of students. The

second difference is just the gap between the two first differences, which signals relative gains in learning. Figure 7 shows this this mathematically.

FIGURE 7: DIFFERENCE-IN-DIFFERENCE ESTIMATOR

	Period 1	Period 2	Difference 1: Growth Between Period 1 and Period 2	Difference 2: Difference Between Growth in Group 1 and Group 2
Group 1	A	B	B - A	(B - A) - (D - C)
Group 2	C	D	D - C	

In other words, this technique looks at the average baseline, midline, and endline scores for Bridge and comparison school students. The difference between the baseline and midline averages and the differences between the baseline and endline averages are calculated for both Bridge and comparison schools. Then, the growth of the comparison school is subtracted from the growth of the Bridge schools. Statistical significance is calculated using a t-test on the difference in growth between Bridge schools and comparison schools.

EGRA Results

Between baselines and endlines, Bridge students have made more gains.

In Upper Kindergarten, students outperform their peers. Relative gains are positive across all subtasks and statistically significant for Oral Vocabulary. Relative gains were not present for oral vocabulary at midlines. By endlines however, Bridge students had made significant progress. At the beginning of the school year, Upper Kindergarten students at Bridge were only able to identify 2 vocabulary words (i.e. pencil, floor, and head); by the endline they had grown more and could identify about 8 of the vocabulary words.

FIGURE 8: UPPER KINDERGARTEN EGRA BASELINE THROUGH ENDLINE

	Bridge			Comparison		
Subtask	**Baseline**	**Midline**	**Endline**	**Baseline**	**Midline**	**Endline**
Oral Vocabulary (% Correct)	10.9%	20.7%	39.8%	25.5%	35.5%	34.1%
Familiar Word Reading #/Minute	0.41	2.91	9.73	1.22	3.17	8.22

FIGURE 9: UPPER KINDERGARTEN EGRA DIFFERENCE-IN-DIFFERENCE ESTIMATOR

	Gains from Baseline to Midline			Gains from Baseline to Endline		
	Bridge	**Comparison**	**Differential Gains**	**Bridge**	**Comparison**	**Differential Gains**
Oral Vocabulary (% Correct)	9.8%	10.0%	-0.23%	28.9%	8.7%	20.19%**
Familiar Word Reading #/Minut	2.50	1.95	0.55	9.32	7.00	2.32

** p<0.01, *p<0.05, + p<0.01

In Standard 3, Bridge students outperformed their peers across all EGRA subtasks. While Bridge students were reading about three less sight-words per minute at the baseline than their peers, they are now reading about ten more words per minute than their peers. Similarly, when looking at Passage Fluency, Bridge students read about 31 words per minute compared to 34 words per minute by comparison schools. Bridge students not only caught up to their peers, but are now reading 24 more words per minute than their peers. These increases are statistically significant at a 99% confidence level.

FIGURE 10: STANDARD 3 EGRA BASELINE THROUGH ENDLINE

	Bridge			Comparison		
Subtask	Baseline	Midline	Endline	Baseline	Midline	Endline
Familiar Word Reading #/Minute	24.93	36.27	46.65	28.31	29.63	36.15
Passage Fluency #/Minute	31.23	49.40	72.84	33.82	40.52	49.04
Reading Comprehension (% Correct)	31.7%	38.9%	48.9%	22.7%	30.8%	34.9%

FIGURE 11: STANDARD 3 EGRA DIFFERENCE-IN-DIFFERENCES ESTIMATOR

	Gains from Baseline to Midline			Gains from Baseline to Endline		
	Bridge	**Comparison**	**Differential Gains**	**Bridge**	**Comparison**	**Differential Gains**
Familiar Word Reading #/Minut	11.34	1.33	10.01**	21.72	7.85	13.87**
Passage Fluency #/Minute	18.17	6.70	11.47**	41.61	15.22	26.39**
Reading Comprehension (%)	7.2%	8.1%	-0.91%	17.2%	12.2%	5.02%

** p<0.01, *p<0.05, + p<0.01

EGMA Results

Between the baseline and endline, Bridge students have made greater gains as well.

In Upper Kindergarten, Bridge students are now scoring better than their peers in Counting Circles and Basic Addition, though still lagging in Number Identification as seen in Figure 12. Of practical significance is the growth in Addition. While both Bridge and comparison school students could solve less than one addition problem per minute at the baseline, by the endline, Bridge students could solve around 6.5 questions per minute, while their peers only had slight improvements.

FIGURE 12: UPPER KINDERGARTEN EGMA BASELINE THROUGH ENDLINE

	Bridge			Comparison		
Subtask	Baseline	Midline	Endline	Baseline	Midline	Endline
Counting Circles	28.91	42.95	55.86	33.97	47.94	53.97
Number Identification #/Minute	6.06	10.63	15.52	9.11	14.35	19.35
Basic Addition #/Minute	0.64	2.64	6.50	0.11	0.50	0.52

FIGURE 13: UPPER KINDERGARTEN EGMA DIFFERENCE-IN-DIFFERENCES ESTIMATOR

	Gains from Baseline to Midline			Gains from Baseline to Endline		
	Bridge	**Comparison**	**Differential Gains**	**Bridge**	**Comparison**	**Differential Gains**
Counting Circles	14.05	13.97	0.08	26.95	20.00	6.95
Number Identification #/Minute	4.57	5.24	-0.68	9.46	10.24	-0.78
Basic Addition #/Minute	2.00	0.39	1.61**	5.86	0.41	5.46**

** p<0.01, *p<0.05, + p<0.01

For Standard 3, Bridge students have grown faster in both Basic Addition and Basic Subtraction. The difference-in-difference estimator is positive for both addition and subtraction scores and significant at a 99% confidence level. Practically speaking, both Bridge and comparison students could answer about 5 or 6 subtraction questions in one minute. At the endline, Bridge students now answered on average 12 questions correctly, compared to 9 by the comparison schools.

FIGURE 14: STANDARD 3 EGMA BASELINE THROUGH ENDLINE

	Bridge			Comparison		
Subtask	Baseline	Midline	Endline	Baseline	Midline	Endline
Basic Addition #/Minute	9.74	14.16	17.20	9.15	10.71	12.63
Basic Subtraction #/Minute	6.19	10.70	12.07	5.27	8.05	8.93

FIGURE 15: STANDARD 3 EGMA DIFFERENCE-IN-DIFFERENCES ESTIMATOR

	Gains from Baseline to Midline			Gains from Baseline to Endline		
	Bridge	**Comparison**	**Differential Gains**	**Bridge**	**Comparison**	**Differential Gains**
Basic Addition #/Minute	4.42	1.55	2.86**	7.45	3.48	3.97**
Basic Subtraction #/Minute	4.51	2.78	1.73+	5.87	3.66	2.21**

** p<0.01, *p<0.05, + p<0.01

5. Conclusion

After nine months of operations, numeracy and literacy indicators from the Assess for Success program are promising. Results suggest that Bridge has had a positive impact on students' learning gains. Bridge students generally grew relatively faster than their peers in both Upper Kindergarten and Standard 3. EGRA results for Standard 3 students at Bridge are especially exciting – they have doubled their passage reading speed from the beginning of the year, setting them on the path towards fluency and comprehension.

FIGURE 16: PROGRESS ON READING FROM BASELINES TO ENDLINE