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Report

# Assessing the effects of English language support for children undertaking Complementary Basic Education in Ghana



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## Abbreviations

<b>BTE</b>	Bridge to English
<b>CBE</b>	Complementary Basic Education
<b>DFID</b>	The Department for International Development
<b>EGMA</b>	Early Grade Mathematics Assessment
<b>EGRA</b>	Early Grade Reading Assessment
<b>JHS</b>	Junior High School
<b>PCA</b>	Principal Component Analysis

## Summary

This report provides an assessment on whether English language support to children who were engaged in the Complementary Basic Education (CBE) programme in 2015-16 managed to retain their language skills two years after making the transition into public schools. The English language programme, known as the Bridge to English (BTE), was piloted during July-August 2016, after children completed a cycle of the CBE programme. The Bridge to English component of the CBE programme was experimentally designed to capture short and medium terms impact of the additional language support. For this reason, a total of 750 children from 30 CBE centers were randomly assigned either to the Bridge to English pilot programme (375 children from 15 CBE centers) or as control group (375 children for the other 15 CBE centers).

Our research provides evidence on the following research questions:

1. Did the Bridge to English pilot programme facilitated transition into public schools?
2. Are there different attitudes towards learning English as well as use of English at home and school between children who benefited from the Bridge to English programme and those who did not?
3. After nearly two academic years in public schools, do children who undertook the Bridge to English programme achieved higher learning outcomes compared to children who were part of the control group?

Our analyses suggests that a higher frequency of BTE students were found to be in school as well as in the upper levels of Primary (5 and above) and Junior High School (JHS) and above, compared with the non-BTE group. This finding suggested that the BTE intervention facilitated school retention following CBE and higher-grade placement at transition. In addition, BTE students showed a greater tendency to engage with English in the home, community and school environment compared with non-BTE. BTE students reported feeling more ease than non-BTE students with English speaking, reading, writing and listening skills. BTE students outperformed non-BTE in English literacy, as demonstrated through significant differences across subtasks and proficiency scores, but only for children who were placed in the higher grades of primary school (grades 4 and above). For children who were placed in grades 3 and below of primary school, where mother tongue is used as language of instruction, there are no significant differences in English literacy proficiency.

# 1. Introduction

The Bridge to English (BTE) pilot programme took place from July-August 2016, following children's completion of the CBE Cycle in 2015/2016. The intervention involved exposing randomly assigned CBE centres to a two-month course of intensive beginners English. This research identifies whether the intended boost in English has enabled smoother transition into formal school in terms of progression and learning outcomes for CBE children who were beneficiaries of the programme.

In order to assess the effectiveness of the BTE pilot programme, information was collected 18 months later in February and March 2018, on students' educational trajectories, learning outcomes, attitudes towards learning English as well as use of English at home and at school. Our study followed an experimental approach for the short-term evaluation of the BTE programme whereby 30 CBE centres from Cycle 3, all implemented by School for Life, were randomly assigned into recipients of the programme (15 centres) or control group (15 centres). All centres were based in the district of Sagnarigu in the Northern Region of Ghana. The total sample size at the time of randomisation was 750 CBE children, 375 children who took part in the BTE programme and 375 who were the control group. As per the randomisation of the BTE intervention, there were small differences in terms of children's age, gender, school grade attended and wealth status between the BTE and non-BTE groups. However, it is important to highlight that the randomisation was done at the level of the CBE centre. Due to this approach, it is possible that there may be variations between the BTE and non-BTE sample (control group) on certain variables. This includes, for example, potential differences between groups in age, grade, gender and socio-economic characteristics.

This report presents evidence on the differences between BTE and non-BTE children in terms of their English literacy and numeracy achievement, English use at home and school as well as opinions regarding learning English. This research also focuses upon gender differences in performance, as well as variations between children who are currently enrolled in school and those who discontinued their education. When comparing the outcomes for BTE and non-BTE children, we controlled for a number of socio-economic and demographic factors in order to ascertain if there were systematic differences between groups which may bias results.

This report is structured as follows: Chapter 2 describes the methodological considerations, research instruments including the child survey and assessment instruments as well as tracking information. Chapter 3 compares the sample of BTE and non-BTE students in terms of gender, age, grade and language. It also examines students' household characteristics and differences in wealth status between groups. Chapter 4 examines differences between BTE and non-BTE English use at home and at school. It investigates if there are differences between students' own perceptions of their English reading, writing, speaking skills as well as attitudes on learning English. Chapter 5 presents the results of learner assessments for English literacy and numeracy for BTE and non-BTE students. It investigates if there are differences overall as well as by gender and current school status. Chapter 6 examines the relative influence of previously explored variables on learning scores through the use of linear regression modelling. It further examines the extent to which gender effects, as found at the descriptive level of analysis, are retained after accounting for a number of explanatory factors. Chapter 7 presents conclusions on the findings in this study.

## **2. Methodological Considerations: Research Instruments, Tracking and Analytical Strategy**

### **2.1. Child Background Questionnaire**

The child background survey was administered to children who took part in the experimental research design for the BTE programme in 2016. The child survey collected information on students' demographic backgrounds, family status, household economic situation, language diversity and work status. It also examined children's English use at home and in their current school, as well as personal opinions related to learning English. This survey was designed to permit the analysis of patterns of differences in performance linked to the students' background. Although there was a random allocation for centres into BTE and control group, there is the possibility of having systematic differences for children within each of these groups. Therefore, the aim of the child background questionnaire was to capture information that would enable us to assess the existence of systematic differences and allow the possibility of conditioning these out in our empirical analyses.

### **2.2. English and Numeracy Assessments**

The assessments used for the CBE BTE and non-BTE students were based on the Early Grade Reading Assessment (EGRA), for English and Early Grade Mathematics Assessment (EGMA) for numeracy. The subtasks in literacy were oral vocabulary, letter-sound identification, non-word reading, oral passage reading, reading comprehension and listening comprehension. EGMA was designed to provide information about basic mathematics competencies—those competencies which should typically be mastered in the very early grades, and without which pupils will struggle, or potentially drop out of school in later years. The subtasks in numeracy were number identification, single digit addition and subtraction, number discrimination, missing numbers in patterns, two-digit addition and subtraction as well as word problem solving.

### **2.3. Component Scores and Proficiency Levels**

The English literacy assessment used for this study consisted of six subtasks and the numeracy assessment was made up of eight subtasks. The approach used for analysis in the current report was designed to match that of other CBE Cycles. It therefore examines student performance at a subtask level and further calculates proficiencies (basic, advanced and overall) through the use of principle component analysis (PCA). Four separate score categories were defined for the current study. All Cronbach's alphas (a measure of internal consistency) in Table 1 were well above the acceptable cut-off of 0.7. Additionally, the final column shows that between 0.7-0.89 of the variation in scores was explained by the categories as defined in these models. Therefore, the subtasks were effectively reduced for analysis, while still achieving variation (as opposed to just a single measure).

**Table 1: Measure of Internal Consistency for the Three Learner Assessments**

Component score category	Subtasks	Cronbach's alpha (internal consistency)	Proportion of variance explained by first component
Basic English literacy	<ul style="list-style-type: none"><li>• Letter sound identification</li><li>• Non-word reading</li></ul>	0.80	0.89
Advanced English literacy	<ul style="list-style-type: none"><li>• Oral reading</li><li>• Reading comprehension</li></ul>	0.89	0.84
Basic numeracy	<ul style="list-style-type: none"><li>• Number identification</li><li>• Number discrimination</li><li>• Missing number</li><li>• One-digit addition</li><li>• One-digit subtraction</li></ul>	0.85	0.70
Advanced numeracy	<ul style="list-style-type: none"><li>• Two-digit addition</li><li>• Two-digit subtraction</li><li>• Word problems</li></ul>	0.78	0.70

Source: CBE Cycle 3 Bridge to English Study

After component scores were created, all scores were scaled from 0-100, for ease of interpretation. As a final step, the scaled component scores were then divided into four proficiency categories. These were defined based on the students' performance of the component scores, as follows:

1. **Non-performer**, comprising those who scored zero on a component score; [L] [SEP]
2. **Beginner**, comprising those who scored greater than zero but less than 50; [L] [SEP]
3. **Approaching proficiency**, comprising those who scored greater than 50 but less than 80; and [L] [SEP]
4. **Proficient**, comprising those who scored greater than 80. [L] [SEP]

In addition to beginner and advanced component scores, overall scores were generated for English literacy and numeracy. They were then divided into the four proficiency categories described above. These scores comprised all subtasks that were administered to students for the assessment. The only exception was the overall score for English literacy, which omitted the subtask of oral vocabulary. This was done to ensure consistency between component scores generated other analyses and reports on CBE Cycles.

## 3. The CBE Cycle 3 Bridge to English Report Sample

### 3.1. Sample of Students

The original CBE Cycle 3 Bridge to English (BTE) study in 2016 consisted of 750 students. The sample for this follow up study consisted of 703 students in total, which represents an attrition rate of 6.2%. From our follow up study, 347 of the original 375 students took part in the BTE programme, 47.11% of which were male and 52.89%, female. The non-BTE group constituted 356 out of 375 from the original sample, 51.69% of which were male and 48.31%, female. Among the key reasons for attrition were migration and absence at the time of interview. There were also six students who had died as well as two unique cases where the child was required to be interviewed via phone which caused subsequent issues with administering the learner assessments via tangerine software.

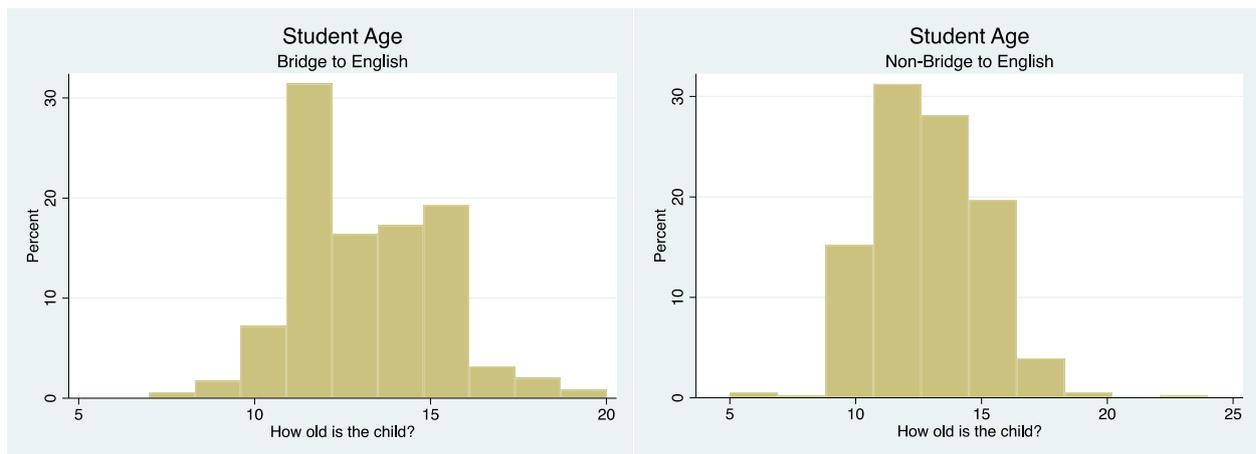
All students in the sample came from the Northern region of Ghana and the district of Sagnarigu. The sample covered 30 communities comprising of 15 communities for the BTE group and 15 communities for the non-BTE group (which were randomly assigned to the intervention and control). See Appendix A for

the complete list of communities. All 347 students from the BTE group reported that Dagbani was the main language spoken at home. For the non-BTE group, the vast majority of students (344; 97.72%) also reported Dagbani as their main language, with the remaining number reporting Gonja (5 students), Mampruli (1 student), Hausa (1 student) and Waala (1 student).

### 3.2. Socio-Economic and Demographic Information

Students' ages ranged from 5-24 with the average age for the BTE group being 12.87 and the non-BTE group 13.10 (Figure 1). Whilst the majority of students in both groups were currently enrolled in school, the BTE sample revealed a significantly higher number of students (93.39%) compared with non-BTE (89.01%).

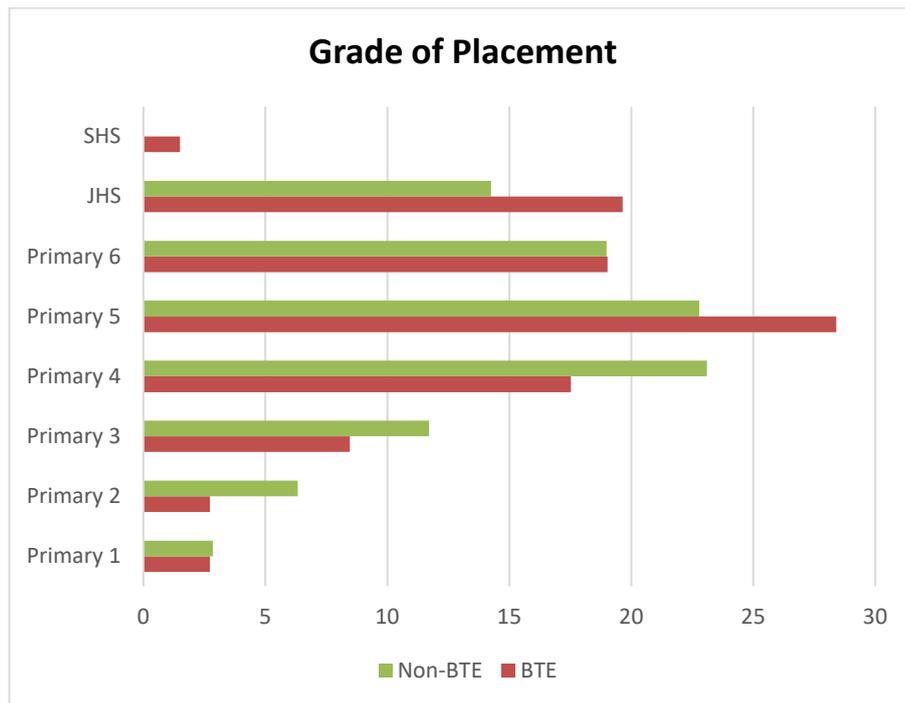
**Figure 1: Age Distributions between BTE and non-BTE**



Source: CBE Cycle 3 Bridge to English Study

Figure 2 shows the numbers of BTE and non-BTE students for each grade of placement at formal school. As can be seen, there was considerable variability amongst current grades of placement for students from both groups. For the BTE students, the most common grade of placement was Primary 5 whereas for non-BTE, it was Primary 4. Students from the BTE cohort further showed a relatively higher frequency of students in the upper grades (Primary 5 and above) whilst non-BTE demonstrated the inverse, with higher frequencies of students in the lower grades (Primary 4 and below). This finding suggests that exposure to BTE may facilitate higher grade placement upon entry to formal school.

**Figure 2: Current School Grade, Frequencies of BTE and non-BTE**



Source: CBE Cycle 3 Bridge to English Study

A small number of children were not enrolled in school (16 from the BTE group and 39 from the non-BTE group). Among the reasons given by those not enrolled from the BTE group included family not believing school was important (3 students), not doing well in school (2 students), having to work to earn money (2 students) and starting a family (2 students). Additional responses reported by only one student in each instance included the family not having enough money to send the child to school, finding the transition to formal school too hard, being engaged to be married, shyness, having no money to buy a uniform and needing to take care of livestock. For the 39 non-BTE children who were not in school, the main reasons included family not having enough money for schooling (15 students), not doing well in school (9 students), having to work to earn money (2 students), having to help at home (2 students), finding classwork too hard (2 students) and the family not believing school was important (2 students). Other factors reported by only one student in each instance were the distance to school, the child feeling as though they were too old for school, needing to assist to a family member, having no interest in school and having to take care of livestock.

Table 2 demonstrates some minor differences in terms of the socio-economic and demographic characteristics of the BTE and non-BTE student groups which could be expected, due to the sampling approach. This table similarly compares the percentage of female students from the BTE and non-BTE sample for each item. As can be seen, however, these differences were modest overall, with a gap of less than 5% for all items except those relating to work status.

BTE students had a marginally higher number of household members on average compared with non-BTE. In addition, whilst the average number of siblings between groups did not differ, BTE students had a significantly higher percentage of siblings in school relative to non-BTE students. Around 75% of BTE and non-BTE students worked at home, however, a significantly higher proportion of non-BTE students worked outside of home and received payment for their work outside of the home. In addition, higher percentages of females were found to work at home for both BTE (92.9%) and non-BTE groups (89.35%).

For the economic status of the household, there were slightly more students from the BTE group who reported having access to motorbikes, televisions and radios. Though the majority of students from both groups had access to electricity, a slightly higher proportion had access to electricity at home from the non-BTE group. We did not find differences between BTE and non-BTE students in terms of subjective measures of poverty.

**Table 2: Socio-Economic and Demographic Characteristics for BTE and non-BTE Students**

Family Status	BTE Students (1)	BTE Female (2)	Non-BTE students (3)	Non-BTE Female (4)	Statistic	Significance (1-3)	P Value
Household size	9.81	10.19	8.93	8.97	t-test	yes	0.0096
Number of siblings	4.81	4.91	5.03	4.95	t-test	no	0.3267
% siblings attending school	66.7	63.08	55.9	56.28	t-test	yes	0.0000
<b>Work Status</b>							
% children working at home	76.37	92.90	78.69	89.35	chi2	no	0.462
% children working outside of home	32.17	31.32	45.01	50.00	chi2	yes	0.001
% children receiving payment for outside work	8.36	7.65	12.08	11.63	chi2	yes	0.008
<b>Economic Status of the Household</b>							
% children owning a mobile phone	49.41	51.76	50.59	48.24	chi2	no	0.4850
% children owning a bicycle	48.83	49.79	51.17	50.21	chi2	no	0.4760
% children owning a motor bike	52.82	53.15	47.18	46.85	chi2	yes	0.0270
% children owning a radio	51.97	52.19	48.03	47.81	chi2	yes	0.0450
% children owning a TV	54.74	56.90	45.26	43.10	chi2	yes	0.0000
% children with access to electricity	94.52	92.90	97.73	98.90	chi2	yes	0.0280
% children with same/less money than others	3.17	2.73	1.14	0.00	chi2	no	0.0640
% children with enough food every day	79.54	80.33	74.36	75.74	chi2	no	0.1040

Source: CBE Cycle 3 Bridge to English Study

### 3.3. Overall Summary

Overall, some differences were found in terms of age, grade at school, household characteristics and wealth between BTE and non-BTE students. Gender differences were also seen within items relating to work status, where significantly higher numbers of females for both BTE and non-BTE groups were reported as working at home. It is particularly important to highlight the differences between current grade enrolled, which as noted, showed a higher frequency of BTE students in the upper levels of Primary (5 and above) and JHS and above compared with the non-BTE group. Whilst this suggests that exposure to the BTE programme may have facilitated higher grade placement, particularly given that BTE children were relatively younger than non-BTE, it is important to remember that this difference may act as an independent predictor of assessment results which are presented in Chapter 5. In other words, differences that may appear to be driven by the BTE intervention, may actually be partly due to the fact that BTE students are attending higher school grades. In addition, our analyses will also consider the systematic differences in age, gender and household characteristics, which can also have independent influences on learning outcomes beyond the exposure of BTE programme. These points will be investigated more thoroughly in Chapter 6.

## 4. English at Home and School

### 4.1. English Usage at Home and School

Children were asked a set of survey questions which investigated their English language usage at home and at school. Students were also asked to rate on a scale of 1-4 how easy it was for them to write, speak, listen and read in English (where: 1=Very difficult; 2=Somewhat difficult; 3=Somewhat easy; 4=Very easy).

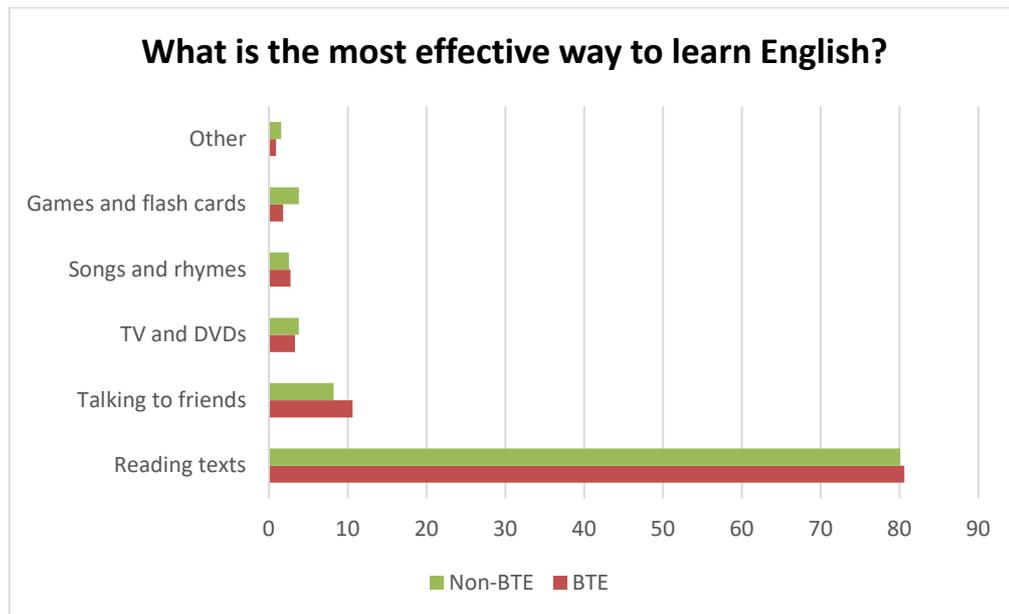
Responses were later recoded as a binary variable (0=Difficult -very difficult and somewhat difficult; 1=Easy -very easy and somewhat easy) for ease of comparison. For English use at home, whilst there was no major difference between the proportions of students who had access to English language materials (BTE=68.59%; Non-BTE=75%), the children exposed to the BTE initiative engaged in significantly more English language activity in their household environments compared to the non-BTE group. This included reading English texts at home and speaking English with both family members and friends within their community. Table 3 shows significantly higher proportions of BTE children reported that reading, speaking, writing and listening was “somewhat easy” or “easy” compared with non-BTE group. Irrespective of between group differences, these results further revealed that both groups perceived speaking to be the most challenging skill and writing, the least challenging. See Table of Contents Appendix B for all response levels of the scale.

**Table 3: English Use at Home and School for BTE and Non-BTE Students**

<b>English at Home</b>	<b>BTE Students</b>	<b>Non-BTE students</b>	<b>Statistic</b>	<b>Significance</b>	<b>P Value</b>
% children with English language materials at home	68.59	75.00	chi2	no	0.060
% children who read English texts at home	65.13	48.58	chi2	yes	0.000
% children who speak English at home	39.76	23.58	chi2	yes	0.000
% children who speak English with their friends	31.70	21.08	chi2	yes	0.001
<b>Perceptions of English Skills</b>					
% reporting reading “somewhat easy” or “easy”	56.20	43.87	chi2	yes	0.001
% reporting speaking “somewhat easy” or “easy”	48.41	34.47	chi2	yes	0.000
% reporting writing “somewhat easy” or “easy”	66.86	50.71	chi2	yes	0.000
% reporting listening “somewhat easy” or “easy”	55.33	43.87	chi2	yes	0.002
<b>English at School</b>					
% children who can read simple English texts	85.30	77.84	chi2	yes	0.011
% children who feel they improved English this year	84.29	75.32	chi2	yes	0.003
% believing their English better than peers	64.95	50.00	chi2	yes	0.000
% participating in English class discussions	71.90	62.97	chi2	yes	0.015
% speaking English outside of classroom	50.76	38.61	chi2	yes	0.002
% participating more in English than local language	66.47	52.85	chi2	yes	0.000

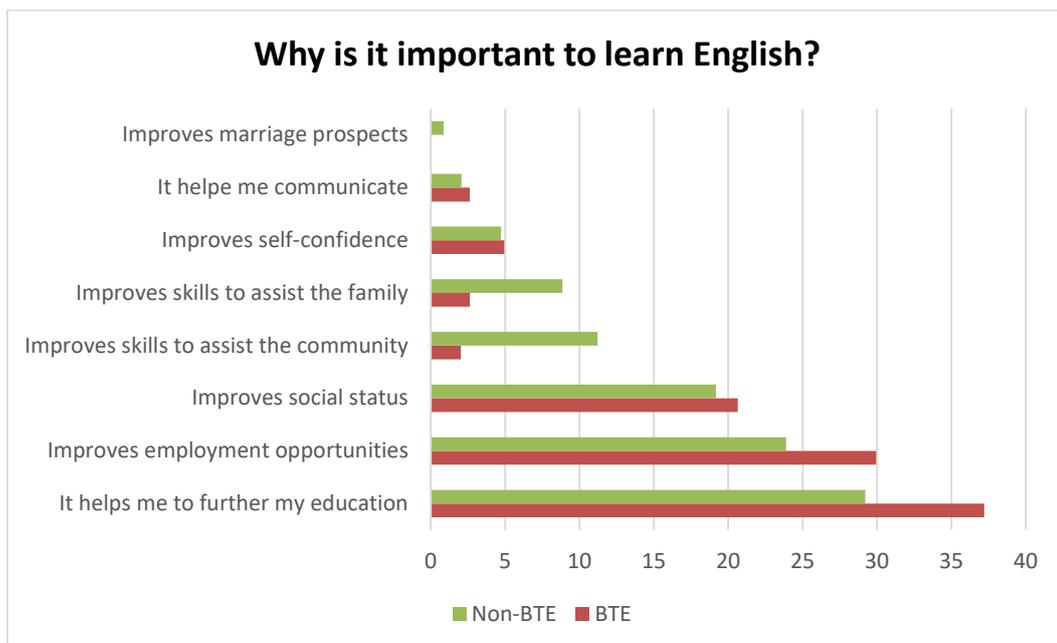
For English at school, the BTE sample showed higher proportions of students who perceived they were able to read simple English texts and who spoke to children in English outside of the classroom. In addition, more BTE students reported actively taking part in class discussions in English and participating more in classes held in English than in ones which were instructed in the local language. Moreover, a higher frequency of BTE students felt they had improved their English skills in the current academic year and believed their skills to be better than their peers.

**Figure 3: Perceptions on Effective Strategies for Learning English, percentage of BTE and Non-BTE Students**



In addition to these questions, students were asked what they felt was the most effective way to learn English. See Figure 3 above. For these questions, there was more commonality amongst responses with the highest frequency category being through “Reading texts in English” (BTE = 80.61%; Non-BTE = 80.06%) followed by “Talking to friends in English” (BTE = 10.61%; Non-BTE = 8.23%). Less frequent responses (i.e. less than 5% for both groups) included through “TV and DVDs,” “Songs and rhymes” and “Games and flash cards”.

**Figure 4: Perceptions on Importance of Learning English, percentage of BTE and Non-BTE Students**



When asked about why they felt English was important to learn, the most cited response across groups was that “It helps to further my education”. See Figure 4 above. This was followed by “Learning English helps improve employment opportunities” and “Learning English helps improve my social status”. More

non-BTE than BTE students reported that English helped them to assist their community and family, however response rates for both these categories were low overall. Less frequent responses (i.e. below 5% for both groups) included “Improves self-confidence”, “It helps me communicate” and “Improves marriage prospects”.

## **4.2. Child Opinions**

Within the Child Survey, students were asked a series of questions concerning their opinions about learning at school. Whilst the majority of these were focused upon learning English, several questions addressed well-being at school, peer relationships and independent learning tendencies. Students were asked to respond on a scale of 1-4 where; 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree. The current findings present the combined proportions of students who answered only 3=agree or 4=strongly agree for ease of comparison. The following section reports some of the major results from this section of the survey. Please refer to Appendix C, however, for a more comprehensive overview of results.

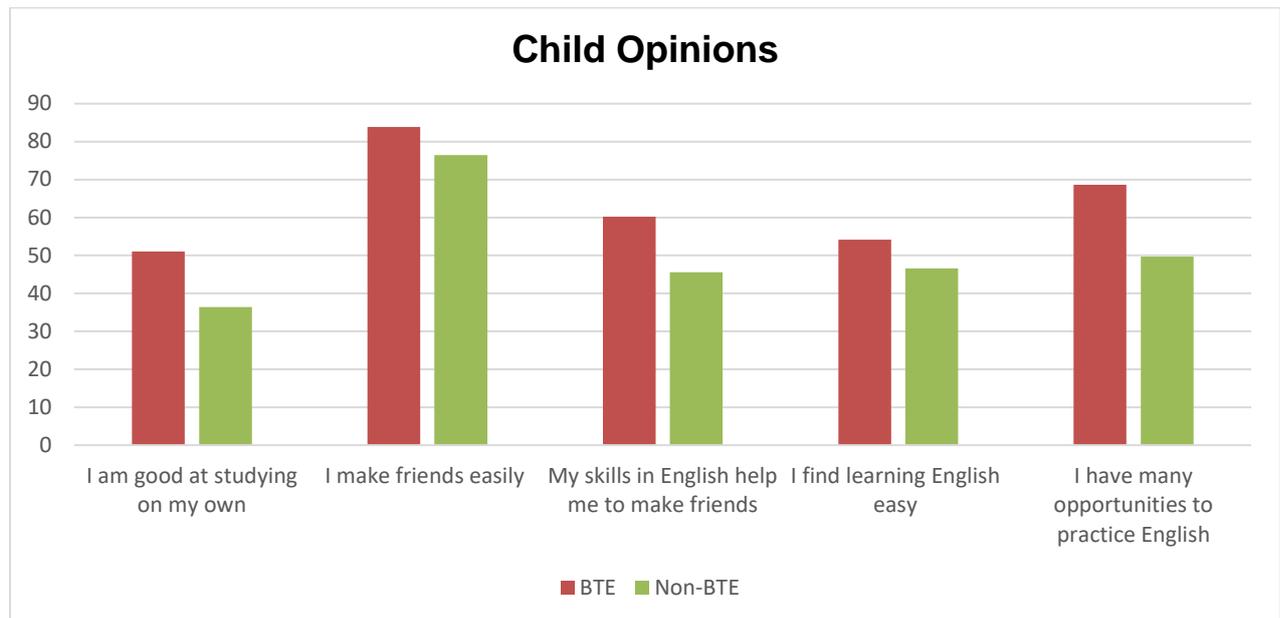
### **4.2.1. Commonalities in Response**

For general well-being, the vast majority of both student groups either agreed or strongly agreed feeling happy at school (BTE = 95.74%; Non-BTE = 95.39%). In terms of experiences with English, over 80% of students across samples agreed or strongly agreed that they enjoyed speaking English and that their English skills helped them to understand other subjects at school such as Mathematics. More than 90% of both groups also stated that they wanted to improve their English and believed that the language was important for their futures. Less than half of both groups, however, claimed that they felt confident with their English skills (BTE = 48.13%; Non-BTE = 46.59%) and over 70% of both groups reported making many mistakes in the language. Comparable majorities also agreed or strongly agreed that that they experienced embarrassment from making errors (BTE = 84.73%; Non-BTE = 79.26%) Approximately two thirds of both groups reported they were mocked by their friends because of making errors English (BTE = 66.86%; Non-BTE = 67.33%), and felt shy when they had to communicate in English (BTE = 63.40%; Non-BTE = 66.76%).

### **4.2.2. Differences in Response**

BTE students showed statistically higher frequencies of students for questions relating to learning independence, making friends, ease of learning English and opportunities to practice the language (See Figure 5 below). Whilst 51% of BTE students agreed or strongly agreed that they were good at studying on their own, only 36.36% of non-BTE students responded positively to this statement. There were also minor differences between student groups when asked if they made friends easily with 83.86% of BTE and 76.42% of non-BTE participants agreeing or strongly agreeing. Even larger discrepancies were obtained when students were asked if their skills in English helped them to make friends, with 60.23% of BTE children responding positively, compared with 45.58% of non-BTE children. Lastly, the BTE group revealed a higher proportion of positive agreement when asked if they found English easy to learn (BTE = 54.18%; non-BTE = 46.59%) and had many opportunities to practice English (BTE = 68.59%; non-BTE = 49.72%). These differences, however, may have been influenced by the fact that there were more BTE students in the upper grades of primary (as well as JHS and above), where English becomes an increasingly dominant language of instruction compared with local language.

**Figure 5: Differences between Child Opinion Items, percentage of BTE and Non-BTE Students reporting agree or strongly agree**



#### 4.2.3. Responses by Gender

Whilst this section has focused upon differences between BTE and non-BTE samples overall, when results were examined by gender, several inconsistencies were observed. Appendix C demonstrates the percentage of male and female agreement rates from both BTE and non-BTE for all afore listed items within the Child Opinions subsection of the Child Survey. As can be seen, for the majority of items, there was minimal difference between the agreement rates of males and females within and across BTE and non-BTE groups. Exceptions to this were found, however, for items including “I feel embarrassed when I make a mistake”, where BTE females (71.58%) showed significantly higher rates of agreement than BTE males (62.58%) suggesting a greater degree of self-consciousness regarding the use of English. Interestingly, findings from BTE females also suggested greater social benefits to learning English as indicated from their higher agreement rates for the items “I make friends easily” (BTE Female=87.98%; BTE Male=79.75%) and “My skills in English help me to make friends” (BTE Female=65.03%; BTE Male=55.21%). Whilst these differences were found to be significant, rates of agreement revealed less than an 11% discrepancy in all cases showing that on the whole, there was a large degree of comparability for males and female responses across items and samples.

#### 4.3. Overall Summary

Overall, students who engaged in the BTE pilot programme showed a greater tendency to engage with English in the home, community and school environment. In addition, BTE students reported feeling more ease with speaking, reading, writing and listening skills, compared with non-BTE students. As highlighted previously, however, these results may have been influenced by the fact that more BTE students were in higher grades of schooling, which demand greater application of the English language. For questions relating to opinions on learning English, there were a number of similarities between the rates of responses concerning confidence with using English, for example, as well as motivation for improving English skills. Differences were observed, however, for several items including more opportunities to practice English and finding learning English less challenging. Some minor gender differences were also noted, with findings from BTE females suggesting a higher degree of self-consciousness when using English. In addition, BTE females indicated greater social benefits from being able to speak the English language, compared with BTE males.

## 5. Learner Assessments for BTE and Non-BTE Students

This chapter presents the results for English literacy and numeracy assessments for BTE and non-BTE students. The chapter compares the learning performance between students in relation to their subtask scores, zero scores, proficiency levels and overall scores. It also examines differences in terms of gender and students' current enrolment in school. Overall, the purpose of this chapter is to ascertain whether there are systematic differences between those students who were exposed to BTE following their completion of CBE and those who were not in terms of academic abilities in English language and mathematics. As previously noted, when examining the results in this chapter, it is important to remember that a significant higher proportion of BTE students are in higher grades of school compared to non-BTE students. It is therefore expected that current student performance is likely to be influenced by the impact of BTE programme on grade placement, which then impacts on academic advancement of BTE children relative to non-BTE children.

Table 4 shows the mean percent scores of each subtask from the English literacy and numeracy assessments. For all basic English subtasks including oral vocabulary, letter sound identification and non-word reading, BTE students performed significantly better than the non-BTE group with gains ranging between 6.35 to 12.04 percentage points. For both samples, oral vocabulary achieved the highest results (BTE = 88.51%; Non-BTE = 82.06%) amongst basic subtasks and non-word reading the lowest (BTE = 54.27%; Non-BTE = 42.43%). The largest difference in scores was found with non-word reading. For advanced English literacy, BTE students also achieved significantly higher results across all subtasks including oral reading, reading comprehension and listening comprehension with discrepancies ranging from 11.06 to 12.66 percentage points. Across advanced tasks, both groups achieved their strongest scores within oral reading and their weakest with reading comprehension.

For numeracy, BTE students' results exceeded those from the non-BTE cohort for all basic and advanced subtasks with all but one task, two-digit addition. For basic tasks including number identification, number discrimination, missing number and one digit addition and subtraction, differences between results ranged from 6.06 to 8.49 percentage points with students attaining the strongest results for number identification (BTE = 93.47%; Non-BTE = 87.42%) and the lowest for missing number (BTE = 60.23%; Non-BTE = 51.80%). For advanced subtasks including two-digit addition/subtraction and numeracy word problems, results showed smaller differences between 4.03 to 5.22 percentage points with one-digit addition representing the strongest advanced skill for groups and two-digit subtraction the weakest. Overall, whilst BTE students outperformed non-BTE students for all English literacy and numeracy assessments, the discrepancies between scores were more pronounced with English subtask scores.

**Table 4: Differences in Subtask Performance between BTE and Non-BTE**

Subtasks	BTE mean percent score (%)	Non-BTE mean percent score (%)	Statistic	Significance	P Value
<b>English Literacy Subtasks</b>					
Oral vocabulary	88.51	82.06	t-test	yes	0.0000
Letter sound identification	55.14	48.15	t-test	yes	0.0006
Non-word reading	54.27	42.43	t-test	yes	0.0000
Oral reading	71.67	60.61	t-test	yes	0.0005
Reading comprehension	56.77	42.70	t-test	yes	0.0000
Listening comprehension	70.99	58.33	t-test	yes	0.0000
<b>Numeracy Subtasks</b>					
Number identification	93.47	87.42	t-test	yes	0.0000
Number discrimination	88.21	79.92	t-test	yes	0.0000
Missing number	60.23	51.80	t-test	yes	0.0000
One-digit addition	71.82	64.99	t-test	yes	0.0002
One-digit subtraction	63.70	55.21	t-test	yes	0.0000
Two-digit addition	54.87	50.84	t-test	no	0.0855
Two-digit subtraction	45.53	40.51	t-test	yes	0.0235
Numeracy word problems	65.56	60.35	t-test	yes	0.0383

### 5.1. Overview of Zero Scores

In addition to presenting the mean percent scores, Table 5 provides an overview of the subtask zero scores for learning assessments. These scores show the percentage of students who could not correctly answer a single item on the given subtask and reflects those students performing at critically low levels.

In examining results from English literacy, it can be seen that there were statistically fewer students in the BTE subsample identified as non-performers across all subtasks with the exception of oral vocabulary. Whilst only a very small percentage of students from both the BTE and non-BTE groups could not answer a single question on oral vocabulary and letter sound identification tasks, the non-word reading task posed somewhat more challenge for both groups. For the non-word reading task we found 17.87% of BTE students and 26.40% of non-BTE students achieving zero scores. Expectedly, there were higher proportions of non-performers found for advanced tasks with reading comprehension proving to be the most difficult skill for students overall. For this subtask, approximately a quarter of BTE students and over a third of non-BTE students were unable to answer a single question.

For numeracy subtasks, substantially less students in both groups were classified as non-performers compared with English literacy subtasks. For basic tasks, less than 5% of students from both groups attained zero scores and even with these small proportions, BTE students showed statistically lower percentages. For all advanced tasks, whilst BTE students had fewer students in the non-performer category only the numeracy word problem subtask revealed a significant difference between groups (BTE = 9.51%; non-BTE = 15.17%). Based upon non-performer proportions, two-digit subtraction posed the greatest challenge for students across all numeracy subtasks.

**Table 5: Differences in Percentage of Non-Performers between BTE and Non-BTE**

Subtasks	BTE mean percent score (%)	Non-BTE mean percent score (%)	Statistic	Significance	P Value
<b>English Literacy Subtasks</b>					
Oral vocabulary	0.29	1.12	t-test	no	0.1907
Letter sound identification	2.59	5.62	t-test	yes	0.0434
Non-word reading	17.87	26.40	t-test	yes	0.0065
Oral reading	17.29	25.28	t-test	yes	0.0097
Reading comprehension	25.36	36.24	t-test	yes	0.0018
Listening comprehension	17.87	26.12	t-test	yes	0.0083
<b>Numeracy Subtasks</b>					
Number identification	0.00	1.12	t-test	yes	0.0480
Number discrimination	0.58	1.97	t-test	no	0.1017
Missing number	1.44	1.97	t-test	no	0.5880
One-digit addition	0.29	3.09	t-test	yes	0.0042
One-digit subtraction	1.73	4.21	t-test	yes	0.0534
Two-digit addition	9.22	13.48	t-test	no	0.0753
Two-digit subtraction	14.70	17.13	t-test	no	0.3787
Numeracy word problems	9.51	15.17	t-test	yes	0.0227

## 5.2. Overall Scores and Proficiency Levels

Table 6 presents the mean percent of beginner, advanced and overall scores for English literacy and numeracy assessments. For Basic English, the BTE group (54.76%) demonstrated highly significant gains over the non-BTE group (45.63%) with the average difference between scores being 9.13 percentage points. This trend was also observed with the advanced score for English literacy with the BTE cohort (64.06%) demonstrating even stronger results than non-BTE (51.47%) with an average discrepancy of 12.69 percentage points. When the overall component score was calculated, this resulted in an average score of 60.76% for BTE and 49.69% for non-BTE students. For numeracy, significantly BTE's stronger performance was also demonstrated for basic, advanced and overall scores. Differences however were less pronounced than with English literacy showing less than a 7.5 percentage points discrepancy for all component scores.<sup>1</sup>

**Table 6: Differences in Overall Scores and Proficiency Levels between BTE and Non-BTE Students**

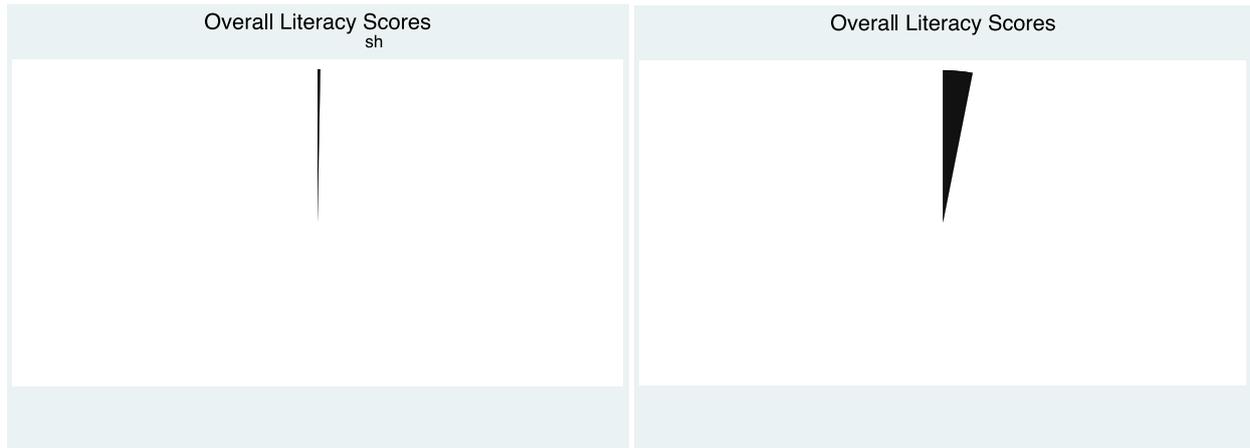
Scores	BTE(%)	Non-BTE(%)	Statistic	Significance	P Value
<b>English Literacy</b>					
Basic score	54.76	45.63	t-test	yes	0.0000
Advanced score	64.06	51.47	t-test	yes	0.0000
Overall score	60.76	49.69	t-test	yes	0.0000
<b>Numeracy</b>					
Basic score	76.92	69.46	t-test	yes	0.0000
Advanced score	54.24	49.51	t-test	yes	0.0163
Overall score	69.64	62.98	t-test	yes	0.0000

Source: CBE Cycle 4 Tracker Study Round 3.

<sup>1</sup> As discussed in Chapter 1, the overall score for literacy omitted the subtask of oral vocabulary in order to ensure consistency between component scores generated in other analyses and reports on CBE cycles. It should be noted, however, that if this subtask score were included, then the mean reported overall score for English literacy would be higher (i.e. BTE=67.17; Non-BTE=57.14) than shown in Table 6 due to the fact that the oral vocabulary subtask represented the highest achieving skill. The discrepancy between BTE and non-BTE scores, however, is largely unaffected by this recalculation and highly significant differences still remain.

The proportion of students for each proficiency level for BTE and non-BTE groups for Overall English Literacy Scores are shown in Figure 6. Very few students from both groups fell into the non-performer category with minimal difference observed between proportions (BTE = 0.29%; non-BTE = 3.09%). The beginner category had the highest frequency of BTE (35.35%) and non-BTE students (42.13%) with a higher proportion of non-BTE children belonging to this level. 30.84% of BTE participants and 40.73% of non-BTE students were identified as approaching proficiency. Whilst over a third of BTE students were identified as proficient (i.e. with scores greater than 80%), only 14.04% of non-BTE children achieved this level. This represented the largest difference amongst categories for Overall English Literacy.

**Figure 6: Differences in Overall English Literacy Score between BTE and Non-BTE by Proficiency Levels**



Source: CBE Cycle 3 Bridge to English Study

The overall results for the numeracy proficiency levels are shown in Figure 7. The BTE sample had no children who were classified as non-performers overall; non-BTE similarly showed a minimal proportion of children who received zero scores (0.56%). More students from the non-BTE sample fell within the beginners and approaching proficiency levels with the latter representing the highest proportions of students for both groups. As with English literacy, the largest difference between group percentages was found with the highest category 'Proficient', with the BTE group showing greater numbers of students at this level (34.58%) compared with non-BTE (17.7%).

**Figure 7: Differences in Overall Numeracy Score between BTE and Non-BTE by Proficiency Levels**



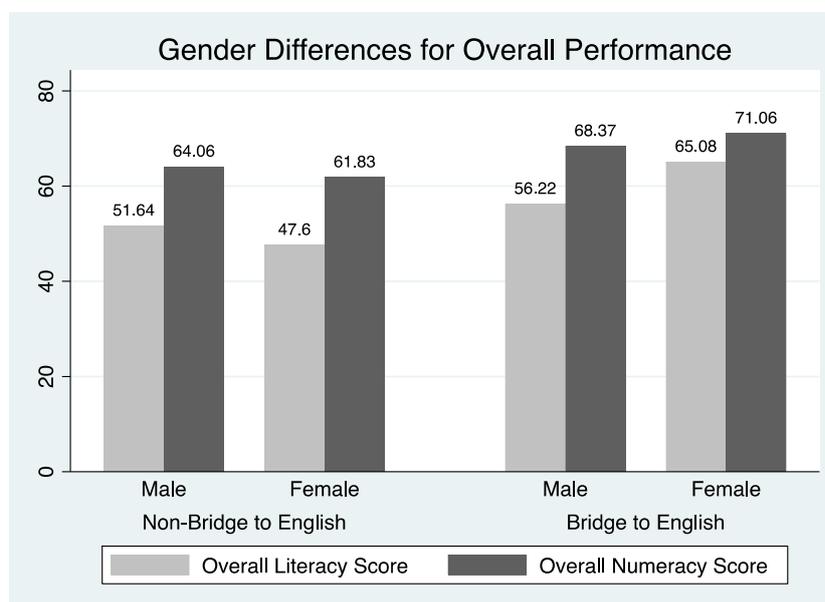
Source: CBE Cycle 3 Bridge to English Study

### 5.3. Differences by Gender

This section considers gender differences within and between BTE and non-BTE groups. Figure 8 presents the overall scores for males and females across for both English literacy and numeracy assessments. For the non-BTE group, there are no statistical differences between male and female students for English literacy and numeracy. For the BTE group, females were found to outperform males for both English literacy and numeracy with differences between Overall English Scores showing significance (Females = 65.08%; Males = 56.22%).

Looking now at differences between groups, that is females in the BTE versus females in the non-BTE, we found that female BTE outperformed female non-BTE in both English and numeracy. For differences between males in the BTE and males in the non-BTE groups, we did not find significant differences in English literacy or numeracy.

**Figure 8: Gender Differences in Assessments between BTE and Non-BTE (Overall Scores)**

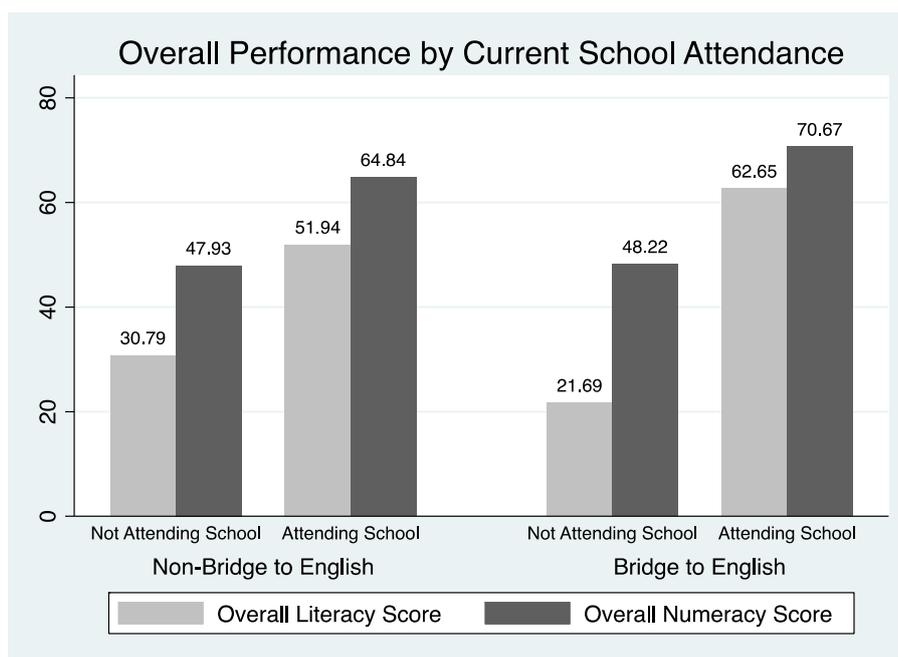


Source: CBE Cycle 3 Bridge to English Study

### 5.4. Differences by School Attendance

This section considers differences between BTE and non-BTE groups in relation to current school attendance. Figure 9 presents the overall scores for children who were attending school at the time of data collection and those who had discontinued their education. In examining these results, one caution is that the frequencies of students who had discontinued their education were very low for both the BTE (16 students) and non-BTE (35 students) groups. As can be seen from Figure 9 below, across groups there were strong differences between English literacy and numeracy scores for those currently attending school and those out of school. For English literacy, the non-BTE children who were out of school scored, on average 20 percentage points lower, in their assessment, than their in school counterparts. For BTE children, this difference was even greater and represented approximately a 40 percentage points difference between in school and out of school children. Despite small sample sizes, both results demonstrated high statistical significance. Though out of school BTE children revealed lower Overall English Literacy results than out of school non-BTE children the low sample sizes did not show statistical significance for this difference. For numeracy, significant gaps in results were also seen for out of school and in school children in both the BTE and non-BTE groups. However, for out of school children there were no statistical differences in English literacy or numeracy between BTE and non-BTE children.

**Figure 9: Differences in Assessments between BTE and Non-BTE (Overall Scores) by School Attendance**



Source: CBE Cycle 3 Bridge to English Study

### 5.5. Overall Summary

Overall, results from this section show that BTE students outperform non-BTE students in English literacy. This was demonstrated through significant differences across all subtasks. It was also revealed through proportional differences of zero scores (non-performers) between BTE and non-BTE groups, as well as through the greater percentage of BTE students classified as 'Proficient' in English. For numeracy, BTE also achieved significantly higher scores in all but one subtask and had more students identified as 'Proficient'. These differences, however, were more modest compared to English literacy. Whilst it is important to remember the grade level differences between student groups, these findings do suggest that exposure to the BTE intervention leads to some improvement in students' English and mathematical skills.

In examining the difference between out of school children and in school children's performance in English and numeracy, strong differences were observed with out of school children significantly underperforming in all assessments. Between group differences for out of school children, however, were not found to be statistically significant at the descriptive level. This result could suggest that any initial benefits in English proficiency that were the result of the BTE programme could not be sustained unless children continued to be exposed to learning environments such as schools.

Finally, in examining gender differences, significant within group discrepancies were observed for the BTE group, with females outperforming males for English literacy. Within group gender differences were not found for the non-BTE group. Females from the BTE group achieved significantly higher scores than females from the non-BTE group for both English literacy and numeracy. Male scores, however, revealed no difference between groups. These findings point to the particularly strong performance of female students who were exposed to the BTE intervention, a finding that will be further investigated in the next chapter.

## 6. Understanding Sources of Variation between BTE and Non-BTE Groups

### 6.1. Linear Regression Modelling

For this chapter, factors of interest were included in a set of multiple linear regression models in order to investigate their relative influence on BTE and non-BTE learning outcomes. In particular, previous descriptive results have shown key aspects of grade enrollment, gender and age which are potential predictors of the difference in performance between BTE and non-BTE children. Wealth differences were controlled for through the inclusion of variables accounting for both linear and quadratic trends in the data. This chapter reports the results of models predicting Overall English Literacy and Numeracy Scores as a function of the key confounding factors.<sup>2</sup>

Table 7 shows the results of six models. Models 1-3 represent regressions for the Overall English Literacy Scores, first looking at the raw estimate or estimate without any confounding factors, Model 2 adding controls in the estimation and finally Model 3 undertaking the results for those children who were in school at the time of the survey. Model 3 not only restricts its sample to children in school but also includes confounding factors such as the teacher mainly using the English language in class and non-attendance at school. Models 4-6 follow the exact same approach as Models 1-3 but include Overall Numeracy Scores as the outcome variable.<sup>3</sup>

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<sup>2</sup> As noted, overall scores comprised all subtasks that were administered to students for the learner assessments. The only exception was the overall score for English literacy, which omitted the subtask of oral vocabulary. This was done to ensure consistency between component scores generated for other analyses and reports on CBE Cycles.

<sup>3</sup> The figures displayed in Table 7 can be understood as follows. For continuous variables such as age and non-attendance, a one unit increase in the explanatory variable, is associated as an assessment score increase or decrease as indicated by the coefficient shown for each model (positive = increase; negative = decrease), holding all other variables constant. For binary (e.g. female) and categorical variables (eg. grade and wealth index) each coefficient can be understood as the assessment score impact in relation to the reference group. For example, in Model 2, female students were found to score on average 1.36 points higher than males, a finding which was insignificant.

**Table 7: Linear Regression Models Predicting Assessment Scores**

Explanatory Variables	Model 1 Overall English (Comparison)	Model 2 Overall English (All children)	Model 3 Overall English (School only)	Model 4 Overall Numeracy (Comparison)	Model 5 Overall Numeracy (All children)	Model 6 Overall Numeracy (School only)
Bridge to English	11.08**	4.43*	5.35**	6.65**	3.33*	3.78**
Female		1.23	1.22		-1.38	-1.46
Age		2.91***	2.97***		1.84***	1.98***
<b>Grade level</b>						
Grade 1-3 (Reference group)		0	0		0	0
Grade 4-6		14.33***	13.91***		5.87**	4.08*
JHS and above		23.92***	23.04***		13.39***	11.05***
Out of school		-19.74***			-16.75***	
Household size		0.31	0.34		0.35*	0.31*
English materials at home		-3.76	-3.47		0.92	0.08
Speaks English (home)		9.46***	8.75***		3.80*	3.25*
Speaks English (friends)		5.02	3.61		2.31	0.88
Undertakes Work		2.64	3.96		8.22***	8.87***
Teacher uses mainly English			1.76			7.36***
Non-attendance			-2.46*			-1.35
Additive wealth Index		-12.04***	-8.41*		-8.36***	-4.43*
Additive wealth Index <sup>2</sup>		1.16***	0.79*		0.73***	0.36
_cons		-12.04***	3.61		-8.36***	0.88

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: CBE Cycle 3 Bridge to English Study

## 6.2. Conditional Impact of BTE on English Literacy

Model 1 in Table 7 suggests that the unconditional association of BTE to English literacy was 11.08 percentage points. In other words, BTE students achieved 11.08 higher points in English literacy compared with non-BTE students without the inclusion of any confounding variables. When other predictors were included in Model 2, however, the coefficient was reduced by over half. In other words, after controlling for additional variables, the estimated gain for BTE children was 4.43 points, a finding that was still significant, but only marginally at the 5% level. Model 2 further revealed that age was a highly significant factor, with each unit increase resulting in a 2.91 percentage points gain in Overall English assessment scores. For grade level, where Grades 1-3 represented the reference category, Grades 4-6 and JHS and above both revealed respectively higher scores which were statistically significant. Children not in school, were found to significantly underperform compared with students in Grades 1-3 by 19.74 points. Speaking English at home was found to significantly increase English scores by 9.46 points and whilst access to English language materials negatively predicted scores, this finding was not significant.

Model 3 examined students only in school in order to account for the impact of other variables including non-attendance and teachers' predominant use of English in class (as opposed to local languages). Results previously obtained for age, grade and English language spoken at home in Model 2 also held for Model 3. The added factor of non-attendance was found to be modestly significant, where each additional day of absence was associated with a score decrease of 2.46 points. In this model, access to English language materials was not found to significantly impact scores nor was teacher's predominant use of English in the classroom.

### 6.3. Impacts on Overall Numeracy

Model 4, in Table 7, shows the unconditional association between BTE and numeracy performance, with BTE students achieving 6.65 points higher than non-BTE students. When other explanatory variables were included in Model 5, the effect was substantially reduced to 3.33 points, a result which retained a 5% level of significance. Similarly, age and grade were found to be highly significant predictors of scores and whilst trends matched those found within Models 2 and 3, estimated differences were not as pronounced. Each unit increase of age, for example, resulted in a 1.84 point gain. Compared with the reference category of Grades 1-3, Grades 4-6 and JHS and above showed increases of 5.87 points and 13.39 points respectively. Out of school children were similarly found to underperform by 16.75 points. Within this model, speaking English at home positively predicted scores by 3.8 points, as did undertaking work (8.22 points) and household size (0.35 points). In Model 6 which examined students only in school, all afore mentioned patterns of significance from Model 5 were retained with slightly adjusted coefficients. Both added variables relating to school non-attendance (-1.35 points) and teachers' main use of English in the classroom (7.36 points) were further found to significantly predict scores. Gender effects were not found to be significant in Models 5 and 6. Due to significant differences observed at the descriptive level in Section 4.3, however, a separate set of models were created in order to ascertain the presence of more subtle gender effects within and between BTE and non-BTE groups.

### 6.4. Gender Effects

#### 6.4.1. *Between Group Gender Effects*

In Table 8 below, Models 1-4 are restricted to subgroups of either only male or only female for which overall assessment scores (Literacy and Numeracy) are the outcome variables. Predictor variables match those from previous regression models examining effects on both in school and out of school children. These subgroup models allow for between group gender effects to be more closely observed. As noted in Chapter 5, Section 5.2, whilst males showed no significant between group effects, females from the BTE group were found to significantly outperform females from the non-BTE group for both literacy and numeracy. In regression Models 1-4 in Table 8 below, these findings are maintained, even after controlling for a number of explanatory factors. Whilst the majority of previous significance patterns hold for these models where other explanatory variables are concerned, one noteworthy difference can be seen in Model 4, where having to work is associated with a for more pronounced positive increase in female numeracy assessments compared with males (Model 3). This suggests that females who work (often alongside their studies) may show benefits in their numerical understanding which translates to school contexts.

**Table 8: Linear Regression Models Examining between Group Gender Effects**

Explanatory Variables	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
	Overall English BTE and Non-BTE (Male)	Overall English BTE and Non-BTE (Female)	Overall Numeracy BTE and Non-BTE (Male)	Overall Numeracy BTE and Non-BTE (Female)
Bridge to English	0.32	9.28**	1.98	5.04**
Age	3.12***	2.65***	1.83***	1.83***
<b>Grade</b>				
Grade 1-3 (Reference group)	0	0	0	0
Grade 4-6	9.03*	19.81***	4.77	7.67**
JHS and above	22.89***	23.54***	14.63***	11.82**
Out of school	-22.21***	-15.13*	-17.85***	-13.93**
Household size	0.17	0.35	0.22	0.41*
English materials at home	-4.82	-2.09	-1.62	2.96
Speaks English (home)	8.51*	9.95**	4.55	3.11
Speaks English (friends)	5.87	3.06	3.09	1.13
Undertakes Work	1.04	7.65	5.00*	17.08***
Additive wealth index	-15.72***	-7.09	-10.13**	-5.94*
Additive wealth index <sup>2</sup>	1.63***	0.57	0.99**	0.42
_cons	35.64*	9.54	53.96***	30.70**

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: CBE Cycle 3 Bridge to English Study

#### 6.4.2. Within Group Gender Effects

In Table 9 below, Models 1-4 also apply overall assessment scores as outcome variables but in these examples, subgroups represent either only BTE beneficiaries or non-BTE beneficiaries. As with examples from Table 7, predictor variables are drawn from previous regression models examining effects on both in school and out of school children. These subgroup models allow within group gender effects to be more closely examined. As noted in Chapter 5, Section 5.2, whilst non-BTE males showed no significance difference from non-BTE females scores for literacy or numeracy, for BTE children, females were found to significantly outperform males for literacy, but not for numeracy. Again, from examining the regression models in Table 9 below, it can be seen that these findings hold, after accounting for the influence of other factors.

**Table 9: Linear Regression Models Examining within Group Gender Effects**

Explanatory Variables	Model 1 Overall English (BTE)	Model 2 Overall English (Non-BTE)	Model 3 Overall Numeracy (BTE)	Model 4 Overall Numeracy (Non-BTE)
Female	6.15*	-3.85	-0.26	-2.53
Age	4.29***	1.52*	3.12***	0.76
<b>Grade</b>				
Grade 1-3 (Reference group)	0	0	0	0
Grade 4-6	13.09**	15.70***	4.27	7.73**
JHS and above	21.02***	25.13***	10.49**	14.41***
Out of school	-32.00***	-9.52	-21.84***	-12.46**
Household size	0.43	0.18	0.43*	0.19
English materials at home	-1.63	-2.31	1.06	2.39
Speaks English (home)	5.03	13.24***	2.41	4.41
Speaks English (friends)	5.36	6.09	3.27	1.95
Undertakes Work	0.57	3.67	9.12***	7.02**
Additive wealth index	-8.47	-14.79**	-2.92	-13.55***
Additive wealth index <sup>2</sup>	0.7	1.54**	0.21	1.24***
_cons	6.82	44.27**	19.83*	72.35***

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: CBE Cycle 3 Bridge to English Study

### 6.5. Grade Level Effects

Regression models examined in this chapter have predicted significant gain scores for the BTE intervention for both English literacy and numeracy, after controlling for a number of confounding variables. We wanted to know, however, if these effects would be maintained if students' scores in Grades 3 and below (i.e. where students learn in their local language alone) were examined separately from students in Grades 4 and above (where students learn English alongside their local language). We therefore looked at subgroup models for this analysis in order to better determine the respective influences of BTE and grade of placement in school on differences in English language and numeracy scores.

Table 10 demonstrates the results of these models for English literacy and numeracy and shows that the BTE intervention was not found to be significant for students in Grade 3 and below but was highly significant in models examining students' scores for Grade 4 and above. This suggests the considerable influence that grade of placement and access to English in the upper years of schooling had upon BTE students' scores in both learning areas, that was separate to the intervention itself.

**Table 10: Linear Regression Models Examining Grade Level Effects**

Explanatory Variables	Model 1	Model 2	Model 3	Model 4
	Overall English (Grade 3 and below)	Overall English (Grade 4 and above)	Overall Numeracy (Grade 3 and below)	Overall Numeracy (Grade 4 and above)
Bridge to English	3.69	6.79**	2	5.17***
Female	-4.07	1.9	-2.65	-1.38
Age	4.39**	2.31***	2.93**	1.53***
Household size	2.21***	0.04	1.39**	0.22
English materials at home	-0.19	3.95	2.86	6.10***
Speaks English (home)	7.02	13.42***	5.56	6.06**
Speaks English (friends)	-1.55	9.04**	-1.21	4.77*
Undertakes Work	7.21	1.61	11.83*	7.31***
Additive wealth index	-18.99*	-10.75**	-12.73*	-7.62**
Additive wealth index <sup>2</sup>	1.89	1.01**	1.15	0.65**
_cons	4.11	37.68**	32.3	50.20***

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: CBE Cycle 3 Bridge to English Study

## 7. Conclusions

The purpose of this study was to identify whether the Bridge to English (BTE) pilot intervention enabled smoother transition into formal school with regards to learning outcomes and progression. Information was collected 18 months after the BTE pilot programme on students' educational trajectories, learning outcomes, attitudes towards learning English as well as use of English at home and school. This information was then compared with students who were not exposed to the intervention. This study adopted an experimental approach whereby 30 Cycle 3 CBE centres were randomly assigned into beneficiaries of BTE (15 centres) or control group (15 centres). In comparing background characteristics of students, some differences were found in relation to gender, age, grade, household characteristics and wealth between the two groups which were anticipated due to the random sampling that occurred at the CBE centre level. Presented below are the main conclusions drawn from this report.

This study revealed that BTE students were more likely to remain in school compared with non-BTE students. In addition, a higher frequency of BTE students in the upper levels of primary school and JHS and above were identified. This finding is important for two reasons. First, it suggests that the BTE intervention may have facilitated students entering formal school at a higher level, particularly given that BTE children were relatively younger than the non-BTE group. Second, it highlights the possibility that differences found between learning outcomes, attitudes to learning English and English use at home and school may have been independently influenced by grade of placement. Indeed, this latter point was supported when later regression analysis examining grade level effects found BTE to be an insignificant predictor of both numeracy and literacy results for children in Grade 3 and below, where students learn in their local language, rather than English language. In other words, this provided further evidence that differences seemingly influenced by the BTE programme were more a result of higher grade attendance where English becomes an increasingly dominant language of instruction. It is therefore crucial that results from this study are contextualised with this finding in mind.

Students who engaged in the BTE pilot programme showed a greater tendency to engage with English in the home, community and school environment. They also reported feeling more ease with speaking, reading, writing and listening skills, compared with non-BTE students. For opinions on learning English, there were largely similarities between BTE and non-BTE responses with very few between group and

gender differences observed. In comparing assessment scores, BTE students were found to outperform non-BTE in English literacy. This was demonstrated through significant differences across subtasks, lower proportions of zero scores (non-performers) and more BTE students classified as 'Proficient' in English. Whilst differences were more modest for numeracy, BTE also achieved significantly higher scores in all but one subtask and had more students identified as 'Proficient'.

In examining the difference between out of school children and in school children's performance in English and numeracy, strong differences were observed with out of school children significantly underperforming in all assessments. A key message derived from this finding is that both BTE and non-BTE out of school children do not progress in their learning beyond CBE or BTE, unless they remain in school.

In undertaking multivariate analysis, we were firstly interested in the raw estimate of BTE on Overall English Literacy and Numeracy result where we found the unconditional association of BTE to English literacy was 11.08 points and to numeracy, 6.65 points. When other confounding variables were included in regression models, it became apparent that the estimated effects of BTE were substantially reduced to approximately half. This was due to other variables accounting for differences in performance that may have been previously attributed to BTE in independent models without controls. Student age, for example, was associated with gains for both English literacy and numeracy, with older students showing larger gains across models. Additionally, grade level which included the category of out of school children strongly predicted scores across models. In reference to the Grades 1-3 comparison group, upper grades (4 and above) revealed positive gains across models. Strong negative associations, however, found for students out of school. Speaking English at home was also found to significantly increase scores across models as did work status, for numeracy models. Interestingly, no within group gender differences were found. When we examined subgroups of only male (BTE and non-BTE) and only female (BTE and non-BTE) participants, however, between group gender differences were identified with females from BTE associated with higher assessment scores compared to females from non-BTE.

In summary, we observed some benefit in terms of the BTE intervention facilitating higher grade of placement following the CBE programme and encouraging students to remain in school. This report has also demonstrated that BTE recipients demonstrated higher results in both English literacy and numeracy assessments compared with non-BTE students, after controlling for a number of factors, and were more positive in their attitudes to the use of English at home and school. Whilst these findings suggest that the BTE programme had a positive impact upon the learning outcomes and progression of CBE students in formal school, it is imperative that the strong influence of grade of placement at transition not be overlooked when interpreting the results from this report. Related to this point, a recommendation for future research would be to compare BTE children who come from CBE, with a non-CBE sample in order to better understand the impact of the English intervention. In addition, findings from this report have suggested that in order to maximise the benefits of English language initiatives such as Bridge to English, students must have continued opportunity to practice and build upon skills learnt during the intervention.

## Appendix A

Community	% BTE	% Non-BTE
Asawaba	21	0
Choggu Mmanayili	25	0
Dalogyili	0	24
Damankung-Yili	0	21
Dohani	0	24
Gbambaya	0	25
Gbanyemli	0	23
Gbrimah	23	0
Gukpegu-Dungu	0	24
Kasaligu	0	24
Kogni	23	0
Kpalsi	23	0
Kpawumo	0	23
Kukpehi	24	0
Kumbuyili	23	0
Kunyevilla East	0	24
Larini	23	0
Namandu	0	25
Nangbagu Yekura	0	24
Sagnarigu	0	22
Sagnarigu - Kukuo	23	0
Sagnarigu-Dungu	25	0
Salamba	23	0
Shishegu	22	0
Sugashee	0	25
Taha	0	23
Tampe-Kukuo	23	0
Wayamba	23	0
Wurishe	23	0
Zujung	0	25
<b>Total</b>	<b>347</b>	<b>356</b>

## Appendix B

<b>BTE Students' Perceptions of English Skills</b>	<b>Very Difficult (%)</b>	<b>Somewhat Difficult (%)</b>	<b>Somewhat Easy (%)</b>	<b>Very Easy (%)</b>
English Reading	24.78	19.02	31.41	24.78
English Writing	17.29	15.85	33.43	33.43
English Speaking	29.11	22.48	32.56	15.85
English Listening	24.78	19.88	35.73	19.6

<b>Non-BTE Students' Perceptions of English Skills</b>	<b>Very Difficult (%)</b>	<b>Somewhat Difficult (%)</b>	<b>Somewhat Easy (%)</b>	<b>Very Easy (%)</b>
English Reading	29.63	26.5	34.47	9.4
English Writing	24.22	25.07	31.34	19.37
English Speaking	31.05	34.47	28.77	5.7
English Listening	27.35	28.77	34.37	9.4

## Appendix C

Child Opinions (All Students)	BTE	Non-BTE	Test	Significance	P-value
I enjoy learning English	88.47	84.38	chi2	no	0.1140
I want to improve my English	99.14	94.32	chi2	yes	0.0000
I enjoy speaking English	72.91	77.84	chi2	no	0.1300
I feel confident with my English skills	48.13	46.59	chi2	no	0.6840
I find learning English easy	54.18	46.59	chi2	yes	0.0450
I feel shy when I have to communicate in English	63.4	66.76	chi2	no	0.3510
I make many mistakes in English	84.73	79.26	chi2	no	0.0600
I feel embarrassed when I make a mistake	67.44	70.17	chi2	no	0.4350
I want to improve my English when I make a mistake	97.98	93.75	chi2	yes	0.0050
My friends laugh and mock me when I make mistakes in English	66.86	67.33	chi2	no	0.8950
I have many opportunities to practice English	68.59	49.72	chi2	yes	0.0000
I believe that English is important for my future education	98.85	95.74	chi2	yes	0.0120
I believe that English will help me with my work outside of school	85.88	89.77	chi2	no	0.1150
I am good at studying on my own	51.01	36.36	chi2	yes	0.0000
I make friends easily	83.86	76.42	chi2	yes	0.0140
My skills in English help me to make friends	60.23	45.58	chi2	yes	0.0000
I felt happy when I was at school	95.39	95.74	chi2	no	0.8220
My skills in English helped me to understand Mathematics	84.44	84.94	chi2	no	0.8530
My skills in English helped me to understand Science	87.61	85.51	chi2	no	0.4170
I enjoy learning English	88.47	84.38	chi2	no	0.1140

Child Opinions (Female Only)	BTE	Non-BTE	Test	Significance	P-value
I enjoy learning English	87.98	81.66	chi2	no	0.0980
I want to improve my English	99.45	94.67	chi2	yes	0.0070
I enjoy speaking English	73.77	75.74	chi2	no	0.6710
I feel confident with my English skills	49.73	43.79	chi2	no	0.2650
I find learning English easy	57.38	47.34	chi2	yes	0.0590
I feel shy when I have to communicate in English	66.12	67.46	chi2	no	0.7900
I make many mistakes in English	84.79	82.84	chi2	no	0.6360
I feel embarrassed when I make a mistake	71.58	70.41	chi2	no	0.8090
I want to improve my English when I make a mistake	97.81	93.49	chi2	yes	0.0450
My friends laugh and mock me when I make mistakes in English	71.04	66.27	chi2	no	0.3350
I have many opportunities to practice English	73.32	46.75	chi2	yes	0.0000
I believe that English is important for my future education	98.36	95.27	chi2	no	0.0960
I believe that English will help me with my work outside of school	90.16	89.35	chi2	no	0.8010
I am good at studying on my own	54.1	34.91	chi2	yes	0.0000
I make friends easily	87.98	76.33	chi2	yes	0.0040
My skills in English help me to make friends	65.03	43.2	chi2	yes	0.0000
I felt happy when I was at school	97.27	95.86	chi2	no	0.4660
My skills in English helped me to understand Mathematics	84.7	84.62	chi2	no	0.9830
My skills in English helped me to understand Science	87.43	85.21	chi2	no	0.4170
I enjoy learning English	87.98	81.66	chi2	no	0.0980

Child Opinions (Male Only)	BTE	Non-BTE	Test	Significance	P-value
I enjoy learning English	88.96	86.89	chi2	no	0.5560
I want to improve my English	98.77	93.99	chi2	yes	0.0190
I enjoy speaking English	71.78	79.78	chi2	no	0.0820
I feel confident with my English skills	46.63	49.18	chi2	no	0.6350
I find learning English easy	50.92	45.9	chi2	no	0.3510
I feel shy when I have to communicate in English	60.12	66.12	chi2	no	0.2480
I make many mistakes in English	84.66	75.96	chi2	yes	0.0430
I feel embarrassed when I make a mistake	62.58	69.95	chi2	no	0.1470
I want to improve my English when I make a mistake	98.16	93.99	chi2	yes	0.0490
My friends laugh and mock me when I make mistakes in English	62.58	68.31	chi2	no	0.2630
I have many opportunities to practice English	63.8	52.46	chi2	yes	0.0330
I believe that English is important for my future education	99.39	96.17	chi2	yes	0.0470
I believe that English will help me with my work outside of school	80.98	90.16	chi2	yes	0.0140
I am good at studying on my own	47.85	37.7	chi2	yes	0.0570
I make friends easily	79.75	76.5	chi2	no	0.4660
My skills in English help me to make friends	55.21	47.8	chi2	no	0.1690
I felt happy when I was at school	93.25	95.63	chi2	no	0.3330
My skills in English helped me to understand Mathematics	84.66	85.25	chi2	no	0.8800
My skills in English helped me to understand Science	88.34	85.79	chi2	no	0.4810
I enjoy learning English	88.96	86.89	chi2	no	0.5560



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